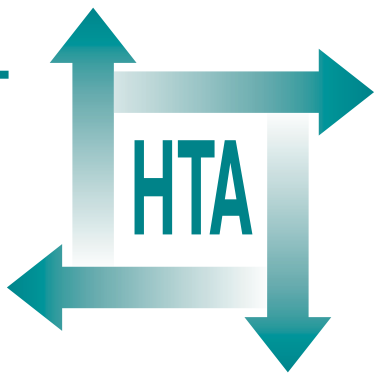
Health Technology Assessment 2000; Vol. 4: No. 4

Review

Community provision of hearing aids and related audiology services

DJ Reeves
A Alborz
FS Hickson
JM Bamford
with additional input from T Gosden

Health Technology Assessment
NHS R&D HTA Programme



Standing Group on Health Technology

Current members

Chair:
Professor Kent Woods
Professor of Therapeutics,
University of Leicester

Professor Martin Buxton
Director & Professor of
Health Economics,
Health Economics
Research Group,
Brunel University

Professor Shah Ebrahim
Professor of Epidemiology
of Ageing, University of Bristol

Professor Francis H Creed
Professor of
Psychological Medicine,
Manchester Royal Infirmary

Professor John Gabbay
Director, Wessex Institute
for Health Research
& Development

Professor Sir John
Grimley Evans
Professor of Clinical Geratology,
Radcliffe Infirmary,
Oxford

Dr Tony Hope
Clinical Reader in Medicine,
Nuffield Department of
Clinical Medicine,
University of Oxford

Professor Richard Lilford
Regional Director of R&D,
NHS Executive West Midlands

Dr Jeremy Metters
Deputy Chief Medical Officer,
Department of Health

Professor Maggie Pearson
Regional Director of R&D,
NHS Executive North West

Mr Hugh Ross
Chief Executive,
The United Bristol
Healthcare NHS Trust

Professor Trevor Sheldon
Joint Director, York Health
Policy Group, University of York

Professor Mike Smith
Faculty Dean of Research
for Medicine, Dentistry,
Psychology & Health,
University of Leeds

Dr John Tripp
Senior Lecturer in Child
Health, Royal Devon and Exeter
Healthcare NHS Trust

Professor Tom Walley
Director,
Prescribing Research Group,
University of Liverpool

Dr Julie Woodin
Chief Executive,
Nottingham Health Authority

Past members

Professor Sir Miles Irving*
Professor of Surgery,
University of Manchester,
Hope Hospital, Salford

Dr Sheila Adam
Department of Health

Professor Angela Coulter
Director, King's Fund,
London

Professor Anthony Culyer
Deputy Vice-Chancellor,
University of York

Dr Peter Doyle
Executive Director, Zeneca Ltd,
ACOST Committee on Medical
Research & Health

Professor John Farndon
Professor of Surgery,
University of Bristol

Professor Charles Florey
Department of Epidemiology
& Public Health, Ninewells
Hospital & Medical School,
University of Dundee

Professor Howard
Glennester
Professor of Social Science
& Administration, London
School of Economics &
Political Science

Mr John H James
Chief Executive,
Kensington, Chelsea &
Westminster Health Authority

Professor Michael Maisey
Professor of
Radiological Sciences,
Guy's, King's & St Thomas's
School of Medicine & Dentistry,
London

Mrs Gloria Oates
Chief Executive,
Oldham NHS Trust

Dr George Poste
Chief Science & Technology
Officer, SmithKline Beecham

Professor Michael Rawlins
Wolfson Unit of
Clinical Pharmacology,
University of Newcastle-
upon-Tyne

Professor Martin Roland
Professor of General Practice,
University of Manchester

Professor Ian Russell
Department of Health Sciences
& Clinical Evaluation,
University of York

Dr Charles Swan
Consultant Gastroenterologist,
North Staffordshire
Royal Infirmary

* Previous Chair

Details of the membership of the HTA panels, the NCCHTA Advisory Group and the HTA Commissioning Board are given at the end of this report.

How to obtain copies of this and other HTA Programme reports.
An electronic version of this publication, in Adobe Acrobat format, is available for downloading free of charge for personal use from the HTA website (http://www.hta.ac.uk). A fully searchable CD-ROM is also available (see below).

Printed copies of HTA monographs cost £20 each (post and packing free in the UK) to both public **and** private sector purchasers from our Despatch Agents.

Non-UK purchasers will have to pay a small fee for post and packing. For European countries the cost is £2 per monograph and for the rest of the world £3 per monograph.

You can order HTA monographs from our Despatch Agents:

– fax (with **credit card** or **official purchase order**)
– post (with **credit card** or **official purchase order** or **cheque**)
– phone during office hours (**credit card** only).

Additionally the HTA website allows you **either** to pay securely by credit card **or** to print out your order and then post or fax it.

Contact details are as follows:

HTA Despatch
c/o Direct Mail Works Ltd
4 Oakwood Business Centre
Downley, HAVANT PO9 2NP, UK

Email: orders@hta.ac.uk
Tel: 02392 492 000
Fax: 02392 478 555
Fax from outside the UK: +44 2392 478 555

NHS libraries can subscribe free of charge. Public libraries can subscribe at a very reduced cost of £100 for each volume (normally comprising 30–40 titles). The commercial subscription rate is £300 per volume. Please see our website for details. Subscriptions can only be purchased for the current or forthcoming volume.

Payment methods

Paying by cheque
If you pay by cheque, the cheque must be in **pounds sterling**, made payable to *Direct Mail Works Ltd* and drawn on a bank with a UK address.

Paying by credit card
The following cards are accepted by phone, fax, post or via the website ordering pages: Delta, Eurocard, Mastercard, Solo, Switch and Visa. We advise against sending credit card details in a plain email.

Paying by official purchase order
You can post or fax these, but they must be from public bodies (i.e. NHS or universities) within the UK. We cannot at present accept purchase orders from commercial companies or from outside the UK.

How do I get a copy of *HTA on CD*?

Please use the form on the HTA website (www.hta.ac.uk/htacd.htm). Or contact Direct Mail Works (see contact details above) by email, post, fax or phone. *HTA on CD* is currently free of charge worldwide.

The website also provides information about the HTA Programme and lists the membership of the various committees.

Community provision of hearing aids and related audiology services

DJ Reeves[1*]
A Alborz[1]
FS Hickson[2]
JM Bamford[2]
with additional input from T Gosden[3]

[1] Hester Adrian Research Centre, University of Manchester, UK
[2] Centre for Human Communication and Deafness, University of Manchester, UK
[3] National Primary Care Research and Development Centre, University of Manchester, UK

[*] Corresponding author

Competing interests: none declared

Published March 2000

This report should be referenced as follows:

Reeves DJ, Alborz A, Hickson FS, Bamford JM. Community provision of hearing aids and related audiology services. *Health Technol Assess* 2000;**4**(4).

Health Technology Assessment is indexed in *Index Medicus*/MEDLINE and *Excerpta Medica*/EMBASE. Copies of the Executive Summaries are available from the NCCHTA web site (see overleaf).

NHS R&D HTA Programme

The overall aim of the NHS R&D Health Technology Assessment (HTA) programme is to ensure that high-quality research information on the costs, effectiveness and broader impact of health technologies is produced in the most efficient way for those who use, manage and work in the NHS. Research is undertaken in those areas where the evidence will lead to the greatest benefits to patients, either through improved patient outcomes or the most efficient use of NHS resources.

The Standing Group on Health Technology advises on national priorities for health technology assessment. Six advisory panels assist the Standing Group in identifying and prioritising projects. These priorities are then considered by the HTA Commissioning Board supported by the National Coordinating Centre for HTA (NCCHTA).

This report is one of a series covering acute care, diagnostics and imaging, methodology, pharmaceuticals, population screening, and primary and community care. It was identified as a priority by the Primary and Community Care Panel and funded as project number 93/35/02.

The views expressed in this publication are those of the authors and not necessarily those of the Standing Group, the Commissioning Board, the Panel members or the Department of Health. The editors wish to emphasise that funding and publication of this research by the NHS should not be taken as implicit support for the recommendations for policy contained herein. In particular, policy options in the area of screening will be considered by the National Screening Committee. This Committee, chaired by the Chief Medical Officer, will take into account the views expressed here, further available evidence and other relevant considerations.

Reviews in *Health Technology Assessment* are termed 'systematic' when the account of the search, appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

Criteria for inclusion in the HTA monograph series
Reports are published in the HTA monograph series if (1) they have resulted from work either prioritised by the Standing Group on Health Technology, or otherwise commissioned for the HTA Programme, and (2) they are of a sufficiently high scientific quality as assessed by the referees and editors.

Series Editors: Andrew Stevens, Ruairidh Milne and Ken Stein
Monograph Editorial Manager: Melanie Corris

The editors have tried to ensure the accuracy of this report but cannot accept responsibility for any errors or omissions. They would like to thank the referees for their constructive comments on the draft document.

ISSN 1366-5278

Published by Core Research, Alton, on behalf of the NCCHTA.
Printed on acid-free paper in the UK by The Basingstoke Press, Basingstoke.

Copies of this report can be obtained from:

The National Coordinating Centre for Health Technology Assessment,
Mailpoint 728, Boldrewood,
University of Southampton,
Southampton, SO16 7PX, UK.
Fax: +44 (0) 23 8059 5639 Email: hta@soton.ac.uk
http://www.ncchta.org

Contents

List of abbreviations

AA	Automobile Association*
ANOVA	analysis of variance
BTE	behind the ear (hearing aid)
CPRS	Comprehensive Psychopathological Rating Scale
DLQI	Dermatology Life Quality Index*
ENT	Ear, Nose and Throat
GHQ	General Health Questionnaire*
GP	general practitioner
GPFH	general practice fundholder
HSQ	Health Status Questionnaire
ITE	in the ear (hearing aid)
NS	not significant*
PGI	patient generated item*
PTA	pure tone audiometry
RCT	randomised controlled trial
RNID	Royal National Institute for the Deaf
TTSA	(Liaison group for) Technicians, Therapists and Scientists in Audiology

*Used only in tables

Executive summary

Objective

To undertake a systematic review of the evidence relating to community provision of NHS hearing aids and related audiology services for adults. 'Community provision' refers to clinics conducted by NHS audiology/hearing aid department staff at locations away from their main departmental base, such as at general practitioner (GP) practices, health centres and peripheral hospitals.

Methods

Literature review

As very few studies specific to community-based adult audiology services were identified, the literature review was extended to studies relating to community clinics in medical and surgical specialities. Because of the paucity of studies, the range of experimental designs admitted was wide, ranging from randomised controlled trials to surveys of professional opinion. This made meta-analysis methods inappropriate and, hence, all analysis was in the form of qualitative review. Of the 44 studies identified, only three were directly concerned with audiology services.

Primary research: national surveys

Two surveys were conducted. The first included all NHS hearing aid departments in the UK. Information was collected on patterns of community provision and the views of heads of hearing aid services were sought on a number of issues. In the second survey, which covered 25% of all departments, details were gathered of the provision made at individual community sites, together with the views of the audiology technicians.

Primary research: costing exercise

Ten departments, eight of which were randomly selected, participated in an exercise to cost the service at one of their community sites and to compare this cost with that of providing the same service at the departmental base.

Results

The findings of the literature review include the following.

- Community clinics have clear advantages in terms of convenience for patients and reduced patient costs.
- Non-attendance rates are generally lower and patient waiting times usually shorter.
- There are indications that community clinics can increase GP referrals and encourage patient compliance and use of after-care, thus increasing 'success' rates and reducing resource wastage.
- Large majorities of patients prefer local services, provided quality is not compromised too much.
- The risk of significant pathology going untreated appears to be potentially higher in the community.
- A degree of service inequity existed in clinics held in GP fundholding practices but this may change under the new primary care group arrangements.

Outcomes for hearing aid patients, such as the quality of hearing aid fitting and use, and the utilisation of after-care services, could differ in the community but there are no studies in which this issue is addressed. This is a serious deficiency in the literature which needs to be addressed as a priority.

The results of the primary evidence collected through the project surveys and costing exercise may be summarised as follows.

- In all, 81% of all hearing aid departments were found to provide a service at one or more locations away from their main departmental base. Community clinics accounted for about 30% of all adult hearing aid work, including hearing testing, hearing aid fitting and after-care: approximately 17% at peripheral hospitals, 9% in primary care locations and 4% at other forms of community site.
- Both heads of audiology services and audiology technicians consider most community clinics to be worthwhile, even though service quality is often perceived as lower than at the departmental base. The main reason given is the benefit the clinics offer in terms of improving patient access.
- The most common disadvantages cited are background noise, equipment, access to patient records and the display of information. These factors can potentially affect the standard of

hearing aid fitting and reduce patient awareness of available support. There may also be problems covering clinics when staff are absent.
- The only reliable information about costs comes from the project exercise. NHS staff costs per patient attendance (including time, administration, and transport costs) were found on the whole to be 18% higher for community sessions compared with equivalent sessions conducted by the same technician at the base site. Sensitivity analysis suggested lower and upper bounds on the true cost differential of 2% and 30%. Community provision is not therefore a cheaper alternative. Community clinics devoted to after-care (e.g. hearing aid repairs) appeared to be more economical than those concerned with the initial provision of hearing aids. Also, new hearing aid technologies may well result in changes in costs.
- Patients attending community clinics have reduced costs because of savings in time and distance travelled. The average saving was estimated to be between two and three times as large as the increase in staff costs to the NHS. The clinics are therefore economical from a societal perspective.
- A sizeable percentage of hearing aids are discarded, underused or poorly maintained – a considerable resource wastage. There are indications that community clinics reduce this wastage and, in terms of cost per 'successful fitting', they could possibly equal or be less costly than centralised clinics. However, the potential of community clinics to stimulate demand, in terms of either after-care or GP referrals, could result in an increase in the overall cost of providing a service.

Conclusions

There is insufficient evidence for recommendations to be made relating to any general policy of expansion or contraction of community-based hearing aid services. However, it is suggested that existing community service providers consider:

- maintaining standards of audiometric testing at community sites
- maintaining standards of patient safety
- providing information for patients
- establishing remote links to centralised records
- reducing costs at community sites
- maximising the patient base for community clinics and reducing inequity
- ensuring that an accessible after-care service is provided for patients fitted with hearing aids in the community.

Recommendations for research

Many of the conclusions are based principally on evidence from studies of clinics in the medical and surgical specialities. Primary research specific to hearing aid services in needed in all areas. However, the immediate need is for research into the effect of community provision on outcomes for hearing aid patients and levels of service use. Specifically, a controlled trial is recommended to address:

(i) the impact of community provision on outcomes for hearing aid patients, particularly relating to aid use and satisfaction, the amount of benefit obtained and the management of ear pathology
(ii) the impact of community provision on GP referral rates, the volume of use of after-care services and the associated costs.

High-quality information on both these issues is needed to inform the debate on the cost-effectiveness of community services.

Chapter 1

Introduction

This research was commissioned under the NHS Research and Development Health Technology Assessment Programme and was carried out by a joint team from the Hester Adrian Research Centre and the Centre for Human Communication and Deafness, at the University of Manchester.

The research, a systematic review of literature supplemented by a survey of current practice and a cost exercise, addresses the question of how NHS hearing aid services can best be organised with respect to the locations at which services are provided. This question has many facets. First, there are a variety of components to the service, the main distinction being between those relating to prescribing and fitting hearing aids to new patients, and those relating to providing lifelong after-care to users of hearing aids: the best locations for the former may not necessarily be those for the latter. Second, the alternatives in terms of location are usually characterised as being between 'base' (centralised) provision and 'community' (decentralised) sites but many different types of community location exist, ranging from various sizes of hospital to health centres and general practitioner (GP) practices to village halls and community centres, each with its own particular pattern of advantages and disadvantages. Third, there is the issue of 'best' for whom? Best for patients may not be the same as best for service providers or even purchasers, and vice versa. Furthermore, the type of location that is good in some respects may be poor in others.

The variety of issues tackled in this review is therefore very broad, including, for example, service quality, patient preferences, GP referral rates, service equity, the primary–secondary care interface, case-mix issues, and service costs. Wherever appropriate, the evidence on any one of these issues is examined in relation to the different components of hearing aid services and the different kinds of locations at which services are provided.

At the inception of the project it was anticipated that the number of existent empirical studies of community provision that specifically addressed audiology/hearing aid services was likely to be quite small. Thus we planned to supplement these with relevant evidence drawn from research into the community provision of services in the medical and surgical specialities, most notably in Ear, Nose and Throat (ENT) but also in psychiatry, rheumatology, paediatrics, dermatology and so on. In the event, the number of audiology-specific studies identified was even smaller than expected; despite a world-wide search for both published and unpublished literature just three studies were found, none of which were of a particularly high standard: two were MSc theses and the third was a small-scale published study with some fundamental flaws.

In consequence, much of the evidence in this report comes from research into clinics in the non-audiological medical and surgical specialities. The justifications for generalising from this evidence to audiology are given in a later chapter and, wherever possible, supporting evidence, albeit only at the level of professional opinion, is provided from the surveys of audiology professionals conducted under this project. This lack of direct evidence clearly weakens the conclusions drawn in the last chapter of the report and points to the need for confirmation from future primary research studies in audiology.

Although primarily concerned with hearing aid services, the inclusion of studies in the medical and surgical specialities means that this report has systematically reviewed all of the UK evidence pertaining to community-based specialist services. Furthermore, most of the issues considered are just as relevant to the provision of specialist services as they are to audiology. Consequently, the summaries of evidence and the findings may be of value across the health services, and not just in the context of audiology.

Chapter 2
Background

Within the NHS, there has been a long-running debate about the organisation of outpatient services: whether it is better to have these centralised at main hospital departments or decentralised with hospital staff travelling out to provide clinics at various locations within the community. A centralised service has often been characterised as providing the best quality of service, in terms of facilities and equipment, and also as being more cost-effective and efficient from a service delivery point of view. Decentralised outpatient services, on the other hand, are frequently viewed as providing better and more convenient access for patients, and having the potential to break down barriers between primary and secondary care sectors.

Centralisation of hospital services was part of official Department of Health policy for England and Wales in 1962, the intention being to abolish most cottage and GP hospitals in favour of large District General Hospitals.[1] However, this plan ran into considerable opposition, which slowed and largely halted the process of closure; but at the end of the 1960s it was still official policy that it was uneconomic to have specialist staff travel out to conduct inpatient and outpatient work at peripheral sites.[2] The situation in Scotland over this period is in sharp contrast. There a policy of building a network of large health centres to serve the scattered rural population was pursued vigorously from the mid-1960s onwards, with the intention that 80% of the Scottish population should be served by one of these centres by the mid-1980s. Specialist sessions at these sites were seen as an important part of this overall plan.[3] By 1976 there were 85 such health centres in Scotland, with outpatient clinics in operation at half of them.[4]

Official attitudes with respect to England and Wales began to soften in the early 1970s and policy was changed in 1974, recognising the need for small hospitals which could provide services, such as outpatients, for patients who did not require the full facilities of a District General Hospital.[5] A survey of a random sample of GP hospitals in England and Wales showed that, in 1976, some 22% of all consultants regularly provided services and that 4.5% of all outpatient appointments took place at them.[6] A later survey in 1988 found that 98% of small hospitals in England had outpatient departments, with almost half having more that ten consultants visiting per week.[7]

The next major development in community provision came with the introduction of the GP fundholding scheme in 1991. This provided GP practices with the means to employ hospital trusts and individual specialists to provide outpatient clinics at their practices. As fundholding expanded, increasing numbers took up this option and, by 1996, some 60% of fundholding practices held at least one specialist clinic on their premises.[8] It was not only clinics staffed by specialists that moved into primary care at this time but also health-related services operated by non-specialist staff, including physiotherapy, clinical psychology and audiology.

Much of the impetus behind this development was undoubtedly financial, both from the point of view of GPs, for whom this often constituted a cheaper form of service, and for hospital trusts, who now had to compete in the NHS 'marketplace' for GP business.[9] The expansion was also highly contentious in many areas, with claims that some practices were using pressure tactics to force trusts to provide in-house clinics; for example, by threatening to switch their referrals to another trust; and that some providers were setting up clinics outside of their normal areas in order to gain business at the expense of other providers.[10,11] Concern was also expressed in many quarters that the fundholding system was resulting in a 'two-tier' health service, in which patients of fundholders received preferential treatment.[8,12]

Although the fundholding scheme has now been halted and is in the process of being replaced by a system of 'Primary Care Groups' who will commission services on a locality basis,[13] the NHS Executive still has, as one of its goals, greater integration of the primary and secondary care sectors, in the cause of achieving 'seamless patient care'. The provision of outpatient clinics in primary care locations is seen as one means of achieving greater integration.

Research related to the community provision of outpatient services has largely come in two main waves. There was an initial flurry of publications during the 1970s and early 1980s. In England and Wales, much of this related to the provision of outpatient services in small hospital settings (e.g. cottage and GP hospitals), mirroring the ongoing development of this form of provision. Only in psychiatry was there also an expansion, at least to any significant degree, into primary care at that time and, in fact, the earliest published report of a specialist clinic in primary care known to this project was in psychiatry.[14] The picture was rather different in Scotland, however, where studies in this area were largely centred on the new and expanding network of health centres.

Unfortunately, many of the publications from the 1970s and early 1980s, from both north and south of the border, have not made it into the collection of papers reviewed here because they were either purely verbal descriptions of clinic set-ups or did not address relevant issues.[4,15–22]

The second, and still current, wave of research activity in this area started in the mid-1990s, stimulated by the introduction of GP fundholding and the development of specialist 'outreach' clinics in these settings. This research focused almost entirely on these types of clinic and gave very little consideration to outpatient provision at peripheral hospitals – the focus in the 1970s – even though the research issues surrounding these have been far from satisfactorily resolved. However, many issues are common to both types of setting, most notably patient satisfaction, clinical efficiency and effectiveness, and service costs, and the literature of the 1990s parallels that of the 1970s in many respects. This is true not only of the questions that have been researched but also of the general conclusions that have been reached.

With specific reference to audiology, particularly to hearing aid services, interest in community-based provision relates principally to the potential for improving patient access. Improvement of access to hearing services became a central issue in the mid-1980s, as the result of a convergence of a number of factors. A large-scale epidemiological survey conducted by the MRC Hearing Research Institute between 1980 and 1985 demonstrated a high degree of unmet need for hearing rehabilitation in the population. The survey found that 10% of the population had a hearing loss which could be helped by the fitting of a hearing aid but that only about one-third of these possessed one.[23] This problem of unmet need was compounded by long delays between individuals becoming aware of hearing difficulties and actually seeking help, with the typical delay being between 10 and 20 years.[24–26] At the same time as these research findings became known, concern was growing over long waiting times for the provision of NHS hearing aids in many parts of the country. The principal cause was the delay in obtaining an ENT appointment subsequent to GP referral, which was as long as 2 years in some areas.[27]

A number of suggestions were made for reforming the system. The most widely debated were the proposals put forward by the Royal National Institute for the Deaf (RNID) in their document *Hearing aids – the case for change*.[28] The central aspect of these proposals was the creation of a new professional grouping, 'community dispensers'. These professionals, who would receive less training than audiology technicians, would be based in primary care settings where they would fit hearing aids to patients considered by GPs to need them, thus eliminating the need for an ENT appointment. This suggestion was strongly criticised by the ENT and audiology communities, on the grounds of professional issues and patient safety rather than because of the primary care context (see, for example, Stephens, 1989[29]).

Besides a reduction of waiting times, the major argument put forward by the RNID for primary care based services was that they would be far more convenient for patients. A more convenient service may certainly be a more accessible one. Many patients find it easier to get to a local clinic than to their nearest main hospital department and this alone may encourage attendance and a willingness to seek help. Furthermore, the great majority of new hearing aid fittings are to people of retirement age or over; this patient group is more dependent upon public transport than most and the costs and effort of travelling may be more of a burden. The inconvenience of having to travel to a central site can also be far worse in rural areas, where the distance involved may be considerable with public transport minimal or non-existent. These arguments in favour of community provision can be applied not only to primary care locations but equally to local hospitals and many other types of setting, including village and church halls, schools, day centres and specially furbished mobile units. All of these can and, in fact, have been used as a means of providing a more convenient audiology service.

Another way in which community services might improve access relates to the willingness of GPs to

make referrals. In order to obtain rehabilitative help, patients normally have to first be referred by their GP. However, studies have indicated that GPs themselves can act as a significant barrier to hearing services, failing to refer on perhaps half of all patients who come to them for help with a hearing impairment.[30–33] The problem here seems to be partly caused by poor perception among GPs of what hearing aids can do and partly the result of a general lack of GP undergraduate or vocational training in otology or audiology.[30,33–37]

ENT and audiology clinics based in health centres and GP practices may help to influence GP attitudes and behaviour. In this way it is hoped that GPs will be encouraged to refer a higher proportion of the patients who come to them for help and also learn more about hearing rehabilitation through interacting with hospital staff on clinic days. The potential for this represents a major difference between clinics based in primary care and those located in other kinds of community settings. However, only GP practices that are larger than a certain minimum size have sufficient throughput of cases to make such clinics viable; furthermore, despite the stimulation of this form of provision that resulted from the introduction of GP fundholding in 1991, such clinics currently account for less than 10% of all hearing aid related work in the UK (see main report).

Partway through the present project the Government halted the GP fundholding scheme, along with the NHS internal market, and is currently in the process of replacing it with a new system of locality-based Primary Care Groups. The full implications of this new system are as yet unclear. There is little doubt that an important factor in encouraging expansion of clinics in primary care under the fundholding system was the financial incentives resulting from individual GP practices holding their own budgets. It is possible that the new financial structures associated with locality commissioning will ultimately result in a contraction in the numbers of these clinics.

The extent to which community clinics might improve access, in terms of patient convenience and numbers of referrals, is only one issue in this area. Along with this there are a number of other important considerations, such as patient and staff satisfaction, service quality, patient outcomes, the effect on hospital work and the costs of providing the service. It may also be the case that some, or possibly all, of these factors differ from one type of community setting to another, most notably between GP practices and peripheral hospitals. They may also differ depending upon the kinds of audiology services being provided – whether these are related to initial hearing testing and the fitting of aids, or to hearing aid repairs and after-care. The aim of this study is to collate and review all the available research evidence relating to these various factors, supplementing this with additional information collected under the project itself. The overall objective is to make as full an evaluation of the arguments for and against community-based audiology services for adults as is possible given current knowledge, and to identify where further research may be required.

Chapter 3
Methods

There were three principal strands to the project:

(i) national surveys of audiology departments/ hearing aid centres in the UK
(ii) a systematic review of relevant literature
(iii) a costing exercise carried out at a small number of centres.

The costing exercise is best dealt with as a self-enclosed study in its own right and, hence, the method used is described later, in chapter 13, rather than here.

In addition to the principal data collection objectives of the project, three focus group meetings were held at an early stage. The main aim of these was to assist the researchers in identifying issues of importance to various stakeholder groups in relation to community-based hearing aid services, and so help to focus the direction of the project.

Focus group meetings

Three focus group meetings were convened, with groups comprised as follows:

(i) hearing aid users
(ii) managers of audiology services
(iii) a mixture of professionals from audiology, ENT, hearing therapy, and general practice.

All the groups were small, with nine participants in each of the first two groups and six in the last. They were composed of convenience samples, although selected to ensure that individuals from all adult age-groups and relevant professional groups were involved. The user group contained a substantially higher proportion of working-age adults than is present in the general population of hearing aid users but it was still the case that about half the group were of retirement age.

Each meeting addressed a set of pre-determined key questions, relevant to the concerns and professional responsibilities of the particular stakeholder groups involved. Time was also allowed for participants to raise issues not covered by the key questions. The meetings proved to be very valuable in identifying issues of concern and the points that emerged from them helped inform the schemas that were used to extract data from the literature, plus the design of the survey questionnaires and cost exercise.

The findings from the focus groups are not reported on separately in the main body of this report. Instead, summaries of the points from each meeting are given in appendix 1 and occasional reference is made to these in the main text when it is felt that they contribute something additional to the findings from the wider review of evidence.

National surveys

Two postal surveys were conducted under the project.

The first, the 'Provider Survey', was aimed at heads of audiology services and encompassed all NHS audiology departments/hearing aid centres in the UK. This survey was concerned with the collection of basic information regarding the pattern and extent of community provision, and with the opinions of service heads on various issues related to this (appendix 2).

The second, the 'Community Clinic Survey', covered a random sample of 25% of all centres. The purpose was to collect detail about each individual community site visited by the centres in the sample. A separate questionnaire was completed for each site by an audiology technician involved in clinics at that site. The questionnaire requested details of the site and the sessions undertaken there, and also the technician's opinions on various aspects of the service (appendix 2). Audiology technicians were used as the respondents because it was considered that they would have the most intimate knowledge of the sites and the clinics they conducted. In addition, their views could be compared with those of the heads of services (from the Provider Survey) for consistency.

For those centres which responded to the Community Clinic Survey, some additional

detail about the sites used was subsequently collected in a special exercise. For hospital sites, the size of each site (in terms of bed numbers) was obtained from the *Directory of hospitals and NHS trusts*,[38] and for all other sites a short telephone interview with the relevant head of audiology services was used to categorise each site according to type (GP fundholder owned/managed; GP non-fundholder owned/managed; community health centre (trust or health authority owned/managed) with GPs attached; community health centre without GPs; other (e.g. village hall, community centre, mobile unit)).

Response to the surveys

The Provider Survey took place between July and September 1997. A total of 249 questionnaires were sent out, addressed to heads of audiology services, based on the list of centres in the UK supplied with hearing aids by Mersey Health Authority (the national supplier of NHS hearing aids). A few centres which catered exclusively for children, servicemen or people with learning disability were excluded. After two mail-shots, questionnaires had been returned by 208 centres, a response rate of 84%. The response varied between the constituent countries of the UK: England, 87%; Scotland, 77%; Wales, 69%; Northern Ireland, 68%. The returns from 16 centres had to be excluded for various reasons: 13 were found to be satellites of other centres; two said the survey did not apply to them; one had closed down. This left a total of 192 admissible returns, of which 158 were from centres in England, 15 from Scotland, 11 from Wales and eight from Northern Ireland. Because of the relatively small numbers from countries other than England, all the analyses in this report are based on the full sample.

For the Community Clinic Survey, a random sample of 63 centres (25% of the total) was taken from the full list. Returns were received from 50 of these (79% response rate). All were admissible but eight reported that they operated no community clinics. Between them, the remaining 42 centres held clinics at a total of 219 different sites and audiology technicians returned questionnaires relating to 208 of these (95% response). Additional details of the size and type of site were obtained for all these 208 sites.

Systematic review of literature

Although the theme of the research project was community-based adult hearing aid services, it was recognised from the start that the number of studies specific to this topic was likely to be very small. Therefore the review of literature also encompassed studies of community-based outpatient services across the medical (including surgical) specialities. This raises the question of whether it is appropriate to generalise from specialist clinics to those conducted by audiologists. This issue, which is discussed later, led to a decision being taken early in the project to include only studies of medical specialities that were UK-based, on the grounds that generalisation might be even more problematic in relation to studies conducted outside the context of the NHS system. With respect to community-based hearing services themselves, however, studies would be included irrespective of country, provided that they met all the other inclusion criteria (see below).

Search strategy

A combination of methods was used to ensure that the maximum amount of relevant research, both published and unpublished, was identified: searches of electronic databases; communication with researchers and practitioners; handsearching of journals; and snowballing (the identification of material from references made in other papers).

Searches of electronic databases

Searches of the following databases were made, going as far back as the early 1970s where possible.

- MEDLINE
- EMBASE
- PsycLIT
- BIDS
- Index to Theses
- Database of Abstracts of Reviews of Effectiveness (DARE – at the NHS Centre for Reviews and Dissemination, York)
- NHS Economic Evaluation Database (also at York)

The project did not start from a position of perfect knowledge about the terms on which to search. A recursive process was therefore adopted, by which the results of each search were used to identify new terms for use in further searches. This process was conducted mainly using the MEDLINE database, after which, once the researchers were satisfied that the list of terms was sufficiently complete, they were used for searching the other databases. Any new terms emerging from these searches were then applied to MEDLINE, and so on, such that ultimately all databases had been searched using the same complete set of terms (appendix 3).

The search terms were mostly quite simple (e.g. outreach, hearing aid*, outpatient clinic*), resulting in broad-level searches which threw up very large numbers of titles. This approach was time-consuming but meant that very little material of relevance was likely to be missed.

One member of the project team went through the titles resulting from each search and excluded all those that were obviously inappropriate. The reduced lists, together with abstracts where available, were then examined by each of the four team members independently, who classified each title as being either: not relevant; possibly relevant; probably relevant – obtain paper.

The criteria for relevance differed between the medical and audiological material. With respect to the former, relevant papers were those pertaining (or possibly pertaining, on the basis of the title and/or abstract) to the provision of outpatient services at community locations, excluding non-UK studies. In the case of audiology, broader criteria were adopted to also include papers concerned with hearing aid use and after-care, screening for hearing loss, counselling and GP views. The reason for widening the search was to ensure that nothing of relevance to community-based audiology (which might not be apparent from titles and abstracts alone) would be overlooked. A number of additional papers were also collected which did not match the criteria but which it was considered might provide useful background information (for example, about GP fundholding).

Those instances when the team members disagreed in their classifications were discussed by two of the team and a final classification assigned, although any paper rated as relevant by three or more members was automatically obtained. Titles in the 'possibly relevant' category were kept in the reference database and reviewed again at a later date. In the latter stages of the search phase, as time became short, the above procedure was abandoned and one team member went through the title lists and decided on relevance. Since by this stage it had become quite clear what constituted relevant material, it is unlikely that this change had any detrimental effect.

In addition to searching on key-words, searches were made on the names of all authors (main and secondary) for each reference classified as relevant. Identified titles were then subjected to the same process as before.

Communication with researchers and practitioners

Requests for personal bibliographies and for information about ongoing or unpublished studies were sent to leading researchers. For audiology this exercise was performed on a worldwide basis; for the medical specialities, it was restricted to the UK. A total of 25 requests went out, mainly to people who had published appropriate material within the last 6 years. In addition, a request for unpublished studies was sent to all heads of audiology services, along with the Provider Survey questionnaire.

The requests uncovered a small amount of new and relevant material, and also provided a few pointers to other potential sources.

Handsearching of journals

Handsearching of journals is very time-consuming and only a limited amount was undertaken in this project. This was concentrated on particularly relevant professional (i.e. not academic) journals not covered by any of the electronic databases: the *British Society for Audiology Newsletter/News* was handsearched for the years 1980–97; *ENT News* was searched for 1994–97; and *Health Service Journal* for 1991–92. As almost nothing of relevance emerged from these searches which had not already been identified by other means (e.g. snowballing), they were abandoned on the grounds that the time could be used more productively elsewhere.

Snowballing

Snowballing (the identification of material from references made in other papers) proved to be a major source of material. This strategy was invaluable for identifying studies in journals or years not covered by the electronic databases, or where the title gave little clue to the content, and also for material in books, research reports and conference proceedings. Approximately half of all relevant material was identified via snowballing.

Criteria for including and excluding studies from the evaluative phase of the review

All papers rated as relevant and obtained in full were read and assessed to determine whether they contained original empirical evidence related to issues of concern to the project and should therefore be retained for inclusion in the evaluative stage of the review. A decision was taken on the basis of the following inclusion and exclusion criteria.

Relevance

Studies were included:

(a) when a form of outpatient clinic or session was being provided by hospital staff (or equivalent) in a setting away from the main hospital base, other than in patients' own homes
(b) when patient or professional opinion was being canvassed in relation to such services (real or hypothetical).

It was not necessary for the study to include comparative results for the main hospital base.

Design

Owing to a paucity of evidence in many areas, all forms of study design were considered eligible for inclusion. Types of design could range from surveys of professional opinion up to randomised controlled trials (RCTs).

Outcomes

The outcomes of interest included: the extent and nature of community provision; patient access and satisfaction; professional opinion; clinical effectiveness and efficiency; impact on referrals and hospital work; costs; the primary–secondary care interface; and equity issues. The specific issues which have been addressed within each of these broad areas were refined as the researchers' understanding of the issues and knowledge of the literature increased. For a number of clearly important issues, no relevant evidence at all was found in the research literature. These issues are highlighted in the main body of the report in the appropriate places.

Reasons for exclusion

The criteria for excluding studies necessarily differed between the component of the review concerned with subjective professional opinion and the remaining components in which objective measurement of outcomes was possible. With regard to the latter, studies were excluded if no relevant objective evidence was presented. A small number of studies of community-based antenatal clinics were also excluded because of the very specific nature of this patient group and the variety of forms that the clinics took. However, studies in paediatrics were included on the grounds that the clinics were attended by adults along with the children and were of the same form as outpatient clinics in other specialities.

In the case of professional opinion, the available studies fell into two groups: those in which the opinions of a number of professionals, working at different community sites, were surveyed; and those in which a single individual (usually a medical specialist) expressed their opinions concerning a particular clinic, or set of clinics, in which they were personally involved.

There was concern that in this latter group a strong bias might be operating, with schemes that did not show any significant benefits being less likely to be reported. Such a bias was unlikely to be adequately corrected for by a search for unpublished studies, since most studies of this type are not based on formal research funded by an external body. In addition to the potential for bias, these studies also demonstrated a lack of any systematic approach to the reporting of perceived benefits and disadvantages.

This latter factor was also a problem when a study had surveyed opinion from more than one but no more than a few professionals. In view of these concerns, a pragmatic criteria was adopted by which studies of opinion were included only if they were based on professionals drawn from eight or more different purchasing or providing bodies.

Quality assessment

Each study that satisfied the above criteria and made it through to the evaluative stage of the review was assessed for quality. A four-category 'quality rating' scale was used.

When rating quality, control (or lack of it) for potentially confounding factors is an important consideration. The wide variety of issues and research designs encompassed by the review meant that the potential confounders differed considerably from one study to another, making it impractical to adopt a single list for the purpose of evaluating studies in this regard. Instead, each study was first assessed against a small number of 'core' factors relevant to most studies and consideration was then given to potential confounders specific to the study itself. The set of core factors related to the presence of any difference between community and base settings with respect to:

(i) staff mix
(ii) patient case-mix
(iii) patient or area demographics
(iv) treatment regimes
(v) data sources and research instruments (including inherent bias)
(vi) data collection time-lines.

In assessing the studies with respect to the likelihood that confounding factors could offer an alternative explanation for the results, evidence of control in the study design was first looked for and, failing that, evidence that such factors had been empirically measured and shown not to differ between settings.

The four quality categories were defined as follows.

I. Main confounding factors were fully or partially controlled for, or empirically shown to be at a low level; multiple providers and/or community sites were involved; samples were mainly large; the main data was collected prospectively; concurrent controls were used.
II. Main confounders were partially controlled for or shown empirically to be at a low level; multiple providers and/or community sites were involved.
III. Main confounders were neither controlled nor measured or were measured and found to be at a moderate level; or the study involved only a single community site; or the study was a survey of professional opinion only.
IV. Main confounding factors were known to be operating or quite likely to be; or the study involved a single community site and a very small sample.

Each study was assigned an 'overall' quality rating on the above basis. These are given in appendix 4 along with the study details. Because the number of studies which made it through to the evaluation stage was quite restricted (see below), a decision was taken to not exclude any on the basis of quality. Rather, the weakest studies were all assigned to the lowest quality category (category IV).

Many studies reported on a wide variety of relevant issues, utilising data collected from different sources using different methods; consequently, quality could vary from one research issue to another, even within the same study. Furthermore, a factor which might be a potential confounder in the context of one issue might constitute the actual outcome of interest in another, patient demographics being a case in point. For these reasons, separate quality ratings were made for each different issue and appear in each relevant table of results.

Data extraction

For each relevant study, data were extracted in a systematic fashion with regard to the design and methods used, the data collected and the evidence presented in relation to each issue of concern. All studies were gone through at least twice by the same person, with an intervening period of 2 months or more, to ensure than nothing of importance had been missed or incorrectly transcribed.

Summary of the results of the literature search

As a result of the wide search strategy, well over 20,000 individual titles were previewed. A total of 475 full papers were obtained and read: 246 related to the medical specialities and the remaining 229 were specific to audiology. Another 40 or so papers were collected for the purposes of background information.

The great majority of papers failed to pass the inclusion and exclusion criteria for acceptance into the evaluative review. In all, a total of 44 separate studies were identified which provided empirical evidence related to the provision of outpatient services at community locations. Details of all these studies are given in appendix 4. Only three studies were specifically concerned with community hearing aid clinics and, furthermore, none of these were particularly good studies. All three were UK-based studies: two were theses conducted in connection with MSc degrees and the third was very small and had some major drawbacks.

Date of publication

The data are summarised in *Table 1*. The oldest study in the review was published in 1970 but the great majority appeared in print from 1990 onwards.

TABLE 1 *Year of publication of studies in the review*

Year	Number
1970–79	8
1980–89	9
1990–97	27
Total	**44**

Experimental designs

A few studies incorporated more than one design methodology. The most common form was for a comparative evaluation of community and main hospital clinics, based on patient data, to be accompanied by surveys of professional opinion. Any study involving more than one substantive design has been tabulated separately, yielding a total of 52 designs in all (see *Table 2*).

There was only one RCT. This randomised patients between community and base clinics. None of the studies attempted to randomise at the level of provider or community sites.

A total of 14 designs were cohort studies using prospective data and concurrent controls, while another 14 designs were the same but based on retrospective data or on a combination of retrospective and prospective. Other than randomised trials, these represent the best forms of design with regard to many issues of concern in the present context. However, many of these studies were let down by a lack of control over confounding factors.

Apart from the above, the most common forms of design were surveys of professional opinion (ten studies) and cross-sectional studies (nine studies). All but one of the latter consisted of evaluations of samples of patients seen at community clinics, without any base sample for comparison.

Quality ratings

Only four studies were given an overall quality rating of I, with the most common rating being III (21 studies). Nine studies fell into the lowest class, IV: these were particularly subject to confounding (either known to be, or potentially), or were very small scale (see *Table 3*).

TABLE 2 *Experimental designs used in the studies*

Design of study	Number
RCT	1
Cohort – prospective data and concurrent controls	14
Cohort – retrospective data and concurrent controls	9
Cohort – mix of prospective and retrospective with concurrent controls	5
Cohort – retrospective data and historical controls	1
Cross-sectional – prospective data	7
Cross-sectional – retrospective data	3
Before and after – retrospective data	2
Survey of professional opinion	10
Total	**52**

TABLE 3 *Quality ratings of the studies*

Quality rating	Number
I	4
II	10
III	21
IV	9
Total	**44**

Chapter 4

Preliminaries to the main report

Layout

The evidence presented in this report comes from two sources:

(i) evidence from the review of published and unpublished literature
(ii) evidence from the primary research (the surveys and cost exercise) carried out as part of the project itself.

The report has been laid out such that each research issue is addressed, in turn, with reference to evidence from both sources. Thus, for example, the issue of patient waiting times is tackled first by a review of all available evidence from the literature, followed immediately by presentation of related evidence from the project surveys. In many instances, the evidence from the literature is solely concerned with clinics related to the medical and surgical specialities (e.g. ENT, dermatology, paediatrics, rheumatology, psychiatry), and results from the project surveys are used to provide corroboration of the findings from these for the case of hearing aid services. This form of lay-out has been adopted (in preference to independent sections for the review of literature and the surveys) in order to reduce the amount of cross-referencing required (both in the text and by the reader) and thus maximise the readability of the report.

Generalisability of the findings from specialist clinics

Of the 44 studies in the evaluative review, 41 were conducted in the context of specialist outpatient clinics – clinics concerned with the examination and management of patients with medical conditions. The question arises as to how appropriate it is to generalise from these to hearing aid clinics, hosted by audiological technicians for the purposes of hearing testing, hearing aid fitting, and related after-care.

In this context it is important to note that hearing aid services differ from specialist services in a number of important ways. Patients who are fitted with a hearing aid have a life-long dependence upon audiology services for aid repairs, new ear-moulds and aids, reassessment of hearing as it continues to deteriorate and other aftercare services. This puts a disproportionate demand on aftercare services, with something like two-thirds of the national hearing aid services budget being spent on this component.[39] This is quite different from the situation in most medical specialities, where patients are normally fully discharged after satisfactory recovery. Not only is aftercare the major component of hearing aid services, it also tends to be an open-access, rather than appointment-based, form of service, which is again quite different from the usual nature of specialist clinics.

A further important difference is that certain aspects of specialist clinics, most notably staff mix, staff grades and follow-up rates, often differ systematically between base and community clinics (this is discussed in more detail later), with implications for any comparison between the two, in a way which does not apply to hearing aid clinics.

Having carefully considered the question of generalisability, taking account of such factors and the evidence available, it seems clear that the extent to which one can generalise from specialist clinics to those concerned with hearing aid provision varies depending upon the research question under consideration. For example, findings concerned with the distances that patients travel or patient preferences for clinic locations can be generalised without much difficulty; however, when it comes to issues related to clinical case-mix, patient management or service costs, then generalisation is much more problematic. Accordingly, the question of generalisability is tackled in this report separately for each specific research issue.

As well as rational arguments for or against generalisation, a factor which provides a useful guide in each particular case is consistency of results across different medical specialities. For instance, it could be argued that there are almost as many differences between specialities such as rheumatology, paediatrics, and psychiatry, as

there are between any of these and audiology; therefore good consistency of results across specialities provides additional weight to any argument for generalising a specific finding to audiology.

Statistical treatment of the findings

Treatment of evidence from the review of literature

No attempts have been made in this report to statistically combine results across studies using meta-analysis procedures. Such methods were considered to be inappropriate in the present situation for several reasons:

(i) a lack of RCTs
(ii) considerable dissimilarity between studies with respect to design, forms of data, and treatment of outcome measures
(iii) for most issues, it is highly unlikely that the studies can be expected to be homogeneous in terms of true effect size
(iv) most studies provide insufficient information to allow the calculation of effect sizes, for anything other than binary variables (e.g. standard deviations are rarely reported).

In consequence, all the evidence from the studies is reviewed in a purely descriptive fashion, with issues such as sample size, study quality, and consistency of results being addressed in the discussion.

Treatment of evidence from the project surveys

The Provider Survey included the whole population of heads of audiology services (bar non-responders and at one point in time); thus, statistical significance testing is not relevant in connection with the data from this survey.

The Community Clinic Survey included a 25% random sample of all centres and statistical testing is appropriate here for the purpose of generalising beyond the sample. However, there are two complications:

- the population size is quite limited
- many centres returned questionnaires for a number of sites, some completed by the same technician, and these cannot be regarded as independent of one another.

These factors make both standard parametric and non-parametric tests inappropriate in a strict sense. However, some statistical testing has been applied, in instances in which it was considered that they contributed substantively. Non-parametric methods have been applied wherever possible, since these are generally more robust, but the resulting levels of statistical significance must be treated as quite approximate.

Chapter 5

The distribution and extent of community audiology

Locations of departmental bases

Of 192 audiology departments/hearing aid centres that provided admissible responses to the Provider Survey, 182 (95%) were based in hospitals, six (3%) were based in health authority or trust health centres or units, two were in GP-owned premises, and one indicated that their base was split between a hospital and a community health centre. In 81%, the site was also the main base for an ENT department. These results show that the service is dominated by departments housed in main hospitals.

The settings in which community clinics take place

Two centres failed to provide any information regarding their community settings. Of the 190 that did, 154 (81%) undertook regular sessions in at least one community-based site. The remaining 36 (19%) were fully centralised in this respect (although they may have conducted some domiciliary visits and occasional work elsewhere). A total of 759 different community sites were covered by the centres that provided outreach clinics, an average of nearly five sites per centre. The largest number of sites visited by any one centre was 20.

A breakdown by type of setting is presented in *Table 4*. Some 71% of centres held clinics in at least one peripheral hospital; 35% made use of GP practices (premises owned/managed by GPs); and 35% used community health centres (owned by trusts or health authorities) and/or various other types of community location. Of all the individual community sites, nearly half (47%) were peripheral hospitals, while one-quarter (24%) were GP practices, and 28% were community health centres or other kinds of site.

A finer level of detail on the types of settings being used was available for the subset of 208 sites for which information was available from the Community Site Survey. These results are presented in *Table 5*.

TABLE 4 *Distribution of community audiology clinics by type of setting (Provider Survey)*

Type of setting	Number of centres providing clinics in each setting type	Number of community sites of each setting type
Peripheral hospitals	134 (71%)	355 (47%)
GP practices	66 (35%)	180 (24%)
Community health centres and other	67 (35%)	214 (28%)
Unspecified but not hospitals	4 (2%)	10 (1%)
Total	(190 centres)	759 (100%)

TABLE 5 *Distribution of community services by type of setting (Community Clinic Survey)*

Type of setting	Number of community sites for each setting type
Small/medium peripheral hospitals (≤ 100 beds)	62 (30%)
Large peripheral hospitals (> 100 beds)	30 (14%)
GP fundholding practices	37 (18%)
Non-fundholding GP practices	8 (4%)
Community health centres with GPs attached	40 (19%)
Other community sites, without GPs	31 (15%)
Total	208 (100%)

The sites were found to include all sizes of peripheral hospital, from the very small (12 beds) to the very large (776 beds). For convenience of analysis, these have been categorised into two groups: small to medium hospitals (0–100 beds) and large hospitals (more than 100 beds). The former make up 30% of all outreach sites and the latter 14%.

The great majority of GP practices (37 out of 45 sites (82%)) were found to be fundholding, with only eight being non-fundholders. Owing to the smallness of this latter group, in most future analyses results for both types of GP practice have been combined.

Community health centres with GPs attached made up 19% of all outreach sites. The important distinction between these and GP practices is that the building is under the control of a trust/health authority and not the GPs who made use of it.

The final class of setting covers all sites (bar peripheral hospitals) that had no GP presence. It includes community health centres without GPs on site, village and church halls, deaf clubs, and even a mobile unit in a supermarket carpark. This group was surprisingly large, accounting for some 15% of all community sites.

Distances of community sites from main departmental bases

The Provider Survey collected information about the distance between each community site and the departmental base. The results are summarised in *Table 6*. The sites furthest from the departmental base were mainly peripheral hospitals and some providers, such as in Scotland, even took flights out to hospitals on remote islands. As a group, peripheral hospitals were at a median distance of 16 miles from departmental bases. Excluding flights, the furthest that staff from any centre travelled to a peripheral hospital was more than 90 miles.

The sites closest to main departmental bases tended to be community health centres and premises without GPs. These were at a median distance of 6 miles from the centre, with the furthest being 60 miles away. GP practices fell between these other types of settings, having a median distance of 10 miles. No GP practice was more than 38 miles from base.

There is an issue as to whether some community sites are unnecessarily close to departmental bases, particularly some of those situated in GP fundholder practices. The results show that 11% of GP practice sites were within 2 miles of the centre but so were 10% of community health centres/other sites.

A difference does show, however, in terms of density of sites. For both peripheral hospitals and community health centres/others, the average area served by each clinic site does not differ greatly between the 0–2 and 3–5 miles bands; however, this is not so for GP practices:

- peripheral hospitals: 2.0 square miles and 2.1 square miles (per community clinic), respectively
- community hospitals/others: 1.0 square miles and 1.3 square miles, respectively
- GP practices: 1.1 square miles and 2.7 square miles, respectively.

In other words, the density of clinics in GP practices is about 2.5 times greater within 2 miles of base than it is 3–5 miles away, a much more unbalanced distribution compared with other types of community setting.

TABLE 6 *Distances of community clinic sites from the main departmental base (Provider Survey)*

Distance	Peripheral hospitals (*n* = 329)	GP practices (*n* = 164)	Community health centres and others (*n* = 201)	All types (*n* = 694)
0–2 miles	3%	11%	10%	7%
3–5 miles	11%	17%	30%	18%
6–10 miles	17%	24%	31%	23%
11–30 miles	60%	46%	24%	45%
More than 30 miles	10%	2%	4%	7%
Other parameters				
Median	16 miles	10 miles	6 miles	11 miles
Involves a flight	1%	0%	0%	< 1%
Furthest (excluding flights)	> 90 miles	38 miles	60 miles	> 90 miles

The length of time that community clinics have been in existence

A survey of specialist outreach clinics by Bailey and colleagues[10] in 1994 indicated that, with the exception of psychiatry, the large majority (73%) of primary care outreach clinics in medical and surgical specialities had been set up since the introduction of GP fundholding and nearly all of these were based in fundholding practices. To investigate the position in respect to audiology, the Provider Survey collected information on this issue.

Evidence from the Provider Survey

In total, about half (48%) of all community-based hearing aid clinics had been set up since the introduction of fundholding in 1991. However, there were marked differences between setting types, with 65% of peripheral hospital clinics already in existence prior to 1991 compared with just 24% of those in GP practices. This latter figure agrees very well with Bailey and colleagues' finding[10] for medical/surgical specialities (see above). Peripheral hospital clinics had been in existence for a median time of 10 years, with the longest recorded being 49 years. In contrast, the median time for GP practices was just 4 years. However, even in this group, 16% of sites had been used for over 10 years. These results are presented in *Table 7*.

The volume of work undertaken in the community

Evidence from the literature review

Nine studies in the literature provided estimates of the volume of outpatient clinic work undertaken at sites away from main hospital bases (*Table 8*). However, only one of these gave results specific to audiology, the rest being concerned with medical specialities only. In addition to the studies from the literature, the project was provided with a set of official departmental activity statistics for 1997 (derived from a computerised database system) for the audiology department at Westbourne Eye Hospital (Corcoran C, Westbourne Eye Hospital, Dorset: personal communication, 1998). This piece of evidence was not classed as a 'study' because it consisted solely of a table providing a breakdown of service activity by site, with no details of methods of data collection and other information. However, the same type of data source formed the basis of two published studies.[40,41]

There is an issue as to whether it is appropriate to generalise across different specialities in this case. However, it will be seen from the results that a very high degree of consistency exists across the studies, irrespective of the particular speciality under investigation.

The studies varied in the types of community settings included, a factor which has a direct bearing on the resulting estimates of how much work went on in the community. Most studies (5/9) focused exclusively on primary care settings.[3,40–44] With one exception,[42] all these studies reported the percentage of outpatient work that went on in primary care locations (in the particular geographical areas and specialities they investigated) to be between 3.7%[41] and 12%.[45] This remains essentially true even for those studies in which the rates were reported for individual specialities. Thus, in Walshe and Shapiro's large study covering eight specialities with outreach provision,[41] the highest rate for any single one of these (dermatology) was 8.6%; and in Milne and colleagues' 1992 investigation covering all health centres in Scotland,[3] the rate (for new attendances) exceeded 10% in only one of nine specialities (obstetrics) at 13.7%.

The exception to the above was Ferguson and colleagues' 1992 study of psychiatry outreach in the Nottingham area.[42] This investigation found

TABLE 7 *Length of time that community clinics have been in existence*

Distance	Peripheral hospitals (*n* = 314)	GP practices (*n* = 154)	Community health centres and others (*n* = 188)	All types (*n* = 656)
Established before 1991 (before GP fundholding)	65%	24%	47%	52%
Established since 1991	35%	76%	53%	48%
Other parameters				
Median (years)	10	4	7	7
More than 10 years	48%	16%	32%	35%
Longest established (years)	49	Over 20	Over 20	49

TABLE 8 *Referrals to community clinics as a percentage of referrals to all settings*

Quality rating	Study	Specialities	Type of community setting to which findings relate	Finding of rates	Summary	Samples
I	Perrett, 1997[40]	Gynaecology Orthopaedics General surgery	All GPFH practices in Sheffield District Health Authority	For the three specialities with most outreach activity, appointments at clinics in GPFH practices represented 5.2% of all new patient appointments, and 0.6% of all follow-up appointments.	New patients, 5.2% Follow-up patients, 0.6%	52,043 121,604
I	Walshe & Shapiro, 1995[41]	All	All primary care sites served by one provider	For eight specialities with outreach services, attendances at primary care clinics represented 3.7% of all. Speciality with the highest rate was Dermatology at 8.6%. The rate for ENT alone was 6.9%.	Attendances, 3.7% Dermatology, 8.6% ENT, 6.9%	62,222 6326
II	Cavenagh, 1978[6]	All	One in seven random sample of GP hospitals in England and Wales	On the basis of extrapolating from outpatient statistics for the sample, 4.5% of all outpatient attendances in England and Wales took place at GP hospitals.	Appointments, 4.5%	53 (GP hospitals)
II	Ferguson, *et al.*, 1992[42]	Psychiatry	All primary care sites served by one provider	31% of all new referrals were seen at primary care outreach sites or as domiciliary visits. The latter were not a large proportion of the total.	New patients plus domiciliary visits, 31%	1316
II	Goldacre & Gatherer, 1977[43]	All	All community sites served by two main hospitals	Overall, some 9.2% of all outpatients were seen at outreach clinics (this includes some specialities with no community provision).	Attendances, 9.2%	20,285
II	Helliwell, 1996[45]	Rheumatology	All community sites served by one provider	Attendance of new patients at community clinics represented 8.8% of all new attendances. Including follow-up patients, the rate becomes 12.0%.	New patients, 8.8% New plus follow-up, 12.0%	571 2941
II	Low & Pullen, 1988[44]	Psychiatry	All primary care sites served by Edinburgh Adult Psychiatric Service (four main hospitals)	10% of all referrals were to primary care clinics.	Referrals, 10%	12,741
III	Almond, 1996[46]	ENT Audiology	All primary care and all peripheral hospitals served by 20 providers	8% of all ENT clinic lists were seen at primary care clinics, and 34% at peripheral hospital clinics. 9% of all audiology clinic lists were seen at primary care clinics, and 22% at peripheral hospital clinics. Author notes that this may overestimate proportions of patients seen at outreach clinics, because clinic lists may be longer at main base.	ENT clinic lists: primary care, 8%; peripheral hospital, 34% Audiology clinic lists: primary care, 9%; peripheral hospital, 22%	19 (depts) 20 (depts)
III	Milne, *et al.*, 1992[3]	Nine, including ENT	All health centres in Scotland	Only in one speciality from nine did the **estimated** proportion of new outpatient attendances that took place in health clinics exceed 10% (gynaecology, 13.7%). The figure for ENT was 5%. However, these estimates may be quite approximate.	New attendances: ≤ 10% in all specialities bar one. ENT: 5%	188 (health centres)

that 31% of all psychiatry referrals were seen at primary care sites or as domiciliaries (the latter were only a small proportion). The Nottingham Psychiatric Service, however, has a long history of planned development into a community-based service and is considered exceptional even within psychiatry.[42,47,48]

In the case of community-based audiology services, both Almond[46] and the Westbourne Eye Hospital (Corcoran C, Westbourne Eye Hospital, Dorset: personal communication, 1998) provided relevant measures. Almond, on the basis of counting 'clinic lists' (at one list (of patients) per staff member at each session), yielded an estimate of 9% for the volume of audiology work performed in primary care. The activity statistics provided for the Westbourne Eye Hospital yield a corresponding figure of 10.8% for that particular provider in 1997 (out of a total of 22,691 attendances across the whole service). Both results are close to the mid-range of the findings for specialist clinics. However, both may well be higher than the national average for audiology, in that Almond focused on centres known to provide a good range of community services and the audiology department at the Westbourne Eye Hospital is (from the Provider Survey) one of the most community-orientated providers.

Almond[46] also provided an estimated rate for ENT of 8% at primary care sites, which is slightly higher but still close to the ENT rates given by Walshe and Shapiro (6.9%)[41] and Milne and colleagues (5%).[3]

Less information was available regarding provision made at peripheral hospitals. With respect to specialist clinics, the study by Cavenagh[6] produced an estimate that 4.5% of all outpatients in England and Wales were seen at GP hospitals in 1976. This is an early result (with respect to the development of this type of provision) and only includes the smaller types of peripheral hospital. The studies by Goldacre and Gatherer[43] and Helliwell[45] included all sizes of hospital but did not report separate results for these. Only Almond[46] and the Westbourne Eye Hospital data yield rates specific to peripheral hospitals. In both cases, provision at this type of setting far exceeded that based in primary care, by a factor of 300–400%, and accounted for 22% and 38%, respectively, of all audiology work. It will be seen below that the Provider Survey conducted under the current project concurs strongly with these findings.

Almond[46] also found that, in the providers she studied, peripheral hospitals formed the basis for around one-third of all ENT outpatient clinic work.

Evidence from the project surveys

As a part of the Provider Survey, heads of audiology services were asked to provide estimates of what proportion of their centre's 'total adult hearing aid work' was undertaken by centre staff, in each of the different types of community setting. There was a six-point response-set to the question: None; 1–25%; 26–50%; 51–75%; 76–99%; and All. The results are summarised in *Table 9*. The results here differ slightly from some reported previously or in later sections. For example, 13% of centres stated that they did 'All work' at their main site, whereas the percentage with no outreach provision was given previously as 19%. The discrepancy is due to centres taking domiciliary visits and occasional work off-base into account when responding to the question.

In total, only 15% of centres conducted more than half of their adult work at sites other than a main hospital department. Most community work went on at peripheral hospitals, which accords with the fact that these make up the largest number of outreach sites. Even so, only a minority (23%) of centres undertook more than a quarter of their work at peripheral hospitals. A very small percentage of centres conducted all, or nearly all, their work at GP practices or community health centres/other sites but these were all centres based in such locations. Among the hospital-based centres,

TABLE 9 *Amount of 'adult hearing aid work' performed in various settings. (The figures reported are from Provider Survey;* n = *185)*

Setting	Adult hearing aid work performed					
	None	1–25%	26–50%	51–75%	76–99%	All
Departments based in main hospitals	4	1	10	28	45	12
Peripheral hospitals (without a department)	28	49	21	2	–	–
GP practices	65	32	2	–	0.5	0.5
Community health centres and other community sites	60	36	2	–	2	1

TABLE 10 *Estimated mean percentage of all adult hearing aid work that takes place in various settings (from Provider Survey;* n = *175)*

Setting	Estimated mean (%)
Departments based in main hospitals	71
Peripheral hospitals (without a department)	17
GP practices	5
Community health centres and other community sites	8

provision at non-hospital sites was low, with around three-fifths doing no work in such settings and hardly any doing more than 25%.

To make the findings more interpretable, estimates of the mean percentage of work done in each setting have been derived (*Table 10*). These are based on representing each response category by its mid-point and computing the mean across all centres, weighted by the numbers of hearing aid fittings conducted at each centre, in 1996 (as a proxy measure of total workload). Owing to the distributions underlying the data, these estimates are only approximate. In particular, the means for the three kinds of community setting are quite likely to be overestimated. This is because the estimates effectively assume that centres are symmetrically distributed within each response category, whereas they are, in reality, very likely to be skewed towards the lower ends.

The estimated means indicate that, across the whole of the UK service, roughly 30% of all adult hearing aid work (this includes pure tone audiometry (PTA), fitting, follow-up, repairs and batteries) is undertaken away from main departmental bases. The largest proportion of this, 17% (or 57% of all community-based work) goes on at peripheral hospitals while, of the remainder, 5% is based at GP premises and 8% at other sites. A proportion of this latter group will be community health centres with GPs attached. Using the information from the telephone survey, it is estimated that these constitute roughly half that group and, on this basis, the total amount of work undertaken at sites which have a GP presence is about 9% of the total, or just under a third of all community-based provision.

The above findings – that 17% of work goes on at peripheral hospitals and 9% at sites with GPs – do not differ greatly from the results of Almond's[46] 1996 study of audiology outreach services – of 22% and 9%, respectively.

Audiology services provided at main departmental bases and in the community

Both the Provider and Community Clinic Surveys collected information relating to the kinds of hearing-aid related audiology services provided for adults in various settings.

Services provided at main departmental bases

Most components of service are provided at the base site by 97% of centres or more (see *Table 11*), including all those central to hearing aid provision: audiological support for ENT outpatient clinics; PTA; tympanometry; ear impressions; first issues of hearing aids; modification of ear-moulds; follow-ups; repairs, and battery replacement. The elements of service which are not supplied as extensively as these are: diagnostic audiology in young adults (90%); tinnitus assessment/counselling (88%); direct referral (69%); accelerated referral (63%), and hearing therapy (47%).

Services provided at community sites

The second column of figures in *Table 11* gives the percentage of centres out of those operating community clinics, who provide each service component at one or more community sites. For most elements of service, the rates are not much below the corresponding figure for main base provision, the principal exceptions to this being: diagnostic audiology in young adults (46% versus 90% at base); modification of ear-moulds (73% versus 99%); hearing therapy (29% versus 47%); and tinnitus assessment/counselling (51% versus 88%).

The rates drop substantially when the percentage of community sites providing each component is considered (see column three of *Table 11*). Only PTA, ear impressions and repairs are undertaken at three-quarters or more of all community sites. First issues, follow-ups and batteries are all available at about two-thirds of sites, while technicians provide support to ENT clinics at just over half, and see directly referred patients at just under half.

Details of the services provided in each type of community setting are presented in *Table 12*. The general tendency with respect to most components of service is for provision to be at its highest level at peripheral hospitals, lower in GP practices, and lower still at community health centres/other types of site. This pattern

TABLE 11 *Services provided for adults at main base and at community sites (from Provider Survey)*

Service	Centres providing service at main base (%) (*n* = 191)	Centres (from those operating outreach clinics) providing service at one or more outreach sites (%) (*n* = 156)	Outreach sites where service is provided[a] (%) (*n* = 759)
Audiology support to ENT outpatient clinics	97	91	54
Accelerated referral system	63	58	Unknown
Direct referral system	69	61	45
PTA	98	96	80
Tympanometry	98	89	Unknown
Diagnostic audiology in young adults	90	46	30
Ear impressions	100	99	90
First issues of hearing aids	100	89	66
Modification of ear-moulds	99	73	53[b]
Follow-up appointments	97	89	65
Hearing aid repairs	99	94	74
Battery provision	98	96	67[b]
Hearing therapy	47	29	Unknown
Tinnitus assessment and/or counselling	88	51	Unknown

[a] *This information is taken from a different part of the Provider Survey questionnaire, where a reduced list of service elements was used; hence the figure is unknown for some items*
[b] *Not asked in the Provider Survey but figure taken from the Community Clinic Survey used with a 25% sample of centres*

TABLE 12 *Community sites providing various services: results from Provider Survey (%)*

Services provided as part of the regular service	Peripheral hospitals (*n* = 355)	GP practices (*n* = 180)	Community health centres and others (*n* = 214)	All types[a] (*n* = 759)
Support to ENT outpatient clinics	83	43	14	54
Direct referral system	48	51	34	45
PTA	93	79	59	80
Ear impressions	94	87	85	90
First issues of aids	76	63	53	66
Follow-up appointments	73	63	54	65
Hearing aid repairs	75	62	83	74
Dedicated open-access repair sessions	38	35	68	45
Diagnostic audiology in young adults	38	31	14	30
Modification to ear-moulds[b]	50	33	70	53
Battery provision[b]	65	53	79	67

[a] *This includes ten additional sites which could not be classified*
[b] *These items were not asked in the Provider Survey, the data is taken from the Community Clinic Survey, and is based on a smaller sample size (*n = *208)*

is particularly strong in the case of audiological support to ENT clinics, which is provided at 83% of peripheral hospitals, 43% of GPs, and just 14% of community health centres/ other types. This result presumably reflects the way that ENT outpatient clinics are distributed. PTA, ear impressions, first issues, follow-ups, and diagnostic audiology in young adults, all exhibit this same pattern, though to varying degrees and to nowhere near the same magnitude. Direct referral systems are similar, except that equal proportions of peripheral hospitals and GP practices offer this form of service.

The components that have a different pattern to the above are all forms of service more relevant to after-care than to patients being fitted for the first time: that is, repairs, batteries, open-access repair sessions, and modification of ear-moulds. These components are all provided in high proportions, around 70% or more, at community

health centres/other sites but are less common elsewhere, particularly with regard to GP practices.

The focus groups of hearing aid users and service managers identified considerable demand for locality-based after-care services, and the above results indicate that such services tend to be concentrated at sites other than GP practices or hospitals. This is particularly true of dedicated open-access repair sessions; one reason why these are not very widespread in GP practices may be because there is no financial incentive for fundholders to house them.

Chapter 6

Benefits and disadvantages according to providers and purchasers

The aim of this chapter is to provide an overview of the **opinions** of various professional groups on the benefits and disadvantages of community-based services. Evidence at the level of professional opinion is generally regarded as rather weak but for many aspects of community provision it is the only form of evidence available. Where 'harder' evidence for perceived benefits and disadvantages does exist (e.g. actual patient waiting times, non-attendance rates), this is presented and discussed in later chapters.

A general observation can be made at this point, however; in those instances where harder evidence is available, this has not been at variance with professional opinion, although the latter can, in many cases, give a falsely high impression of effect sizes.

Findings from the literature review

A total of ten studies were found which fitted the inclusion criteria of involving professionals from eight or more different purchasing or providing bodies. Three of the studies surveyed the opinions of both providers (specialists) and purchasers (GPs), four surveyed providers only, and three purchasers only. Only one study included audiology outreach (along with ENT). Another five included ENT as one speciality among several. Three studies covered psychiatry only and one covered only paediatrics.

Three studies used item lists of possible benefits and disadvantages, two used open questions, and the rest did not specify the method used. In addition, some studies reported results in the form of percentage of respondents, while others only indicated whether a particular benefit/disadvantage was reported or not. The studies that reported their results in the clearest and most thorough fashion were those of Abery and colleagues,[49] Bond and colleagues,[50] Bailey and colleagues,[10] and Almond.[46]

The study by Almond[46] was the only one to include audiology outreach schemes. The study used a rather different form of question to the others and, because the study is also the most relevant to audiology, the results from it are examined separately later. The findings of the remaining nine studies are summarised in *Tables 13–16*. All of these studies were concerned solely with provision in primary care settings (i.e. excluding peripheral hospitals and non-GP sites), something which needs to be borne in mind when considering the results. The items in the tables have been ordered such that those with the greatest degree of perceived benefit appear first.

Benefits of clinics in primary care as reported by specialists

The single biggest benefit of primary care clinics, in the opinion of specialists, is patient access/convenience, and this obtained very strong ratings in all studies (*Table 13*).[10,41,49–53] Better communication with GPs is second, again agreement was across the board. A group of benefits comes next, identified strongly by Abery and colleagues[49] and Bond and colleagues,[50] but not reported to anywhere near the same extent in other studies: reduced patient waiting times; improved relationships with GPs; attracts/secures income for trust; and reduces non-attendance rates. There is considerable disagreement between studies as to whether GPs' knowledge and skills benefit from on-site clinics but fairly consistent agreement, albeit at quite a moderate level, that patients benefit by being seen in familiar surroundings. Apart from those given above, most benefits appear to be fairly small-scale or have not been assessed in sufficient studies for a conclusion to be drawn.

There is very little suggestion that hospital-based work benefits much at all from the provision of outreach services. This is not surprising given the generally small contribution that specialist clinics in primary care make to overall patient throughput (see chapter 5). Finally, although some specialists reported personal financial benefits and improved job satisfaction, none considered that the clinics had any educational value for them.

Disadvantages of clinics in primary care as reported by specialists

There is less consensus across studies with regard to disadvantages (*Table 14*) but, taking all the evidence together, the following are the most commonly agreed upon disadvantages, and were found quite major in at least one study: specialist time lost due to travelling; reduction in specialist's time in hospital; repeat appointments for patients requiring further tests or procedures not available at the outreach site; lack of equipment or backup; and less time for other work. Other items which appear to be a problem for substantial minorities include: lack of space; fewer patients per clinic; a low frequency of clinics; reduced time for training of juniors; lack of hospital notes; and a lack of administrative backup.

Benefits of clinics in primary care as reported by GPs

GPs agreed with the specialists that the single biggest advantage of primary care clinics is improved patient access and convenience (*Table 15*).[10,49,50,54–56] Also, across the studies they agreed with the specialists that improved GP–specialist communication is substantial and comes second. These benefits are followed closely by reductions in patient waiting times, and improvements in GP knowledge/skills. On the whole, GPs are more convinced that they have benefited in this respect than specialists think they have (*Table 13*).

Just one study, Strathdee,[56] reported extremely high percentages (> 95%) of GPs claiming benefits in terms of earlier referral, continuity of patient care and reduced hospital admissions. However, these questions were not asked of GPs under the other studies, and the high levels of benefit obtained might well be particular to psychiatry (the speciality involved) – certainly a principal goal of psychiatry outreach is to minimise hospital admissions.

A group of four items, asked about almost exclusively by Abery and colleagues[49] and Bond and colleagues,[50] also received relatively high levels of agreement from GPs: reduced non-attendance rates; improved relationships with specialists; a cheaper service for the GP; and improved GP job satisfaction.

Disadvantages of clinics in primary care as reported by GPs

GPs reported far fewer problems than specialists (*Table 16*). The biggest disadvantage was additional administration but in only one study[49] was this a problem for a sizeable proportion (43%) of those responding. Apart from this, the only items rated a disadvantage by a substantial number in any study were reduced specialist time for hospital work and repeat appointments for patients requiring further tests at hospital.

Almond's study of ENT and audiology outreach

The study by Almond[46] covered 21 provider units, and included both ENT and audiology outreach at each. Benefits and disadvantages were examined using item lists and a five-point response scale (major benefit; minor benefit; neutral; minor disadvantage/problem; major disadvantage/problem). The results are summarised in *Table 17* and, in order to simplify presentation, are given in the form of 'major benefit gain', which was computed as the difference between the percentage of respondents rating an item a 'major benefit' and the percentage rating it a 'major disadvantage'. Almond collected data separately for peripheral hospital and primary care settings, thus allowing comparisons to be made between the two.

It can be seen that the greatest benefit, as perceived by both ENT specialists and head audiologists, is patient satisfaction, which obtains a 'gain' score of 71% or higher across both types of setting. Head audiologists considered primary care sites even better in this regard than peripheral hospital sites (94% 'major benefit gain' compared with 74%). However, with the exception of patient satisfaction, only minorities of either set of respondents regarded any of the remaining items to have much major benefit, in either type of setting, although some important items were not included in Almond's list (e.g. patient access, communication with GPs, patient waiting times).

With regard to disadvantages (items with negative benefit gain), in the majority of cases the percentages are not large (less than 25%) and with little difference between settings. There are a few significant exceptions, however, with availability of space, availability of equipment, and quiet conditions for testing all being rated worse in primary care for both ENT and audiology outreach. In audiology, the disadvantage of primary care appears particularly striking with regard to equipment (–47% in primary care compared with –6% at peripheral hospitals) and noisy conditions when testing (–65% compared to –32%). However, Almond[46] did not undertake

tests of statistical significance. Noisy conditions are far more likely to be problematic in the context of audiology than in medical or surgical specialities; this clearly appears to be true in Almond's study, in which noise is not seen to be anywhere near such a problem for ENT clinics as for audiology clinics.

Findings from project surveys

The Provider Survey addressed issues of the benefits and disadvantages of audiology outreach. The questionnaire included two lists – one of possible benefits and one of possible disadvantages. These lists were informed by the findings of previous studies (see, for example, Bailey, *et al.*[10] and Almond[46]) and by the findings from the three focus groups convened under the project. The items on each list carried a four-point response set: major benefit/disadvantage; minor benefit/disadvantage; not a benefit/disadvantage; and 'the reverse [of the item] applies'. This last category was included so as to avoid 'locking' respondents into being unable to disagree with a proposed benefit or disadvantage.

Head audiologist ratings of benefits of community provision

The biggest single benefit of community services, according to service heads, is 'improved access/convenience for patients', which was rated a major benefit by 95% (*Table 18*). This concurs strongly with the findings for specialist clinics, based on the review of literature (see above). None of the other potential benefits were rated anywhere near as high. However, two did receive 'major benefit' ratings from more than 50% of respondents: 'provides better continuity of care' (57%), and 'encourages hearing aid use and maintenance' (57%). The perception that continuity of care is better is probably a reflection of the fact that community patients are more likely to be seen by the same technician every time they attend. The possibility that community clinics can improve patient compliance, in terms of aid use and maintenance, may be very significant: evidence to the effect that a substantial proportion of aids are poorly maintained or fall into disuse not long after fitting is discussed later (see chapters 9 and 13), and if outreach services can reduce this then that may be an important point in their favour.

A sizeable number of items were rated of 'major benefit' by between 35% and 39% of service heads, and when 'minor benefit' ratings are added nearly all of these reach 70% or more. The items are: 'reduces the number of domiciliary visits'; 'fewer non-attendees at outreach sites'; 'secures work for the department'; 'reduces waiting times'; 'improves GP willingness to refer'; 'improves communication with GPs (the results for these last two items are based on only those centres operating at GP sites). A reduction in domiciliary visits can come about because some frail patients can make their way to a local site but not to a main centre a greater distance away; a reduction in domiciliary visits would help offset the technician's lost working time caused by travelling to an outreach site.

An improved GP willingness to refer is also important. A number of studies have found that something like 50% of patients who attend their GP in connection with a hearing impairment are not referred on (see, for example, Humphrey, *et al.*,[30] Brooks,[31] Keay[32] and Gilhome, *et al.*[33]). The delay in treatment caused by this can subsequently result in a poorer rehabilitation outcome when assistance is eventually obtained (see, for example, Stephens, *et al.*[57]).

Head audiologist ratings of disadvantages

Two aspects of community-based clinics stand out in terms of disadvantage (*Table 19*). The first is that it makes it considerably harder to arrange staff cover for absence or sickness (63% 'major disadvantage' and 32% 'minor disadvantage'). In a centralised service, with all staff at base, the absence of one individual is relatively easy to absorb but when staff are spread across several sites, providing cover for an absentee at one site is likely to leave a shortage at another. The second big disadvantage quoted is noisy conditions (62% 'major'; 28% 'minor'). This finding concurs with that of Almond[46] (*Table 17*).

A group of five items were rated as major disadvantages by between 30% and 40% of head audiologists. These are all related either to facilities in the community (limited range or standard of equipment; lack of space), or to work–time issues (less time for training juniors; harder to organise staff time-tables; time loss owing to staff travel). This concurs completely with the major disadvantages identified by Almond[46] (*Table 17*).

One other disadvantage, although not rated so highly, is worth a mention. This is the lack of information on display for patients (25% 'major'; 51% 'minor'). One particular concern is that this could lead to patients missing out on post-fitting services and support (such as repairs, assessment for assistive devices, user-groups, and voluntary

home visitor schemes) through lack of awareness of their existence, which could, in turn, jeopardise continued use of the hearing aid. Within the focus group of hearing aid users there was a strong feeling that provision of information was poor, both for new and long-term users, and it would be worrying if outreach schemes were to exacerbate this problem further.

Comparison of the findings for specialist and audiology clinics

If the findings from the literature review are compared with those from the project survey, it is clear that specialists, GPs, and heads of audiology services all rated improved patient access as the single biggest benefit of community-based services. Both specialists and GPs put improved inter-professional communication in second place but this was much further down the list for heads of audiology services. However, the latter were not rating primary care clinics exclusively but were giving a 'global' rating across all their community sites.

The heads of audiology services considered continuity of patient care and patient compliance to be the two other most important benefits of community-based audiology. These factors have not shown through in the context of specialist clinics but this may be because few studies have taken them into consideration.

There exists a moderate level of agreement across all three professional groups on three other benefits of community provision: reduced patient waiting times; fewer non-attendees; and the attraction of income/work into the department.

The disadvantages that have been reported tend to be much more specific to the different professional groups. Heads of audiology services saw arranging cover for when staff are absent and a lack of quiet conditions as the greatest disadvantages for community audiology. Specialists were more concerned about time issues, particularly on how this impacted on their hospital work, and about the numbers of patients requiring repeat appointments. The biggest issue for GPs was the extra administration work the clinics generated for practice staff.

There was some common ground, however: quite a number of heads of audiology services shared the specialists' concerns about time issues; and notable numbers of both heads of audiology services and specialists had problems in the community with the availability of equipment and space.

TABLE 13 *Benefits of clinics in primary care according to specialists*

Study	**Abery, *et al.*, 1997[49]**	**Bond, *et al.*, 1997[50]**	**Bailey, *et al.*, 1994[10]**	**Strathdee & Williams, 1984[51]; Strathdee, 1987[52]**	**Pullen & Yellowlees, 1988[53]**	**Walshe & Shapiro, 1995[41]**
Specialities	5, including ENT	6, including ENT	11, including ENT	Psychiatry	Psychiatry	8, including ENT
Sample (number of specialists)	18 (5)[a]	19	72	109	65	8
Type of questions	Item list	Item list	Open	Not stated	Not stated	Open
Advantage						
Patient access/convenience	100% (100%)	74%	85%	Yes		Yes
Better communication with GPs	61% (80%)	74%	57%	65%	Yes	Yes
Reduces waiting times	72% (80%)	74%	15%			
Improves relationship with GPs	67% (80%)	47%		6%		Yes
Attracts/secures income for trust	56% (100%)	58%	24%			
Reduces non-attendance rates	56% (80%)	53%				
Improves GP knowledge/skills	11% (20%)	42%	6%		Yes	Yes
Patients seen in familiar surroundings			25%	25%	Yes	Yes
Specialists obtain personal financial benefit	22% (20%)	42%				
Improves specialist's job satisfaction	22% (20%)	5%	10%			Yes
Better access to GP patient notes				23%	Yes	
Creates space at hospital clinics			25%			
Patients feel less stigma (psychiatry)				> 20%		
More GP involvement in patient care					19%	
Reduces hospital waiting lists			13%			
GPs have more satisfied patients				11%		
Better continuity of care				7%		Yes
Reduces hospital admissions				10%		
Earlier referral possible				9%		
Patients more at ease			4%			Yes
Patients get longer consultations						Yes
Improves patient compliance					Yes	
Better working environment for specialists						Yes
Specialist gets break from hospital work						Yes
Improved patient access to private care	6% (0%)	0%				
Patients are seen by consultant			4%			
Educational for specialists	0% (0%)	0%				0%
No advantages	0% (0%)	0%				

[a] *Figure for ENT clinics in parentheses*

No entry means the item was not asked or mentioned; 'yes' indicates item was mentioned but actual percentage was not reported

TABLE 14 *Disadvantages of clinics in primary care according to specialists*

Study	Abery, *et al.*, 1997[49]	Bond, *et al.*, 1997[50]	Bailey, *et al.*, 1994[10]	Strathdee & Williams, 1984[51]; Strathdee, 1987[52]	Pullen & Yellowlees, 1988[53]	Walshe & Shapiro, 1995[41]
Specialities	5, including ENT	6, including ENT	11, including ENT	Psychiatry	Psychiatry	8, including ENT
Sample	18 (5)[a]	19	72	109	65	8
Type of questions	Item list	Item list	Open	Not stated	Not stated	Open
Disadvantage						
Travelling time	67% (60%)	?[b]			Yes	Yes
Reduces specialist's time in hospital	72% (100%)	32%		8%		
Repeat appointments for patients requiring further tests at hospital	50% (40%)	37%	13%			
Lack of equipment/backup	28% (60%)	60%				Yes
Reduces time for other work	50% (20%)	37%				
Lack of space/accommodation	17% (0%)	42%		Yes	Yes	
Fewer patients seen per clinic	28% (60%)	37%				Yes
Reduces time for training of juniors	39% (20%)	26%	15%			
Low frequency of clinics	39% (40%)	26%				
Hospital notes required at clinic	39% (20%)	?[b]				
Lack of hospital notes	22% (40%)	26%				
Lack of administrative backup at clinic	11% (20%)	26%		Yes	Yes	
Outreach has no disadvantages	0%	0%			17%	
Inefficient use of time				6%		Yes
Time wasted due to non-attendance					Yes	
Increase in number of inappropriate referrals						Yes
Promotes inequity in service provision						Yes
Additional administration for trust/hospital			7%			
Resource implications for trust/hospital			6%			

[a] *Figure for ENT clinics in parentheses*
[b] *Question asked but result not reported*

No entry means the item was not asked or mentioned; 'yes' indicates item was mentioned but actual percentage was not reported

TABLE 15 *Benefits of clinics in primary care according to GPs*

Study	**Abery, et *al.*, 1997[49]**	**Bond, et *al.*, 1997[50]**	**Bailey, et *al.*, 1994[10]**	**Corney, 1994[54]**	**Spencer, 1993[55]**	**Strathdee, 1988[56]**
Specialities	5, including ENT	6, including ENT	11, including ENT	10, including ENT	Paediatrics	Psychiatry
Sample	60 (12)[a]	59	86	9	9	58
Type of questions	Item list	Item list	Open	Not stated	Not stated	Not stated
Advantage						
Patient access/convenience	95% (92%)	85%	53%	Yes	Yes	
Better communication with specialists	74% (75%)	?[b]	35%	Yes	Yes	81%
Waiting times	88% (75%)	41%	30%	Yes		
Improves GP knowledge/skills	44% (42%)	32%	17%		Yes	86%
Earlier referral possible					Yes	98%
Better continuity of care						98%
Reduces hospital admissions						97%
Reduces non-attendance	67% (58%)	63%		Yes		
Improves relationships with specialists	54% (50%)	47%				
Cheaper service for GP	44% (42%)	51%				
Improves GP job satisfaction	49% (75%)	31%				
Attracts/secures income for trust	7% (0%)	73%	13%			
Educational for specialists	19% (8%)	36%				
Better access to hospital notes	?[b]	34%				
Familiar surroundings			28%	Yes		
Patients seen by consultant			15%	Yes		
Involves GP more in patient care				Yes	Yes	
Creates space at hospital clinics			14%			
Reduces hospital waiting lists			12%			
Patients feel less stigma (psychiatry)						Yes
Patients more at ease			10%			
GPs have more satisfied patients			7%			
Improves specialist's job satisfaction			6%			
Specialists obtain personal financial benefit	5% (0%)	4%				
Improved patient access to private care	2% (0%)					
Outreach has no advantages	2% (0%)	0%				

[a] *Figure for ENT clinics in parentheses*
[b] *Question asked but result not reported*

No entry means the item was not asked or mentioned; 'yes' indicates item was mentioned but actual percentage was not reported

TABLE 16 *Disadvantages of clinics in primary care according to GPs*

Study	Abery, et al., 1997[49]	Bond, et al., 1997[50]	Bailey, et al., 1994[10]	Corney, 1994[54]	Spencer, 1993[55]	Strathdee, 1988[56]
Specialities	5, including ENT	6, including ENT	11, including ENT	10, including ENT	Paediatrics	Psychiatry
Sample	60 (12)[a]	59	86	9	Does not discuss disadvantages	58
Type of questions	Item list	Item list	Open	Not stated	Not stated	Not stated
Disadvantage						
More administration for GPs	43% (50%)	25%	3%	Yes		14%
Reduces specialist time in hospital	35% (17%)	14%				
Repeat appointments for patients needing further tests at hospital	24% (33%)	12%	8%			
Lack of space/accommodation	18% (25%)	7%		Yes		Yes
No disadvantages	27% (17%)	7%				
Low frequency of clinics	7% (17%)	14%				
Increased potential for GP-specialist disagreement						16%
Fewer patients seen per clinic	11% (0%)	7%				
Inconvenient when hospital notes not available	9% (8%)	9%				
Travelling time for specialist			10%			
Loss of referrals/income			10%			
Increased GP costs				Yes		
Lack of equipment/backup	9% (0%)	0%				
Reduced time for other work	6% (17%)	7%				
Inefficient use of specialist time			6%			
Resource implications for trust/hospital			5%			
More administration for trust/hospital			1%			

[a] *Figure for ENT clinics in parentheses*

No entry means the item was not asked or mentioned; 'yes' indicates item was mentioned but actual percentage was not reported

TABLE 17 *ENT specialists and head audiologists' ratings of community clinics in peripheral hospital and primary care settings; data from Almond, 1996[46] (presented as 'major benefits; – 'major disadvantage')*

Item	Head audiologists (*n* = 17)		ENT specialists (*n* = 12)	
	Peripheral hospitals	Primary care	Peripheral hospitals	Primary care
Patient satisfaction	74%	94%	71%	75%
Job satisfaction of specialists/audiologists	27%	35%	35%	8%
GP awareness of appropriate 'direct referrals'[a]	0%	18%	24%	17%
Education of specialists/audiologists	27%	18%	0%	0%
Safe keeping of patient records	–5%	–6%	6%	0%
Costing for wear and tear of equipment and calibration	0%	–6%	–12%	0%
Workload for specialists/audiologists produced by this service	–21%	–18%	6%	–8%
Travel time for specialists/audiologists	–11%	–24%	–18%	–8%
Organising staff timetables	–16%	–24%	–17%	–17%
Time available for other work	–21%	–24%	–18%	–8%
Availability of space/consulting rooms	–5%	–29%	6%	–25%
Availability of equipment	–6%	–47%	5%	–25%
Suitable quiet conditions for testing	–32%	–65%	–6%	–25%

[a] *Direct referrals are patients who can be referred by GPs directly to audiologists, according to agreed criteria*

TABLE 18 *Head audiologists' ratings of benefits of their outreach services (*n = *153–156)*

Benefit	Major benefit	Minor benefit	Not a benefit	Reverse applies
Improved convenience/access for patients	95%	4%	1%	–
Encourages hearing aid use and maintenance	57%	24%	19%	1%
Provides better continuity of care	57%	23%	14%	7%
Reduces number of domiciliary visits	39%	33%	25%	3%
Fewer non-attendees at outreach sites	37%	33%	24%	7%
Secures work for department	36%	28%	36%	1%
Reduced waiting times for patients at outreach sites	35%	35%	22%	9%
Improves willingness of GPs to refer [a]	37%	41%	21%	–
Increased job satisfaction for audiologists	27%	40%	24%	9%
Improved communication with GPs[a]	37%	40%	23%	–
Educational for GPs[a]	21%	39%	40%	–
Educational for audiologist	8%	34%	50%	7%

[a] *Percentages based on sample restricted to centres holding clinics at GP sites,* n = *75*

TABLE 19 *Head audiologists' ratings of disadvantages of their outreach services (*n = *154–156)*

Disadvantage	Major disadvantage	Minor disadvantage	Not a disadvantage	Reverse applies
Harder to arrange staff for illness or absences	63%	32%	4%	1%
Lack of quiet conditions for testing	62%	28%	8%	1%
Limited range or standard of equipment	38%	43%	17%	1%
Less senior staff time available for training/ supervision of juniors	37%	41%	20%	3%
Lack of space for sessions at outreach sites	36%	37%	23%	3%
Harder to organise staff timetables	34%	47%	18%	1%
Time lost because of staff travel	30%	51%	19%	–
Lack of information on display for patients (e.g. about support groups, assistive devices)	25%	51%	21%	3%
More time spent on administration	24%	46%	29%	1%
Repeat appointments for patients who need tests, etc. at main base	17%	41%	20%	3%
Insufficient cooperation from outreach site staff	8%	24%	51%	17%

Chapter 7

Features of the community sites and the quality of services provided

Features of the community sites

For the Community Site Survey, a list of 23 'features' of community sites was drawn up. These features included aspects of the sites themselves (e.g. carparking, standard of premises) and also of the clinics held in them (e.g. waiting times, standard of equipment). A five-point response set was used with each item which specifically asked responding technicians to make a comparison between the site and their main base: much better than base; better; the same; worse; much worse.

The list of features in many respects overlapped with the lists of benefits and disadvantages used in the Provider Survey with the heads of audiology services. The methodology used was quite different however: data collection was at the level of individual sites, rather than community provision as a whole; the features were not preclassified into benefits and disadvantages; the respondents were audiology technicians working directly within the locations they were rating. These differences mean that this data provides a 'second opinion', from a different perspective, on many of the perceptions of service heads regarding benefits and disadvantages.

At the time that it was drawn up, the feature list contained all aspects thought to be important. However, with hindsight, there were some omissions. The main one was the lack of an item pertaining to the psychological state of patients; for example, how 'relaxed' they appeared to be. This aspect was highlighted by technicians elsewhere in the questionnaire, in response to an open-ended question, as a distinct community advantage. The list also did not contain any item pertaining to patient access, because this was viewed as being a function of the overall distribution of clinics, not of particular clinics. However, technicians also highlighted this as a major benefit elsewhere in the questionnaire, again in response to an open-ended question.

The results of the Community Site Survey are presented in *Table 20*. Features are ranked according to their mean ratings, with the most favourable towards the community first. In addition, the mean rating for each feature has been compared with the midpoint of the scale (i.e. 'same as base') using *t*-tests. Although the significance levels can only be taken as approximate, they do provide an indication of the strength of any difference between community sites and the base.

Only three features did not reach statistical significance, implying no overall difference between community and base sites in these respects: access for wheelchair users, continuity of patient care, and the appropriateness of referrals from GPs. It is of interest that technicians did not rate continuity of care as better in the community, since heads of audiology services regarded this as one of the greatest benefits (see chapter 6).

Six features were perceived by technicians to be significantly better at community sites: car parking, patient attendance, patient satisfaction, waiting times, communication with GPs, and work satisfaction. However, of these, only car parking could be said to be substantially better. The other five items are only better at minorities of sites (35% or less) and, in almost every case, the percentage of sites rated 'much better' is nearly equalled by the percentage rated 'much worse'.

Many more features, 14, were found to be significantly worse than at departmental base sites. Six of these were rated as worse at about 50% of community sites or more: administrative backup (49%), technician travel time (53%), access to patient records (55%), the range/standard of equipment (54%), quiet conditions for testing (73%), and information on display for patients (71%). The last two items are clearly very widespread deficiencies, occurring at nearly three-quarters of all sites. Noise appears to be a particularly large problem, with nearly one-quarter of all sites judged to be 'much worse' than the base in this respect.

Other features that received a notable number of 'much worse' ratings were: access to patient records (15%), availability of ENT advice (15%),

TABLE 20 *Technician ratings of features at community sites compared with the base site*

Feature	Rating of community site compared with base					Significance test of mean rating[a]
	Much better	Better	Same	Worse	Much worse	
Items significantly better than at base						
Car parking for patients	14%	40%	28%	12%	7%	***
Rate of patient non-attendance	3%	25%	65%	7%	1%	***
Patient satisfaction	2%	20%	73%	4%	2%	***
Patient waiting times	7%	28%	46%	17%	2%	**
Communication with GPs	3%	18%	71%	8%	1%	**
Personal satisfaction from your work	2%	22%	65%	8%	3%	*
Items not different than at base						
Access for patients in wheelchairs	6%	21%	57%	10%	5%	NS
Continuity of patient care	2%	16%	73%	8%	3%	NS
Appropriateness of GP referrals	–	7%	88%	4%	1%	NS
Items significantly worse than at base						
Facilities for patients	1%	11%	68%	16%	5%	**
Amount of counselling time per patient	1%	12%	58%	26%	4%	***
Space available for sessions	–	12%	58%	21%	10%	***
General standard of premises	2%	14%	48%	30%	6%	***
Obtaining ear-wax removal	2%	11%	53%	23%	11%	***
Range of aids available for patients	–	1%	75%	19%	5%	***
Availability of ENT specialist advice	1%	9%	52%	24%	15%	***
Number of patients needing repeat appointments elsewhere	–	2%	61%	32%	5%	***
Technician's travel time	2%	12%	34%	40%	13%	***
Administrative backup	–	4%	48%	37%	12%	***
Access to patient records	1%	4%	41%	40%	15%	***
Range and/or standard of equipment	–	–	47%	48%	6%	***
Quiet conditions for testing	1%	5%	22%	49%	24%	***
Information on display for patients	1%	1%	28%	58%	13%	***

[a] *Result of t-test comparing mean rating with 'same as base':* * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

travel time (13%), and information on display (13%). Very few community sites were considered to be 'much better' than the base in any of these respects.

The overall picture produced by this analysis, of the advantages and disadvantages of community sites and their relative importance, matches well (where items overlap) with the findings from the project survey of heads of audiology services and also with the results from Almond's[46] set of interviews. However, the audiology technicians do differ from both of these other sources of evidence, in that they give far fewer ratings at the extremes of the scale (i.e. 'much better' or 'much worse'). This suggests that they perceive community provision to possess fewer important advantages or disadvantages. Whether this reflects a real difference of opinion between heads of services and the audiology technicians working at community sites, or whether it is caused by differences in the data collection methods and instruments, is unknown.

Relationship between features and setting types

Each of the 23 different features has been tested for a significant difference between setting types using a Kruskal–Wallis analysis of variance (ANOVA). Eight features reached significance (at 5% or higher), indicating that they were more of an advantage/disadvantage in some settings than in others. Four of the significant items related mainly to patient benefits: patient satisfaction, waiting times, access for wheelchair users, and repeat appointments. The remaining four related to clinical efficiency: communication with GPs, obtaining ENT advice, administrative backup, and access to patient records.

Of equal interest are some of the features which did not reach significance, as these include the

three items previously identified as the biggest deficiencies in community provision: noisy conditions, limited equipment, and a lack of information on display. These seemed equally poor in all types of community setting. The two greatest advantages of community provision also did not vary significantly across settings: car parking and patient attendance rates.

The relationship between features and community settings is illustrated in *Table 21*. This indicates which setting type is 'best', 'second-best', and 'worst' for each feature (on the basis of the mean ratings). The eight features found to differ significantly between settings are set in bold type, followed by the significance level. Non-significant features are included in the table for completeness.

From the table some general conclusions can be drawn regarding the way in which types of setting compare. GP practices came out as the best type of setting for the largest number of features, including five of the eight that reached significance: patient satisfaction, communication with GPs, ENT advice, administrative backup, and access to patient records. All the items relating to clinical efficiency are included.

Small peripheral hospitals were not particularly good in any respect, nor were they particularly

TABLE 21 *Comparison of features of different community settings, based on audiology technician ratings*[a]

Setting	Best community setting for:	Second best for:	Worst community setting for:
Small peripheral hospitals (≤ 100 beds)	Car parking	**Administrative backup***** Patient attendance Facilities for patients Standard of premises Range of aids available Range/standard of equipment	**Repeat appointments elsewhere***** Continuity of patient care Appropriate referrals Counselling time per patient Technician's travel time
Medium to large peripheral hospitals (> 100 beds)	Wax removal Quiet conditions for testing Information on display	**ENT advice***** **Access to patient records***** Technician's travel time Range/standard of equipment	**Patient satisfaction**** **Patient waiting times***** **Access for wheelchair users*** Car parking Patient attendance Technician work satisfaction Space available for sessions
GP practices	**Patient satisfaction**** **Communication with GPs***** **ENT advice***** **Administrative backup***** **Access to patient records***** Patient attendance Technician work satisfaction Facilities for patients Standard of premises Range/standard of equipment	**Repeat appointments elsewhere***** Car parking Appropriate referrals Counselling time per patient Wax removal	Range of aids available Information on display
Health centres with GPs attached	**Patient waiting times***** Continuity of patient care Appropriate referrals Space available for sessions	**Patient satisfaction**** **Communication with GPs***** **Access for wheelchair users*** Technician work satisfaction Information on display	Facilities for patients Range of aids available Quiet conditions for testing
Other sites (no GPs)	**Access for wheelchair users*** **Repeat appointments elsewhere***** Continuity of patient care Counselling time per patient Range of aids available Technician travel time	**Patient waiting times***** Technician work satisfaction Quiet conditions for testing Space available for sessions	**Communication with GPs***** **ENT advice***** **Administrative backup***** **Access to patient records***** Standard of premises Wax removal Range/standard of equipment

[a] *Items significantly different between settings are in bold, followed by the significance level; * = p < 0.05; ** = p < 0.01; *** = p < 0.001*

TABLE 22 *Heads of audiology services' ratings of overall quality of service at community sites compared with main base (Provider Survey, n = 156)*

Rating				
Much poorer	**Somewhat poorer**	**Same/mixed**	**Somewhat better**	**Much better**
14%	58%	23%	5%	1%

TABLE 23 *Technicians' ratings of overall quality of service at community sites compared with main base service (Community Site Survey)*

Setting	Rating					Sample size
	Much poorer	**Somewhat poorer**	**Same**	**Somewhat better**	**Much better**	
Peripheral hospital ≤ 100 beds	3%	61%	30%	5%	2%	61
Peripheral hospital > 100 beds	3%	57%	40%	–	–	30
GP practice	12%	46%	29%	12%	–	41
Community health centre with GPs	3%	68%	23%	3%	5%	40
Other (no GPs)	7%	39%	42%	10%	3%	31
All settings[a]	5%	55%	32%	6%	2%	203

[a] *No significant difference between settings on a Kruskal–Wallis non-parametric ANOVA (p = 0.519)*

bad, except with regard to the numbers of patients requiring repeat appointments at the base.

Larger peripheral hospitals were clearly the least patient-friendly, being significantly the worst setting for patient satisfaction, waiting times and wheelchair access. Conversely, community health centres were good for patients, with all of these features being rated either best or second-best in this environment.

Other forms of site, without GPs, were also fairly patient-friendly but were significantly the worst on all four aspects related to efficiency.

The above, of course, are generalisations and there was considerable variation between individual sites within each setting type. Furthermore, the findings only relate to comparisons between community settings, not to how these compared with the base.

Overall quality of service at community sites

Evidence from the project surveys

Heads of audiology services were asked to rate the 'overall quality' of the service provided at community sites in comparison to the quality at the main departmental base. The large majority were of the opinion that quality was lower in the community (*Table 22*): 58% rated it as 'somewhat poorer' and 14% as 'much poorer'. Only 6% of heads of audiology services considered service quality to be, on the whole, better at community sites.

Audiology technicians rated each individual community site on the identical question (*Table 23*). Much the same pattern of results was obtained, with 55% of sites being judged as 'somewhat poorer' and 5% as 'much poorer'. Only 8% were thought to provide better overall quality than the base.

The technician data has been broken down by type of setting, and the settings compared by means of a Kruskal–Wallis non-parametric ANOVA. The test was far from being significant, indicating that technicians perceive no difference between community setting types with regard to the overall quality of the service provided.

Technicians were also asked to provide reasons for their choice of answer. Those who had rated the service at the community site as poorer than at base gave a total of 208 comments. The biggest categories by far related to a limited range or standard of equipment at the site (27% of all comments), and to noisy conditions (26%). The other most common reasons were to do with other aspects of the facilities (12%); lack of backup, particularly ENT (8%), limited stock (7%), and only being able to offer a limited service (7%).

With regard to the few sites rated as offering a better service than the base, the principal

TABLE 24 *Technicians' ratings of overall quality of service at outreach sites compared with main base by services provided*

Pattern of service provided	Rating					Sample size
	Much poorer	Somewhat poorer	Same	Somewhat better	Much better	
Full range[a]	–	65%	35%	–	–	37
All except direct referral	5%	70%	25%	–	–	20
All except support to ENT outpatient clinics	–	41%	32%	15%	12%	34
PTA, fitting, follow-up, and repairs	8%	31%	54%	8%	–	13
Support to ENT outpatient clinics (including PTA) and nothing else	19%	47%	31%	3%	–	32
Repairs and nothing else	–	67%	26%	7%	–	27

[a] *The 'full range' of services is: support for ENT outpatients clinic; direct referral; PTA; hearing aid fitting; follow-up, and repairs*

Differences between settings reached a p-value of 0.007 on Kruskal–Wallis ANOVA

TABLE 25 *Heads of audiology services' ratings of whether sessions at outreach sites are 'worthwhile' (n = 156)*

Rating				
Definitely	Probably	Undecided/mixed	Probably not	Definitely not
47%	33%	8%	7%	5%

reasons given here related to a less intimidating atmosphere/more relaxed patients (30%) or to patients finding the service more accessible (30%).

Service quality has also been investigated in relation to the particular forms of service provided at each community site. To achieve this, the 'full range' of services was defined to consist of six components: audiological support to an ENT outpatient clinic, a direct referral scheme, PTA, hearing aid fitting, follow-up, and repairs. The taking of ear impressions is assumed, because this procedure was virtually ubiquitous. Other elements of service, such as battery provision, are treated as 'optional extras' to this list. Examination of how these six components occur together reveals that just six different patterns account for service provision at over 80% of all community sites. These patterns are:

(i) the 'full range' (18% of sites)
(ii) all components bar direct referral (10%)
(iii) all components bar ENT support (17%)
(iv) PTA, fitting, follow-up and repairs (8%)
(v) ENT support only (including PTA; 15%)
(vi) repairs only (13%).

All other combinations occurred at only very low levels.

A breakdown of the technician quality ratings by each service pattern are presented in *Table 24*.

A Kruskal–Wallis ANOVA produced a *p*-value of 0.007, the indication being that technicians regard clinics that are restricted solely to ENT support to constitute the poorest quality of service, while those that provide everything apart from ENT support constitute the best.

How worthwhile are the sessions conducted at community sites?

Evidence from the project surveys

The project surveys also asked heads of audiology services and audiology technicians whether they considered outreach sessions worthwhile or not. In all, 80% of heads of audiology services thought they were (*Table 25*); with 47% saying 'definitely' and 33% 'probably'. Very few were undecided and only 12% regarded their community services as probably or definitely not worthwhile.

The technicians were even more certain about the value of community provision (*Table 26*). The sessions were considered worthwhile at 93% of all community sites in the survey; 69% were rated 'definitely' worthwhile. At only 5% of sites did the technicians feel the sessions were not worthwhile.

The difference between setting types was significant on a Kruskal–Wallis ANOVA ($p = 0.003$). Clinics at large peripheral hospitals were the

TABLE 26 *Technicians' ratings of whether sessions at the outreach site are 'worthwhile'*

Setting	Rating					Sample size
	Definitely	Probably	Undecided/mixed	Probably not	Definitely not	
Peripheral hospital ≤ 100 beds	75%	20%	–	3%	2%	61
Peripheral hospital > 100 beds	93%	7%	–	–	–	29
GP practice	53%	29%	9%	7%	2%	45
Health centre without GPs	68%	25%	3%	3%	3%	40
Other (no GPs)	59%	38%	–	3%	–	29
All settings[a]	69%	24%	3%	3%	2%	204

[a] *Differences between settings significantly different on Kruskal–Wallis ANOVA (p = 0.003)*

TABLE 27 *Technicians' ratings of whether sessions at the outreach site are 'worthwhile' in terms of the services provided*

Pattern of services provided	Rating					Sample size
	Definitely	Probably	Undecided/mixed	Probably not	Definitely not	
Full range[a]	83%	17%	–	–	–	35
All except direct referral	100%	–	–	–	–	20
All except support to ENT outpatient clinics	80%	17%	–	3%	–	35
PTA, fitting, follow-up and repairs	81%	6%	6%	6%	–	16
Support to ENT outpatient clinics (including PTA) and nothing else	34%	38%	9%	9%	9%	32
Repairs and nothing else	70%	30%	–	–	–	27

[a] *The 'full range' of services is: support to ENT outpatient clinic; direct referral; PTA; hearing aid fitting; follow-up, and repairs.*

Differences between settings were significant (p < 0.0001) on Kruskal–Wallis ANOVA

type most often rated 'definitely' worthwhile (93% of these were rated as such), while those at GP practices were least often so rated (53%).

As to the reasons given by technicians for thinking clinics worthwhile, almost half of all the comments received referred to convenience of the location for patients (49%). All other reasons were at much lower levels but the second most common related to another aspect of access – that the clinic provided a service for people unable or unwilling to travel to the base (10%). Other reasons of note were that patients were more relaxed/the clinic more friendly (8%) and that patients were more satisfied (7%).

The main reasons for some clinics being rated as not worthwhile were: first, inadequate facilities or equipment (27%); second, low numbers of patients (23%); third, the proportion of patients requiring a re-test at base (14%).

When broken down by the patterns of services provided, a clear trend is evident for technicians to be less confident that dedicated ENT support sessions are worthwhile, compared with other forms (*Table 27*). Only 34% of clinics restricted solely to ENT support were rated 'definitely' worthwhile, whereas all other clinic types obtained 'definite' ratings of between 70% and 100%. This finding is extremely significant on a Kruskal–Wallis ANOVA ($p < 0.0001$). In addition, over half of all clinics rated not worthwhile were those restricted to ENT support.

The relationship between ratings of clinic features, quality and worth

The results presented above show that high proportions of both heads of services and audiology technicians rated the overall quality of service at community sites as poorer than the quality at departmental bases, and yet even higher proportions of both groups considered it worthwhile to provide these services. The principal justification given, by a long margin, for believing a clinic worthwhile was the benefit in terms of patient access. It seems that departments will tolerate the many drawbacks that a community site can possess – poorer facilities,

poorer equipment, noisy conditions, and so on – provided they are convinced that the sessions held there significantly benefit patients in the locality.

Clinics based in GP practices, as a group, received the highest ratings from technicians on many of the clinic features, and yet they were the least likely to be judged 'definitely' worthwhile. Conversely, large peripheral hospitals were the least patient-friendly setting but these sessions were rated the most worthwhile. The components of service on offer differed between settings and this provided a partial explanation for these results: technicians were least confident about clinics devoted solely to ENT support, and GP practices had the greatest proportion of these. Excluding this form of clinic, 68% of GP clinics were rated 'definitely' worthwhile, a figure which is close to the results for all other types of setting, with the exception of large peripheral hospitals (at 93%).

Another factor which could be operating here is clinic size. Although this variable was not collected, information about the amount of staff-time devoted to each clinic session was, and can be used as a rough proxy. Clinics at large peripheral hospitals involved the largest amount of staff time, a mean of 418 minutes per session (across all audiology staff present), while those at GP practices involved a mean of only 220 minutes (only community health clinics/other sites were lower, at 196 minutes). Another reason for suspecting that clinic size is important is that low patient numbers accounted for one-quarter of all reasons given by technicians for judging a clinic to be not worthwhile (see page 38).

Chapter 8

Patient access and satisfaction

The great majority of the evidence reviewed in this chapter comes from surveys of patients. Only in the study by Totten[58] were these hearing aid patients, and that was with respect to only one relevant issue: preference for clinic location. All other patient surveys were conducted in the context of specialist outpatient clinics. These patient groups may differ from hearing aid patients in a few general respects (for instance, in terms of mean age) but there is no reason to believe that this should prevent generalisation from the former to the latter with regard to findings related to patient access and satisfaction.

Distance and time travelled to clinics

Evidence from the review of literature

This issue was addressed in ten studies (*Table 28*),[12,41,43,45,49,50,58–62] all of which found that community patients, as a group, travelled either shorter distances or for less time, or both. As a rough average across all studies, the journeys made by community patients were about half as long (for both distance and time) as those made by patients attending main base clinics. However, this undoubtedly underestimates the savings made by those patients seen at community sites for the simple reason that the base samples are likely to include many patients for whom that location is their nearest provider. An attempt was made to control for this in the studies by Kerr and colleagues[62] and Cullis and colleagues[59] by comparing outreach patients with other 'country' patients who attended base clinics. In these studies the former patients' journeys were only between one-third and one-sixth the distance/time of the latter.

Patient costs

Evidence from the review of literature

In all seven studies in this area (*Table 29*),[43,49,50,59,60,62–64] travel costs were found to be lower for community patients, which is not surprising considering that the journeys were generally shorter (see above). In three studies the value to the patient of the time lost (e.g. through being unable to work) was also investigated and this was found to be lower for the community group in all three studies. The total costs for outreach patients varied across studies, representing between 20% and 75% of the costs for patients seen at base clinics. As in the case of distance/time travelled, however, this will underestimate the savings made by those patients seen in the community, for the same reasons, and both Kerr and colleagues[62] and Cullis and colleagues[59] reported average cost savings of around 75% when outreach patients were compared with other 'country' patients.

Patient waiting times

Evidence from the review of literature

The nine studies in this area[9,10,40,41,45,49,50,63,65,66] were a mixture of patient surveys, analyses of clinical records, and reports from service managers and doctors (*Table 30*). In eight studies the wait experienced by patients seen at community clinics was generally shorter than that for patients seen at base but, in most cases, not dramatically so, with the largest effect being a waiting time reduction for outreach patients, across five specialities, of a little over 50%.[49] However, those studies that provided results for individual specialities or community sites revealed considerable variation and, in some instances, the average waiting time for the outreach clinic was actually the longer of the two. Abery and colleagues,[49] for example, found the wait for one community rheumatology clinic to be more than three times as long as the wait for the equivalent base clinic (24 weeks compared with 7).

A factor that confounds waiting times is that of case-mix. In particular, many GPs with on-site clinics will still refer the most urgent cases to the base clinic because of the relative infrequency of outreach sessions. However, since urgent cases are seen more quickly than most, the effect of this would be to shorten, rather than lengthen, the calculated mean waiting time for base clinics. Hence this factor does not invalidate the overall finding of reduced waits for community patients.

TABLE 28 *Patient travel (distance/time)*

Quality rating	Study	Specialities	Findings	Evidence (outreach vs. main base)	Samples (E = estimated)
I	Cullis, *et al.*, 1981[59]	Paediatrics	At both Bath and Oxford, outreach patients had shorter journeys.	Mean distance to clinic: Bath, 4.4 vs. 23 miles Oxford, 4.3 vs. 28 miles	 850 vs. 572 145 vs. 109
II	Abery, *et al.*, 1997[49]	5, including ENT	Outreach patients had shorter, faster, journeys to clinic. Pattern similar for all 5 specialities.	Mean distance: all specialities, 7.0 vs. 19.0 miles** ENT alone, 7.6 vs. 15.0 miles** Mean time: all specialities, 29 vs. 66 minutes** ENT alone, 27 vs. 53 minutes**	 644 vs. 598 199 vs. 172 672 vs. 620 210 vs. 170
II	Bond, *et al.*, 1997[50]	6, including ENT	Outreach patients had shorter, faster journeys and were much more likely to rate the journey as 'very convenient'.	Mean distance, all specialties: 5.1 vs. 10.7 miles*** Mean time, all specialities: 29 vs. 65 minutes*** Journey 'very convenient': 73% vs. 31%**	 326 vs. 330 363 vs. 375 320E vs. 324E
II	Gillam, *et al.*, 1995[60]	Ophthalmology	Outreach patients had shorter, faster journeys.	Travelled > 5 miles: 1% vs. 22% Journey took ≤ 10 minutes: 74% vs. 19% Journey took > 50 minutes: 0% vs. 12%	157 vs. 150 157 vs. 150 157 vs. 150
II	Goble, *et al.*, 1979[61]	Physiotherapy	In both Devon and Oxfordshire, patients attending outreach clinics tended to have shorter journeys than those attending district general hospitals.	Travelled < 5 miles: Devon, 90% vs. 73%; Oxford, 77% vs. 70% Travelled > 10 miles: Devon, 2% vs. 4%; Oxford, 3% vs. 17%	 340 vs. 158 215 vs. 138 340 vs. 158 215 vs. 138
II	Kerr, *et al.*, 1976[62]	Paediatrics	Outreach patients had shorter, faster journeys than country patients seen in Bath.	Mean travel time: 32 vs. 108 minutes	148 vs. 62
III	Black, *et al.*, 1996;[63] Leese, 1996[12]	Dermatology Orthopaedics	Outreach patients had shorter travelling times. Difference significant only for dermatology. Authors stated that most patients (88/90) wanted to see specialist (i.e. not a junior) and were prepared to travel to hospital to do so.	Mean travel times: dermatology, 20 vs. 40 minutes** orthopaedics, 30 vs. 40 minutes (NS)	 40 vs. 48 41 vs. 28
III	Goldacre & Gatherer, 1977[43]	All main specialities	Community clinics saved an estimated 19 miles patient travel per outreach patient. About 50% of all outpatients were seen at clinics within 4 miles of their homes.	Based on outreach patients' home locations (at parish level), an estimated 35,797 patient-miles of travel were saved by use of community clinics (19.3 miles per booking)	1855E
III	Helliwell, 1996[45]	Rheumatology	Community clinic patients travelled shorter distances.	Mean distance to clinic: 1.6 vs. 5 miles*	 33 vs. 102
III	Walshe & Shapiro, 1995[41]	All specialities	Outreach patients had faster journeys and also spent much less time at the clinic.	Mean travel time (return): 23 vs. 52 minutes*** Mean time spent at clinic: 24 vs. 64 minutes***	 31E vs. 98E 31E vs. 98E

Note: significant differences between settings: * = p < *0.05;* ** = p < *0.01;* *** = p < *0.001*

One issue which none of the studies have adequately addressed is whether reduced waiting times in the community have been achieved only at the expense of longer waits (for either outpatient appointments or surgery) at departmental bases.

Evidence from the project surveys

Results from the project surveys corroborate the above conclusions with respect to audiology. A sizeable proportion of heads of audiology services (35%) rated reduced waiting times a 'major advantage' of their outreach services,

TABLE 29 *Patient costs*

Quality rating	Study	Specialities	Findings	Evidence (outreach vs. main base)	Samples
I	Cullis, *et al.*, 1981[59]	Paediatrics	At both Bath and Oxford, travel costs lower for outreach group. A smaller proportion of parents at community clinics lost work-time and/or pay in order to attend. Fewer outreach patients had to make special arrangements that incurred expenses, although numbers small for both groups.	Mean travel costs: Bath, £0.55 vs. £2.98 Oxford, £0.55 vs. £3.48 Mean cost of lost work-time: Bath, £1.40 vs. £3.40 Oxford, £1.76 vs. £5.18 Special arrangements made: Bath, 2% vs. 4% Oxford, 1% vs. 3.5%	 850 vs. 572 145 vs. 109 850 vs. 572 145 vs. 109 850 vs. 572 145 vs. 109
II	Abery, *et al.*, 1997[49]	5, including ENT	Travel costs significantly lower for outreach group. This also true for ENT patients alone.	Mean travel costs: all, £2.85 vs. £4.54** ENT, £2.75 vs. £4.41**	 262 vs. 417 91 vs. 124
II	Bond, *et al.*, 1997[50]	6, including ENT	Both travel costs and opportunity costs (e.g. lost work-time) significantly lower for outreach patients. Costs of care for dependants at home small for both groups and not significantly different.	Mean travel costs: all, £1.89 vs. £3.96** ENT, £2.85 vs. £4.67** Opportunity costs: all, £2.02 vs. £4.14** ENT, £1.86 vs. £4.12** Care for dependents: all, £0.08 vs. 0.017 (NS) ENT, £0.06 vs. £0.09 (NS)	 326 vs. 330 75 vs. 61 368 vs. 369 85 vs. 67 382 vs. 385 89 vs. 69
II	Kerr, *et al.*, 1976[62]	Paediatrics	Travel costs lower for outreach group. The value of time lost also lower.	Mean travel costs: £0.25 vs. £1.54 Value of time lost: £0.41 vs. £1.33	 148 vs. 62 148 vs. 62
III	Black, *et al.*, 1996[63]; Gosden, *et al.*, 1997[64]	Dermatology Orthopaedics	Total patient costs (travel + value of time + care for dependants) lower for both dermatology and orthopaedic community clinics but differences not significant. Equal small numbers of dermatology patients in both settings found cost a problem, but no ortho-paedic outreach patients found it a problem compared with 12% of orthopaedic main base patients.	Total mean costs: dermatology, £4.49 vs. £5.51 (NS) orthopaedics, £4.98 vs. £8.86 (NS) Found cost a problem: dermatology, 8% vs. 7% (NS) orthopaedics, 0% vs. 12% (NS)	 40 vs. 48 41 vs. 28 40 vs. 48 41 vs. 28
III	Gillam, *et al.*, 1995[60]	Ophthalmology	Fewer community clinic patients incurred travel costs.	Incurred travel costs: 8.3% vs. 33%	157 vs. 150
III	Goldacre & Gatherer, 1977[43]	All	Outreach patients saved an estimated average of £1.93 per appointment, compared with attending main base.	On basis of travelling speed of 20 miles per hour, outreach clinics saved patients a total of 1790 hours travel-time, or £3580 (at £0.10 per mile, equivalent to £1.93 per attendance).	1855

Note: significant differences between settings: * = p < *0.05;* ** = p < *0.01;* *** = p < *0.001*

while 22% reported no benefit, and 9% indicated that waiting times were generally longer at community sites. The picture obtained from audiology technicians was similar when rating individual sites and, although statistically significant ($p < 0.001$), not quite so strongly in favour of the community: 35% judged waiting times to be better (i.e. shorter) than at base, 48% the same, and 19% worse. Only a few clinics were rated 'much better' or 'much worse' (the full data are presented in *Table 20*).

The differences between types of community setting in this respect were significant ($p < 0.001$), the main difference being between peripheral hospitals and all other community settings. Peripheral hospitals were, on the whole, said to be no different to the base in terms of waiting times, while for all other settings more individual sites were considered better rather than worse: GP practices, 48% better versus 32% worse; community health clinics, 51% versus 10%; non-GP clinics, 41% versus 7%.

TABLE 30 *Patient waiting times*

Quality rating	Study	Specialities	Findings	Evidence (outreach vs. main base)	Samples (E = estimated)
I	Abery, *et al*., 1997[49]	5, including ENT	Outreach patients as a whole had significantly shorter waiting times. The pattern was the same for all specialities except gynaecology, for which waiting times were still shorter at outreach clinics but not by very much. Two (from ten) individual outreach clinics had longer waiting times than the main base. For one rheumatology clinic it was much longer.	Mean waiting time: All specialities, 5.6 vs. 12.4 weeks** ENT alone, 7.2 vs. 10.9 weeks** Gynaecology, 5.3 vs. 6.9 weeks* For ten outreach clinics, average waiting times reported by practice managers are compared with those reported by hospital; in six cases, outreach was shorter, in two the same, and in two longer. For one rheumatology outreach clinic waiting time was 24 weeks vs. 7 for main base clinic.	646 vs. 524 198 vs. 150 190 vs. 167
I	Bond, *et al*., 1997[50]	6, including ENT	Outreach patients as a whole had a significantly slightly shorter waiting times. However, per speciality the difference was only significant for ENT.	Mean waiting time: All specialities, 6.4 vs. 8.2 weeks* ENT alone, 8.2 vs. 14.1 weeks* ENT only speciality for which difference was significant.	367 vs. 312 81 vs. 57
I	Walker, 1991[65]	Physiotherapy	Outreach patients had shorter waiting times.	Waiting time ≤ 3 days: 53% vs. 32%*** Waiting time > 14 days: 11% vs. 26%	911 vs. 1352 911 vs. 1352
II	Black, *et al*., 1996[63]	Dermatology Orthopaedics	Dermatology outreach patients had significantly shorter waiting times. Waiting times for orthopaedic outreach patients were also shorter but not significantly so.	Median waiting time: dermatology, 69 vs. 97 days** orthopaedics, 62 vs. 49 days (NS)	40 vs. 48 41 vs. 28
II	Bryden, 1970[66]	All	Very little difference in waiting times at outreach clinics, at the specialists' main base, or at other hospitals to which the GPs at the outreach site referred.	Mean waiting time: 21 vs. 20 days Other hospitals: 24 days	194 vs. 86 422
II	Perrett, 1997[40]	Gynaecology Orthopaedics General surgery	Higher percentage of outreach patients seen within 3 months. Waiting times for GPFHs without outreach clinics were as long as for non-fundholders. Indicates that location rather than fundholding status is the important factor.	Waiting time < 3 months: 97% vs. 88%** (GPFHs without in-house clinics: 85%)	2706 vs. 49,337 5277
III	Helliwell, 1996[45]	Rheumatology	Slightly more community patients waited less than 1 month but there was little difference in waiting times longer than 3 months.	Waiting time < 1 month: 47% vs. 37% (NS) Waiting time > 3 months: 28% vs. 25% (NS)	33 vs. 102 33 vs. 102
III	Bailey, *et al*., 1994[9,10]	11, including ENT	Outreach clinic waiting times shorter at 66% of clinics, or 82% excluding psychiatry. Percentage with longer waiting times not reported. A much higher percentage of GPFHs had short in-house clinic waits compared with non-fundholders.	Specialists and GPs reported 66% (61/92) of community clinic waiting times shorter than hospital clinics. Effect is larger when psychiatry excluded (82%; 53/65). Difference more marked ($p < 0.05$) for fund-holding practices (79%; 45/57) than for non-fundholding practices (46%; 16/35).	92 (outreach clinics)
III	Walshe & Shapiro, 1995[41]	8, including ENT	Little difference overall in waiting times, although main base waiting times considered to be underestimates. Outreach waiting times shorter for five specialities but longer for three.	Mean waiting time (unweighted mean across eight specialities): 8.5 vs. 9.8 weeks ENT only: 7.1 vs. 9.6 weeks Authors note that inclusion of non-GP referrals (e.g. from A&E) may be suppressing main base waiting times for GPs' patients.	1368E vs. 15971E 385 vs. 1847

Note: significant differences between settings: * = p < *0.05;* ** = p < *0.01;* *** = p < *0.001*

It is informative to consider just what proportion of hearing aid patients might be experiencing reduced waiting times as a result of being seen in the community. According to the technicians, the numbers of peripheral hospitals with shorter or longer waiting times balanced out quite equally, while across all other community settings combined, waiting times were shorter at 47% of sites and longer at 18%. These settings were previously estimated to account for around 13% of all adult hearing aid work (see chapter 5) and hence, on this basis, a rough estimate can be made that, nationally, 6% of all adult hearing aid patients experience shorter waiting times as a result of being seen at clinics in primary care and at other non-hospital sites, while another 2% have longer waiting times.

Delay at clinic prior to being seen

Evidence from the review of literature

Mean delays were consistently shorter for patients seen at community clinics in five of the six studies which provided evidence (*Table 31*).[12,45,49,50,60,65] In the remaining study,[63] community orthopaedic outpatients experienced significantly shorter delays, while community dermatology outpatients experienced significantly longer ones. The balance of evidence here clearly favours outreach clinics. In the two largest studies,[49,50] the mean delay in the community was consistently about half the delay at base sites.

Patient satisfaction

Evidence from the review of literature

Nine studies provided comparative evidence regarding patient satisfaction at community and main hospital settings (*Table 32*).[12,41,42,45,49,50,59,63,65,67] In most studies, patient satisfaction was at very high levels at both types of location (more than 80% or 90%) and the differences, even when statistically significant, were not large. In only one study[67] was there a suggestion that community patients might, as a group, be less satisfied but this was not a big effect and the samples were small. Concentrating on the two higher quality, larger, studies by Abery[49] and Bond,[50] not only were the outreach samples in both of these significantly more satisfied on a range of measures but also the proportions of patients in both studies in either setting who gave a negative rating to any part of the service were consistently small.

TABLE 31 *Delay at clinic before being seen*

Quality rating	Study	Specialities	Findings	Evidence (outreach vs. main base)	Samples
I	Abery, *et al.*, 1997[49]	5, including ENT	Outreach patients had significantly shorter delays in all specialities bar one. They were also more likely to experience no delay.	Mean delay: all, 14.4 vs. 29.9 minutes** ENT alone, 20.9 vs. 34.5 minutes**	 678 vs. 621 215 vs. 171
I	Bond, *et al.*, 1997[50]	6, including ENT	Outreach patients had significantly shorter delays in all specialities.	Mean delay: all, 18.7 vs. 36.7 minutes*** ENT alone, 14.6 vs. 28.1 minutes***	 373 vs. 377 87 vs. 69
II	Black, *et al.*, 1996[63] Leese, 1996[12]	Dermatology Orthopaedics	Dermatology outreach patients experienced significantly longer delays. Conversely, orthopaedic outreach patients had significantly shorter delays.	Median delay: dermatology, 30 vs. 15 minutes*** orthopaedics, 10 vs. 25 minutes***	 40 vs. 48 41 vs. 28
II	Gillam, *et al.*, 1995[60]	Ophthalmology	Fewer outreach patients experienced delays of over 30 minutes. All outreach patients seen within 1 hour, some main base patients waited up to 2.5 hours.	Delay > 30 mins: 5% vs. 14%	157 vs. 150
II	Walker, 1991[65]	Physiotherapy	Large majorities of both groups were seen within 5 minutes of appointment time. However, proportion was slightly higher for community clinic patients.	Delay ≤ 5 minutes: 95% vs. 81%	43 vs. 43
III	Helliwell, 1996[45]	Rheumatology	Higher proportion of community clinic patients seen at appointment time.	Seen on time: 94% vs. 71%*	33 vs. 102

Note: significant differences between settings: * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

TABLE 32 *Patient satisfaction*

Quality rating	Study	Specialities	Findings	Samples
I	Abery, *et al*., 1997[49]	5, including ENT	From a list of 15 items related to satisfaction with non-clinical items, outreach patients were significantly more satisfied with 14 ($p < 0.01$ in all cases). Only item not significant was advocacy facilities; however, samples were small (22 vs. 28), as only relevant to a few patients. Although 14 items reached significance, very few patients in either setting gave ratings of 'poor' on any item. ENT patients were significantly more satisfied on four items and more satisfied, but not significantly, on all others. High percentages of both groups said they had got what they wanted from the consultation (87% vs. 80%); difference was significant ($p < 0.001$). For ENT there was no difference (79% vs. 79%, NS). High percentages of both groups also considered visit worthwhile (91% vs. 86%, $p < 0.001$). For ENT, percentage figures were very close (88% vs. 86%, NS).	22–99 vs. 28–637 3–230 vs. 15–179 671 vs. 620 207 vs. 179 436 vs. 391 146 vs. 99
I	Bond, *et al*., 1997[50]	6, including ENT	From a list of 15 items related to satisfaction with non-clinical aspects of care, outreach patients expressed significantly higher levels of satisfaction on 14 ($p < 0.01$ (13 cases), $p < 0.05$ (1 case)). The item not significant was ease of making or changing appointment. However, in the main, ratings of 'poor' were low (less than 10%) at both locations and satisfaction with 'overall visit' was rated 'poor' by just 3% of outreach and 3% of main base patients. ENT patients were significantly more satisfied on 9 items and they were higher, but not significantly so, on all others. High proportions of both groups said they had 'got what they wanted from the consultation' (85% vs. 81%) and considered the visit worthwhile (88% vs. 84%). These results were the same when broken down by new and follow-up patients. Results for ENT alone were not reported.	29–384 vs. 23–393 367 vs. 372 5–88 vs. 5–72 365 vs. 381 229 vs. 191
I	Ferguson, *et al*., 1992[42]	Psychiatry	No significant differences were found between outreach and main base samples on 13 from 14 items relating to satisfaction with aspects of service. The only significant difference favoured outreach ('good communication between hospital team and general practice'; 55% vs. 37%, $p < 0.01$). High proportions of both groups were 'satisfied with service overall' (80% vs. 78%). However, a significantly higher proportion of hospital patients refused to take part in the study ($p < 0.05$); the authors believe this is an indication that they were less satisfied with the service.	112 vs. 90
II	Black, *et al*., 1996[63] Leese, 1996[12]	Dermatology Orthopaedics	From a list of 13 satisfaction items, dermatology patients seen at community clinics were significantly more satisfied than patients seen at the base on one – specialist explanation of treatment, $p < 0.05$ – and less satisfied on one – delay before being seen, $p < 0.001$. Orthopaedic outreach patients were more satisfied on three – clinic location, $p = 0.01$; length of consultation, $p < 0.01$; delay before being seen, $p < 0.01$) – and less satisfied on none.	Not reported
II	Walker, 1991[65]	Physiotherapy	All patients at both locations replied 'yes' to the following: made welcome by physiotherapist; at ease discussing problem; personal privacy respected; felt confidence in physiotherapist; physiotherapist understood their problem. In both groups nearly all considered they had received sufficient attention.	43 vs. 43
III	Worsfold, *et al*., 1996[67]	Physiotherapy	Slightly fewer outreach patients were 'very satisfied' with service (51% vs. 61%) but none were 'dissatisfied', compared with 2% of main base patients (2 patients).	54 vs. 76
III	Cullis, *et al*., 1981[59]	Paediatrics	Very large majorities of both groups were 'pleased' or 'very pleased' with medical attention available (more than 90% in all cases).	97 vs. 71
III	Helliwell, 1996[45]	Rheumatology	More outreach patients found their questions 'always answered' (82% vs. 52%, $p < 0.05$) and more found doctor 'very understanding' (85% vs. 53%, $p < 0.05$). However, all community patients saw a consultant, whereas some base patients did not – but the result holds even when controlled for this. Result could be biased by lower questionnaire return rate at main base but author considers not.	33 vs. 102
III	Walshe & Shapiro, 1995[41]	All specialities	In response to open-ended question, outreach patients made a much higher proportion of positive comments about service (93% 'positive' vs. 42%). Outreach patient comments tended to focus on advantages of outreach clinic compared with past experiences of main base clinics. Main base patient comments tended to be positive about service received, atmosphere and staff but negative about waiting times, delays, facilities and lack of continuity of care. Face-to-face interviews with 16 patients supported these conclusions.	15 vs. 40 comments

Note: significant differences between settings: * = p < *0.05;* ** = p < *0.01;* *** = p < *0.001*

Levels of patient satisfaction are quite likely to be confounded with the grade of staff seen, as patients in general want to be seen by a consultant, and not one of his or her juniors (see, for example, Black, *et al.*, 1996[63]). Most specialist outreach clinics are conducted by a consultant working alone, whereas many patients attending main base clinics will be seen by less senior staff; it is possible that this factor alone could account for much of the difference in satisfaction levels between settings.

Evidence from the project surveys

Corroborating evidence for the above comes from the Community Clinic Survey. However, the form of evidence is rather weak, consisting as it does of technicians' perceptions of levels of patient satisfaction rather than reports from patients themselves. For 22% of community sites, audiology technicians rated patient satisfaction to be better than at the departmental base, while it was rated worse for just 6% ($p < 0.001$; see *Table 20* for full results). However, despite the result being significant, nearly three-quarters of all sites were thought to be no different to base and very few indeed were rated 'much better' or 'much worse' (4% in all); all of which supports the conclusion from the literature review that setting differences in terms of patient satisfaction, while present, are not large.

Patient preference

Evidence from the review of literature

Patient preferences were investigated in 14 studies with regard to clinic location (*Table 33*).[12,41,47–50,55,58–60,62,63,65,68–70] Of these, much the same type of methodology was used in 13 studies – that of asking patients attending community and/or central clinics to indicate their preference (if they have one) between the two types of setting. In the remaining study, by Totten,[58] a quite different method of sampling was used. This was also the only study specifically covering audiology and its results are also, on the surface, quite different from those that emerged from the other studies. For these reasons, Totten's study is discussed separately, after the general findings from the other 13 studies have been examined.

In 11 studies the preferences of patients attending community sites were canvassed and, in all cases, the largest proportion of patients expressed a preference for that site – in most cases well over 70%. Conversely, only small minorities of outreach patients stated a preference for main base clinics, never more than 11% in any study.

Eight studies provided evidence about the preferences of patients attending main hospital clinics. Preferences among these tended to be more evenly divided between hospital and community settings, with good proportions (20–35%) saying they had no preference. In three of the eight studies, the largest proportion of patients preferred base clinics (i.e. the environment in which the interviews took place) but in the other five the biggest preference was for outreach sites. Given that for many patients attending the main base, this site likely to be the most convenient or closest location for them, it is likely that those for whom a community site would be more convenient make up the bulk of those patients expressing a preference for outreach clinics.

The research by Bond and colleagues[50] included a follow-up of patients 6 months after the initial interview. This indicated that preferences among both the community and base samples had remained fairly stable over the intervening period.

In two of the studies at least some of the community clinics were based at peripheral hospitals;[59,62] in all the rest the locations were in primary care. Levels of patient preference for the peripheral hospital sites were at least as high as the levels of preference for primary care. However, the same hospital sites (around Bath) were involved in both studies and the result needs to be duplicated elsewhere.

The study by Totten[58] was based on samples of NHS hearing aid 'users' and 'non-users'. The user sample was randomly selected from the records of a hospital audiology department from patients fitted in that department. The 'non-users' were a random selection of patients aged 60 years or more from the register of a large GP health centre. For convenience these are called 'non-users' even though a small percentage (Totten estimated 7%) were likely to have possessed aids. The results from this study appear at first sight to contradict all the other studies of preference, in that large proportions of both users and non-users expressed a preference for the service at the main base, 81% and 60%, respectively.

The most likely explanation for this finding, however, lies in the wording of the question that Totten used.[58] This presented summaries of the service (with respect to hearing testing and aid fitting) in each of three types of setting: district

TABLE 33 *Preference for clinic location*

Quality rating	Study	Specialities	Type of community setting	Findings	Evidence (outreach vs. main base)	Samples (outreach vs. main base)
I	Cullis, *et al.*, 1981[59]	Paediatrics	Bath: peripheral hospitals Oxford: mix of health centres and peripheral hospitals	Community clinic patients at both Bath and Oxford showed strong preference for community sites. Country patients seen at main base clinics in both cities quite evenly split in their preferences.	Bath: prefer outreach, 80% vs. 39% prefer main base, 7% vs. 42% no preference, 13% vs. 19% Oxford: prefer outreach, 77% vs. 41% prefer main base, 11% vs. 45% No preference, 13% vs. 14%	850 vs. 572 145 vs. 109
II	Abery, *et al.*, 1997[49]	5, including ENT	Primary care	High proportion of outreach patients preferred that setting. Main base patients more evenly split but slightly more preferred hospital to community site. Results for ENT alone very similar.	All specialities: prefer GP, 76% vs. 25% prefer hospital, 5% vs. 40% no preference, 19% vs. 35% ENT alone: prefer GP, 72% vs. 29% prefer hospital, 6% vs. 37% no preference, 22% vs. 34%	503 vs. 492 156 vs. 140
II	Bond, *et al.*, 1997[50]	6, including ENT	Primary care	Two-thirds of outreach patients preferred that setting, whereas hospital clinic patients were quite evenly split. Question on preference was asked again at 6-month follow-up and results show that preferences remained stable over time. Another indication of preference for outreach is that among those patients not offered choice of location, 70% main base patients would have liked a choice compared with only 45% outreach patients.	Initial questions: prefer GP, 67% vs. 37% prefer hospital, 7% vs. 33% no preference, 26% vs. 30% 6-month follow-up: prefer GP, 77% vs. 33% prefer hospital, 7% vs. 36% no preference 16% vs. 31%	436 vs. 462 244 vs. 238
II	Gillam, *et al.*, 1995[60]	Ophthal-mology	Primary care	Of 66 outreach patients previously seen at hospital, almost all expressed preference for outreach site. Reasons given: ease of access; comfortable surroundings; familiarity of staff.	Prefer outreach, 97% prefer main base, ? no preference, ?	66 outreach
II	Kerr, *et al.*, 1976[62]	Paediatrics	Peripheral hospitals	High proportions of both groups preferred to be seen at outreach locations. Very few preferred Bath. Reasons given for preferring outreach mainly expense and time saved. Main reason for preferring Bath was shopping.	Prefer outreach, 93% vs. 77% prefer main base, 3% vs. 5% no preference, 4% vs. 18%	138 vs. 56
II	Strathdee, *et al.*, 1990[68]	Psychiatry	Primary care	Very high proportion of outreach patients stated preference for that setting. Main reasons were accessibility, less stigma and that their own doctor remained in control of their treatment. 40% of main base patients would have preferred to be seen at local GPs for same reasons; these slightly outnumbered those who preferred to be seen at hospital (mainly for reasons of confidentiality and specialist control of their care).	Prefer outreach, 83% vs. 40% prefer main base, 0% vs. 31% no preference, 7% vs. 29%	63 vs. 48
II	Tyrer, 1984[47] Tyrer, *et al.*, 1984[48]	Psychiatry	Primary care	Large majority of sample of 100 consecutive patients from community sites (most seen at outreach but some emergency patients seen at main base) preferred to come to GP site. Only a few preferred hospital. Main reasons given for preferring outreach: convenience 85%; less formal 51%; less stigma 51%; improved understanding between own GP and psychiatrist 42%. Main reasons given for preferring hospital: convenience 60%; better organised 40%.	Prefer outreach, 73% prefer main base, 5% no preference, 22%	100

continued

TABLE 33 contd *Preference for clinic location*

Quality rating	Study	Specialities	Type of community setting	Findings	Evidence (outreach vs. main base)	Samples (outreach vs. main base)
III	Black, *et al.*, 1996[63] Leese, 1996[12]	Dermatology Orthopaedics	Primary care	More outreach patients in both specialities expressed preference for being seen at outreach site. However, quite large proportions of both had no preference. All outreach patients bar two said they would have accepted hospital appointment if appointment at community site had not been available.	Dermatology: prefer outreach, 49% prefer main base, 7% no preference 44% Orthopaedics: prefer outreach, 66% prefer main base, 2% no preference, 32%	4544 (outreach)
III	Spencer, 1993[55]	Paediatrics	Primary care	Most of sample of parents attending main base clinics expressed preference for outreach clinics. Reasons given: 56%, convenience of location; 21%, familiar surroundings; 21%, better communication with GP. Of 73 reasons given for preferring main base, 33% were for convenience and another 33% said that it was best place for child to be seen.	Prefer outreach, 51% prefer main base, 25% no preference, 24%	106 (main base)
III	Walker, 1991[65]	Physiotherapy	Primary care	Large majority of outreach patients expressed preference for that setting, while small majority of main base patients preferred hospital.	Prefer GP, 81% vs. 19% prefer hospital, 0% vs. 53% no preference, 19% vs. 28%	43 vs. 43
III	Totten, 1992[58]	Audiology	Primary care	High proportions of both hearing aid users (all fitted at main base) and non-users (no experience of services, average of 12 miles from main base) expressed preference to be seen at main base. However, wording of question implied that health centre-based or domiciliary visit-based service would be poorer. Car ownership had large influence: 64% of those with cars preferred main base, whereas 61% without cars preferred health centre.	Hearing aid users (main base): prefer health centre, 15% prefer main base, 81% prefer domiciliary visit, 4% Non-users (outreach): prefer health centre, 36% prefer main base, 60% prefer domiciliary visit, 4%	80 342
III	Walshe & Shapiro, 1995[41]	All specialities	Primary care	Nearly all outreach patients preferred community site and two-thirds of main base patients would have preferred to be seen at outreach clinic. Patients not given option of stating 'no preference'.	Prefer outreach, 97% vs. 68% prefer main base, 3% vs. 32% no preference, N/A	31 vs. 98
IV	Cain, *et al.*, 1976[69]	Paediatrics	Primary care	Large majority of parents preferred their child to be seen at community clinic (22/30 had experience of both outreach and main base clinics). Main reason given was efficiency of appointment system.	Prefer outreach, 97% prefer main base, ? no preference, ?	30 (outreach)
IV	Hindler, 1995[70]	Psychiatry	Primary care	Large majority of outreach patients preferred to be seen at community site. However, patients were interviewed by consulting specialist, which may have introduced bias.	Prefer outreach, 94% prefer main base, 4% no preference, 2%	51 (outreach)

hospital, health centre and the patient's own home. The summary for the district hospital service included the phrase "…there are extensive test facilities; highly trained staff are available if needed; an ENT specialist is available for consultation if appropriate", while the summary for the health centre stated "…range of test facilities is more limited; more junior trained staff would carry out testing and fitting; your own GP would provide any medical support". This gives a clear impression that the health centre service is likely to be the poorer of the two. The suggestion that this accounts for the difference between Totten's study and the rest is further strengthened when the summary for a home-based service is considered: "…Range of test facilities is very limited;

TABLE 34 *Accompanying persons*

Quality rating	Study	Specialities	Findings	Evidence (outreach vs. main base)	Samples (E = estimated)
I	Cullis, *et al.*, 1981[59]	Paediatrics	At both centres, smaller percentages of attendances at community sites included both parents. This has implications for time and cost savings.	Both parents attended: Bath: 18% vs. 39% Oxford: 18% vs. 43%	 850 vs. 572 145 vs. 109
II	Abery, *et al.*, 1997[49]	5, including ENT	Fewer outreach patients were accompanied to clinics. The difference was significant. Community clinic patients were significantly more likely to report that any accompanying person had taken time off work to do so.	Accompanied to clinic: 31% vs. 47%** Companion had to take time off work: 14% vs. 23%*	 687 vs. 648 208 vs. 303
II	Bond, *et al.*, 1997[50]	6, including ENT	Fewer outreach patients were accompanied to clinic. The difference was significant. Outreach patients were significantly less likely to report that any accompanying person had taken time off work to do so.	Accompanied to clinic: 33% vs. 46%* Companion had to take time off work: 8% vs. 17%*	 373E vs. 389 119E vs. 176E
II	Gillam, *et al.*, 1995[60]	Ophthalmology	Fewer community clinic patients required an escort for visits.	Required escort: 26% vs. 45%	157 vs. 150
II	Kerr, *et al.*, 1976[62]	Paediatrics	A smaller mean number of adults came to each appointment at community site and both groups considered that fewer adults would attend outreach appointments. This has implications for time and cost savings.	Mean number of adults attending: 1.2 vs. 1.6	148 vs. 62
III	Walshe & Shapiro, 1995[41]	All specialities	Equal numbers of outreach and main base patients were accompanied to clinic.	Accompanied to clinic: 53% vs. 53% (NS)	 31E vs. 98E

Note: significant differences between settings: * = p < *0.05;* ** = p < *0.01;* *** = p < *0.001*

more junior staff would carry out testing and fitting; no medical person would be involved". This implies an even poorer level of service than at the health centre and only 4% of either users or non-users selected this option.

To the best of our knowledge, none of the other studies provided respondents with summary descriptions (none of the authors report doing so) and it therefore seems likely that the patients in these studies thought that they were being asked to choose between services of equivalent quality, although based in different locations.

If this interpretation of Totten's findings is correct, then the implication is that patients will generally prefer a community-based service unless they perceive it to be a substantially poorer one, in which case they largely opt for main base provision.

Totten's research[58] also suggested that ease of travelling to the site was a big factor in determining preferences. Out of both samples taken together, 64% of patients who owned cars chose the hospital service, whereas 61% of those without cars opted for the health centre.

It is unfortunate that in none of the other studies was this or any other factor which might influence preferences considered.

Accompanying persons

Evidence from the review of literature

A potential 'knock-on' benefit of community-based services can be a reduction in the need for relatives or friends to accompany the patient to the clinic (e.g. in order to provide transport). This issue was considered in six studies (*Table 34*)[41,49,50,59,60,62] and, in five of these, substantially lower numbers of patients seen at community clinics attended with companions, in some cases less than half the number attending base clinics. The only study in which no difference was found[41] was based on a much smaller sample size.

In two studies, consideration was given to whether companions took time off work in order to attend.[49,50] In both of these a significant reduction was found at community clinics, of the order of about 50% of the proportion for the main base site ($p < 0.05$).

Chapter 9

The impact of community clinics on referral patterns

GP referrals to community clinics

Evidence from the review of literature

Even though a GP practice, say, may house a community clinic on its premises, the practice GPs may not refer all of the patients, requiring referral, to that clinic. There are several reasons why the GPs may still refer some patients to clinics at a main hospital. For example, urgent cases which cannot wait until the next outreach session; patients requiring tests that can only be done at hospital; patients to see a named specialist or a sub-specialist; or because there were no available slots at the community clinic.

Nine studies provide evidence pertinent to this issue (*Table 35*).[40,43,50,60,66,68,71–73] For the purposes of this review, the results of these studies are expressed in terms of the percentage of patients from particular GP practices or areas seen at community sites, out of all patients referred by those GPs or from that area. Seven of the studies produced remarkably consistent results, with about 40–60% of patients being referred to community clinics (virtually all the rest were referred to main hospitals).

Of the two remaining studies, one found that 75% of ophthalmology patients, across 17 GP practices, were being referred to in-house clinics;[60] however, the clinics in this study acted largely as screens for main base outpatient clinics, which may help to explain the higher rate. In the other study, 95% of psychiatry patients from two GP practices were seen at clinics in those practices.[68] There is no obvious reason why this result should be so different from the rest. However, the base clinic in this study was at a psychiatric hospital and it has been reported in several studies that many patients dislike the stigma of being referred to such a site (see, for example, Tyrer, 1984[47]). Brown and colleagues[71] also examined psychiatric outreach clinics and found 49% of patients were being referred to these. Unfortunately, the authors did not report whether the main hospital in the study was a specialist psychiatric one or not.

In two studies, data specific to ENT outreach clinics were presented;[50,66] both studies provided a very similar figure for the proportion of referrals to community sites, 60% and 59%, respectively, despite 27 years having elapsed between the two studies.

The volume of GP referrals to main base clinics

Evidence from the review of literature

In only four studies were results reported relating to the impact that community clinics (all in primary care) have on the volume of GP referrals to hospital outpatient clinics (*Table 36*)[49,50,54,60] and, in the main, the evidence is not high quality, being principally in the form of professional opinion. Two of the studies, however, do provide some 'harder' data, based on records of clinical activity. Abery and colleagues[49] reported numbers of referrals to base clinics across ten GP practices, for 6 months prior to the inception of outreach clinics in each practice and for 6 months after. Referrals to the base from these practices were down by 59% in the latter period. Gillam and colleagues[60] reported annual referral rates to main hospitals for 17 GP practices with in-house clinics and for 17 matched controls: the rate for the former group was only about 40% of the rate for the latter.

In all, the balance of evidence from three of the four studies is that outreach does reduce referrals to base clinics, while the fourth study is suggestive of a decrease but is too small to be certain.

Although GPs with ready access to outreach services do appear, on the evidence, to reduce the numbers of referrals they make to base clinics, it has been shown previously that outreach in primary care probably accounts for no more than 5–10% of all referrals, in either the medical specialities or hearing services (chapter 5). Consequently, the overall impact that primary care clinics have on workload at the hospital base must be very small.

TABLE 35 *Percentages of patients from community sites/areas seen at community clinics*

Quality rating	Study	Specialities	Findings	Samples
I	Gillam, *et al.*, 1995[60]	Ophthalmology	Referrals to ophthalmology outreach clinics as percentage of all ophthalmology referrals from those sites: 75% Figure may be large because service effectively acted as screen for main base clinics.	1742
I	Perrett, 1997[40]	Gynaecology Orthopaedics General surgery	First referrals, across three specialities, to in-house GP clinics as percentage of all referrals (in those specialities) from those GPs: 40% Maximum for any one outreach clinic: 61%	52,000
II	Bond, *et al.*, 1997[50]	6, including ENT	Referrals, across six specialities, to in-house GP clinics as percentage of all referrals (in those specialities) from those GPs: 43% For ENT alone: 60%	3473 563
II	Brown, *et al.*, 1988[71]	Psychiatry	Referrals to GP-based psychiatry clinics as percentage of all psychiatry referrals from those GPs: 49%	185
II	Bryden, 1970[66]	All	Referrals across six specialities to clinics at GP health centre as percentage of all referrals (in those specialities) from those GPs: 36% For ENT alone: 59% Author noted that clinics were still being developed during study period.	547 156
II	Goldacre & Gatherer, 1977[43]	All	Patients seen at outreach clinics as percentage of all referrals (in same specialities) from towns in which clinics were situated: 41%	2618
III	Gruer, 1971[72]	All	New referrals to peripheral hospital outreach clinics as percentage of all referrals (in same specialities?) from border area: 48%	Not given but large
III	Strathdee, *et al.*, 1990[68]	Psychiatry	Referrals to GP-based psychiatry clinics as percentage of all psychiatry referrals from those GPs: 95%	68
III	Hawkes & Drummond, 1997[73]	Orthopaedics	Referrals to GP-based orthopaedics clinic as percentage of all orthopaedic referrals from that practice: 49% Commonest reasons for referring elsewhere were so that patient could see same consultant as before; referral to sub-specialist; no available appointment slot at outreach clinic; because problem was urgent.	172

TABLE 36 *Referral rates to main departmental bases from community sites*

Quality rating	Study	Specialities	Findings	Samples
II	Abery, *et al.*, 1997[49]	5, including ENT	Referral rates to main base from community sites have decreased. Most GPs considered that outreach clinics had reduced their hospital outpatient referrals (56% vs. 25% who considered they had increased). Specialists were less certain: 33% reported decrease in hospital referrals from these practices, 6% an increase and 50% no change or change in case-mix only). For ten outreach clinics, practice managers reported rates of referral to comparable hospital outpatient clinics for 6 months before start of outreach clinic and for 6 months after. In all but one case, referrals to hospital had dropped substantially but in only two cases had they stopped entirely. Across all ten clinics, referrals in 6 months before establishment of clinics totalled 768, in 6 months after they totalled 312 – a drop of 59%.	18 (GPs) 18 (specialists) 10 (community sites)
II	Gillam, *et al.*, 1995[60]	Ophthalmology	Referral rates to main base from community sites have decreased. Annual referral rate to main base during study period from 17 GPs with outreach clinics was much lower than from 17 matched controls without outreach clinics (3.8 per 10,000 vs. 9.5).	17 GP sites with clinics 17 matched control sites
III	Bond, *et al.*, 1997[50]	6, including ENT	Referral rates to main base from community sites have decreased. 9/18 specialists (50%) reported that GP outreach clinic had reduced referrals from practice to hospital. None said they had increased.	18 (specialists)
IV	Corney, 1994[54]	10, including ENT	Weak evidence for a decrease in referrals. 3/9 GPFH practices with outreach clinics reported substantial decrease in referrals to main providers. This compares with 1/6 GPFH practices without outreach clinics (reason for reduction in this case was initiation of referrals to private hospital).	15 GPFH practices

None of the studies examined the impact of clinics at peripheral hospitals or at non-GP sites. With these, however, referral letters are usually still sent to the main hospital base but patient appointments are arranged to take place at the community sites. Even so, on the evidence available, many more patients are seen at peripheral hospitals than are seen in primary care, perhaps three times as many (chapter 5), and these sites must therefore be making quite a substantial contribution to reducing patient numbers at base sites.

Effect of community provision on the overall number of referrals

Evidence from the review of literature

The term 'overall referrals' is used to mean all referrals to base and community sites combined. There were nine studies in this area (*Table 37*).[40,43,44,47,48,60,74–77] One of these[77] was specifically concerned with a hearing aid clinic in a primary care setting. All of the studies based their findings on clinical activity data.

None of the studies was of particularly high quality. The best form of investigation in this context would utilise a pre–post design with a matched control group (and, ideally, randomisation of sites). Only one study came reasonably close to this description[74] but suffered from the service (physiotherapy) competing for the same referrals as rheumatology and orthopaedics. In two other studies,[44,47,48] pre–post with a comparison group (not matched controls) was used but both were limited in other respects. Of the remainder, in four studies referral rates to outreach sites were compared with those for a control or comparison group, while in two a pre–post comparison was conducted for the outreach sites alone.

Despite the general lack of quality, the studies demonstrated a high degree of consistency with respect to the results, with eight of the nine finding an increase in overall referrals in the context of community clinics. It is not possible from this evidence, however, to put any kind of reliable figure on what the overall effect size might be.

In the one study that failed to find an increase in overall referrals,[40] one of the larger, better, studies, the control group was not a matched one, except that both the control group and the outreach sites were GP fundholding practices. This study also produced the interesting finding that the overall referral rate for a large group of non-fundholding practices was substantially larger than for either group of fundholders. This raises the possibility that fundholding status in itself might have acted to reduce referral rates for these fundholding practices. Alternatively, there may have been patient-demographic differences between fundholders and non-fundholders which could account for the result.

Khunti and Carr's study[77] of a hearing aid clinic in a GP setting appeared to find a five-fold increase in referrals following introduction of the clinic. Unfortunately, however, this study is fundamentally flawed: in the pre-clinic period the average waiting time at the main hospital was very long, more than 1 year, which could well have depressed referrals during that period, but in the post-clinic period the hospital wait was down to 23 weeks and, in addition, a direct referral system was introduced simultaneously with the start of the clinic. Both these factors could have had a strong effect on referrals irrespective of the community location of the clinic.

All of the studies except one were concerned solely with clinics based in primary care and with referrals for GP practices at, or using, those sites. Consequently, these studies provide no information on the impact that clinics at peripheral hospitals, or other non-GP sites, might be having on referral rates within their localities. The exception was the study by Goldacre and Gatherer,[43] who looked at referrals on a geographical area basis, and found evidence for elevated rates of referrals to specialities with community clinics in these areas, compared with specialities with no clinics. Unfortunately, however, these authors provided no information about the types of community settings involved in their study. The evidence available, therefore, while supporting the hypothesis that clinics in primary care can increase referral rates, at least from GP practices utilising those sites, does not allow any conclusion to be drawn concerning clinics outside of the primary care context.

Evidence from the project surveys

In all, 37% of heads of audiology services with clinics based in GP practices rated 'improved willingness of GPs to refer' as a 'major benefit' of their outreach services, with only 21% considering that there was no benefit at all in this respect (see *Table 18*). This finding is corroborated by the answers to a second question on the survey form, which asked the heads of audiology services whether they considered that community provision

TABLE 37 *Overall referral rates (to all main base and community sites combined)*

Quality rating	Study	Specialities	Findings	Samples
II	Goldacre & Gatherer, 1977[43]	All	Outreach has increased overall referral rates. Overall referral rates of patients from ten towns were calculated separately for those specialities with outreach clinics in the towns (types of setting not reported) and for those without. Rate for specialities with outreach clinics was 26% above what would be expected on basis of county average for those specialities and town population; the rate for specialities without outreach clinics was just 4% above expected. Authors argue that 22% excess of bookings is largely a consequence of outreach clinics. Possibility that clinics have simply been located where need is greatest is not supported: authors argue that if this were so, clinics would be located where **numbers** of referrals (not rates) are higher; this is not the case.	2076 vs. 1652
II	Gillam, *et al*., 1995[60]	Ophthalmology	Outreach has increased overall referral rates. Overall referral rate over study period for 17 GP practices with in-house clinics was considerably higher than for 17 matched control GP practices (15.3 per 1000 vs. 9.5 per 1000).	1742 vs. 1187
II	O'Cathain, *et al*., 1995[74]	Physiotherapy	Outreach has greatly increased overall referral rates. Patient 'first contacts' with physiotherapy service increased far more for six GP sites with in-house clinics than for 35 GP control sites during first year of operation compared with previous year (79% increase compared with 12%), even though this includes only first 6 months of scheme. Over first 12 months of scheme, first-contact rates at community sites increased by 164% (no figure available for controls). However, there were significantly greater drops in referrals to hospital orthopaedic and rheumatology clinics for community sites than for controls, but these drops do not account for all of increase in use of physiotherapy service, nor did GPs increase their referrals to other hospitals. Thus, most of increase appears to be caused by participating GPs referring patients who previously would not have been referred.	1471 vs. 2454
II	Perrett, 1997[40]	Gynaecology Orthopaedics General surgery	No increase in overall referral rates. Also found that GPFHs refer fewer patients than non-fundholders. Overall referral rate of new patients in three specialities over 1 year across 11 GPFHs with in-house clinics was little different from that for 13 GPFH practices without (71.5 per 1000 vs. 76.6 per 1000). Both rates were considerably lower than rate for 95 non-fundholding GPs without in-house clinics (104.9).	52,000
III	Low & Pullen, 1988[44]	Psychiatry	Outreach has increased overall referral rates. Over study period, older established health centre clinics referral rates were static but newer clinics showed growth (figures are not reported). Authors suggest that new clinics attract previously unmet need but that once this has been met referrals begin to plateau.	12,741
III	Tyrer, 1984[47] Tyrer, *et al*., 1984[48]	Psychiatry	Outreach has increased overall referral rates. Overall referral rate of new episodes of care from GPs with in-house clinics increased by about 22% over 30-month period, whereas that for other sites changed little. However, all the increase at outreach sites was for re-referrals (known patients with new episodes of illness), and totally new referrals (no previous contact with psychiatry services) showed a decline. Author suggests that outreach clinics are attracting long-term chronic patients who had 'given up' on hospital service and that fall in new referrals indicates greater GP confidence in treating less serious cases without referral.	Sample size not reported
IV	McKechnie, *et al*., 1981[75]	Psychiatry	Weak evidence that outreach has increased overall referral rates. Over 2-year period, overall rate of referral of new patients was higher from GP practice with outreach clinic than from matched control practice without outreach clinic (3.2/1000 vs. 2.2/1000).	72/11,191 vs. 54/12,154
IV	Todd, 1978[76]	Psychiatry	Outreach has increased overall referral rates. Total referrals increased markedly in first year following establishment of outreach clinic in large health centre, then fell a little, but were still above pre-clinic level (figures not given). Author's opinion (consultant psychiatrist) was that clinic was meeting previously unmet need.	Sample size not reported
IV	Khunti & Carr, 1997[77]	Audiology	Increase in overall referral rates too confounded by other factors to say. Rate of referrals from one GP practice for 'deafness' increased five-fold following introduction of on-site audiology clinic. However, waiting time (for ENT appointment) in pre-clinic period was 64 weeks, which may have suppressed referral, whereas it was only 23 weeks in post-clinic period. In addition, outreach clinic simultaneously introduced direct referral scheme (with mean of 13 weeks wait).	10 vs. 53 (referrals)

had stimulated the demand for hearing aids (increased demand would be signalled by increased referrals from GPs). The responses to this question are examined in relation to the proportion of adult work that goes on in the community (see *Table 38*). Overall, 44% of heads of audiology services considered that demand had been stimulated, while 28% thought not; although there is evidence of a relationship with the extent of community provision, the effect is no more than moderate.

TABLE 38 *Heads of services' responses to question, 'Would you say your outreach services stimulate the demand for hearing aids?' by level of community provision (Provider Survey)*

Percentage of adult work conducted at community sites	Responses			Sample size
	'Yes'	'No'	'Not certain'	
1–25%	34%	37%	29%	73
25–50%	53%	22%	25%	49
More than 50%	54%	13%	33%	24
Overall	44%	28%	28%	146

Effect of community provision on patient use of after-care services

The provision of after-care forms a large and important part of the work of most audiology service providers. Some idea of the scale of this component can be gauged from the fact that, nationally, nearly two-thirds of the entire hearing aid budget is spent on existing users in the form of repairs and exchanges.[39]

The availability of effective after-care (in the form of repairs, aid exchanges, counselling, batteries, and so on) is critical to continued patient use of fitted hearing aids. However, a number of authors have discovered that even when provided, many patients do not avail themselves of centralised after-care services. Studies in which cohorts of new users have been followed-up some time subsequent to fitting have commonly found considerable proportions experiencing problems such as poorly adjusted aids, difficulties manipulating the hearing aid or mould, feedback, badly-fitting moulds, faulty tubing and even flat batteries – all problems that could have been solved, or at least alleviated, if the patients involved had availed themselves of after-care (a number of cited references provide examples of this[78–86]). Such difficulties can quite often result in some patients ceasing to use the hearing aid altogether.

The provision of after-care services at community sites local to aid users may possibly encourage a higher proportion of patients to seek help with problems. If this is so, then given the scale of this aspect of services, and the apparent high degree of unmet need for after-care, the resulting benefits could be very substantial indeed. In this context, it is worth highlighting an important difference between after-care services and the initial provision of a hearing aid: while aid provision requires referral by a GP, use of after-care services does not – patients are free to access them as and when they please. Thus, while the indications are that GPs with on-site clinics increase their total referrals (see above), it can be questioned whether community clinics based anywhere other than in GP practices affect referral rates. In the case of after-care, however, because patients access these directly, services based in any type of setting have the potential to attract patients from that locality, whether the location is a hospital, health centre, village hall, or even a mobile unit in a carpark.

Evidence from the review of literature

Although the audiology literature contains a number of investigations into the use and need for after-care, none of these have looked at utilisation in relationship to the community provision of such services. In addition, there are few parallels in the medical/surgical specialities to the kinds of after-care involved in hearing aid services and no studies have been found here that can be considered sufficiently relevant.

The review has found one piece of evidence, however, provided by the audiology department at South Tees NHS Trust (Clarke G; personal communication, 1997). This consists of departmental statistics on patient attendances for aid repairs at base and peripheral hospital clinics over a 10-year period (1979–88); the data are presented in *Figure 1*.

For the first 5 years of the period, all repairs were carried out at the main department but after this open-access repair sessions were instigated at three different peripheral hospitals, each with a different start date: November 1983, June 1985 and June 1986. The graph shows that, across the whole of the 10-year period, the numbers of repairs being performed at the main site remained quite constant and shows no signs of having dropped in response to the

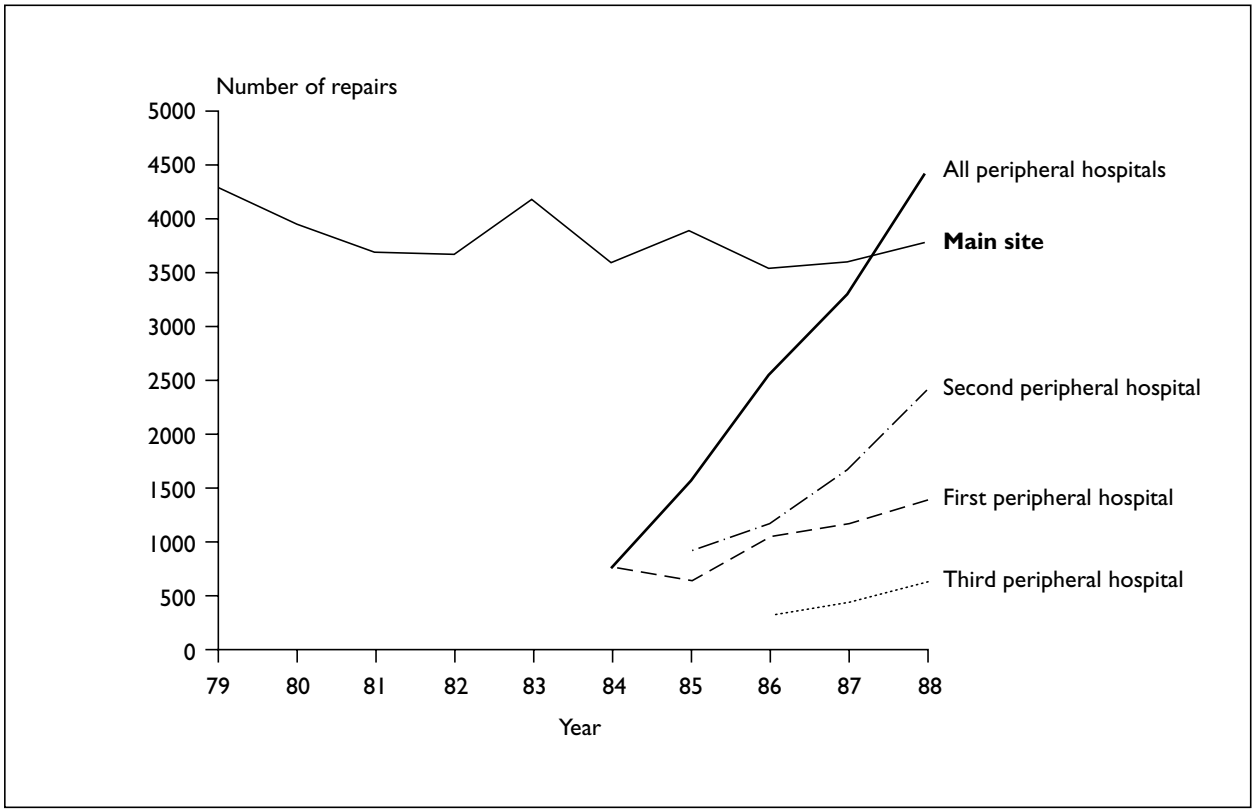


FIGURE 1 *Number of hearing aid repairs at base and peripheral sites, 1979–88 (North Riding Infirmary)*

quite dramatic growth in repairs at the community sites. This suggests that the community sessions were picking up the unmet need from their localities, rather than drawing patients away from the base. The evidence is not conclusive, however, because the 'pool' of patients possessing hearing aids and requiring repairs may have expanded over time, thus compensating for any movement on the part of individual patients away from base clinics. Also, the growth in volume of repairs at the community sites could be caused by patients attending more often, because of the convenience of location, rather than the result of more individual patients attending. However, senior audiology staff at the trust do not believe that the above offers an adequate explanation for the results.

In addition, at the end of 1989 (off the graph), the number of open-access repair sessions at the base itself was increased from three to ten per week, and within 6 months the rate of repair attendances had increased by 40%, much higher than would have been expected by the previous trend alone; the suggestion is that even these extra base sessions were attracting a previously unmet need for repairs.

Evidence from the project surveys

To explore the issue of whether community clinics help to address an unmet need for aftercare, the Provider Survey included a question as to whether community services encouraged previously fitted patients who may have given up with their hearing aids to get back in contact with the service. This question has been looked at in relation to the extent of outreach provision (see *Table 39*). Overall, 18% of heads of audiology considered that 'a lot' of people had been encouraged to get back in touch with the service; 58% 'some', and 16% 'none'. Clearly, a good majority, about three-quarters, did consider that their community services had a benefit in this respect. Although there is a suggestion of a relationship with the extent of community provision, it is not that strong.

Conclusion

The evidence presented above, from both the review of literature and the project surveys, is not sufficient in itself in terms of either quantity or quality to be conclusive. However, there is a clear suggestion of an effect and, given that this is an area of potentially great importance for services, better quality studies are recommended.

TABLE 39 *Heads of Services' responses to the question, 'Would you say your outreach services have encouraged people who had given up or were failing with their hearing aids to get back into contact with service?' by level of community provision*

Percentage of adult work conducted at community sites	Responses				Sample size
	'Yes, a lot of people'	'Yes, some people'	'No'	'Not certain'	
1–25%	15%	53%	21%	11%	73
25–50%	28%	56%	12%	4%	50
More than 50%	8%	75%	8%	8%	24
Overall	18%	58%	16%	8%	147

Chapter 10

Equity issues

A widespread concern in the context of outreach services, across all specialities, is the possible effects on equity of service access for all patients. This particularly applies to the case of outreach clinics based in GP fundholder settings, where the concern is that patients of fundholders may be receiving a faster, and possibly superior, service compared with patients attending clinics in hospital settings, perhaps even at the expense of a reduced quality of service to the latter. Many fear that this is contributing to the creation of a 'two-tier' health service.

One counter-argument to such concern, however, is the suggestion that centralised clinics are themselves a source of a different form of inequity, since patients who live a distance from a main hospital, or who have poor public or private transport facilities, can find it more difficult to utilise centralised services and, consequently, may not try. This issue was addressed in a recent systematic review,[87] in which the authors' conclusion was that the available evidence does indeed suggest a negative relationship between distance and service use, but that the studies are marred by too many confounding variables to be conclusive. If such a relationship is a reality, however, then community-based services have the potential to redress this form of inequity.

In chapter 5 it was estimated that, nationally, only 9% – or probably fewer – of all adult hearing aid patients are seen at clinics in primary care sites. Consequently, any equity 'problem' arising from primary care clinics, if there is one, currently affects only a small proportion of all service users. The primary care situation has also changed recently with the replacement of the GP fundholding system by broader-based primary care groups; the implications of this are as yet unclear.

Despite this, a review of the evidence concerning equity may still be worthwhile. Major expansion of provision in primary care might possibly be stimulated under the primary care group model, in which case the lessons that can be learned from the impact of fundholding on equity of service access may be of value.

Three factors pertaining to the equity issue are examined here:

- patient waiting times
- the degree to which GPs 'share' outreach clinics in primary care settings
- the social demographic characteristics of the patients served by community and main base clinics.

Waiting times

The evidence from the literature review and from the project surveys relating to waiting times was presented in chapter 8, from which it was concluded that waiting times were, on the whole, lower in community settings. However, in the case of audiology, the project surveys indicated that waits were only shorter outside of peripheral hospital settings. Roughly equal proportions of GP practices, community health clinics and non-GP sites had shorter waiting times and, as the great majority of GP practices were fundholders, this suggests that fundholder status is not an important variable here. There were some conflicting findings on this point between the studies in the literature review.

In terms of equity, the important issue is whether shorter waiting times in the community are achieved at the expense of longer waiting times for patients attending base clinics, as a result of reduced staff numbers at the centre. Such an effect might be expected, except where base clinics are working at the limit of their physical capacity, in which case it becomes more efficient for some staff to work off-base. Unfortunately, these issues were not addressed in any of the literature.

GP sharing of outreach clinics in primary care

Evidence from the review of literature

A disadvantage of clinics based in GP practices is that patient access to the clinic may be restricted in some instances to only the patients of GPs at the practice. This is not such a problem when

clinics are based at peripheral hospitals, or at sites without GPs, or even at health centres under trust or health authority control. Failure to share undermines equity if it means that patients in areas distant from the main provider unit are effectively refused access to a much more local clinic. Even when GPs are willing to open out a clinic, other practices may have qualms about sending their patients to another GP's establishment.

A few provider units appear to have devised ways of mitigating this problem. Bailey and colleagues[10] in their survey of outreach clinics reported that two providers had introduced a strategy whereby for each outreach clinic they established at a fundholding practice, they also set up another at a non-fundholding site in an attempt to maintain equity. Also, Black and colleagues[63] reported one consultant refusing to conduct an outreach clinic unless it was made freely available to all practices in the area.

Five studies provided evidence on this issue (see *Table 40*).[9,10,12,49,50,63,88] Across the studies, the percentage of clinics that were restricted to site GPs ranged between 37% and 68%. However, even when clinics were open to non-site GPs, the numbers of other practices allowed to refer patients to the clinic was often quite limited, in some cases to just one other. A further factor here is that many of the studies drew no distinction between clinics in fundholding and non-fundholding practices. Bailey and colleagues[10] did make such a distinction and reported that 61% of clinics based in non-fundholding practices were shared against only 22% at fundholding practices ($p < 0.05$). Black and colleagues[63] also reported that only two of six GP fundholding clinics were open to others; however, in one case this was to just one other practice and in the other it was only at the insistence of the consultant running the clinic (see above).

Evidence from the project surveys

The Community Clinic Survey examined the issue of GP sharing in the context of hearing aid clinics. Technicians conducting sessions in GP practices were asked whether non-site GPs were allowed to refer patients to the clinic and, also, whether open-access repair sessions (where they occurred) were open to all patients in the locality or restricted to practice patients. The results are presented in *Tables 41* and *42*. A substantive difference was evident between fundholding and non-fundholding GP practices; hence, these have been kept separate in these tables.

Sharing of clinics was less common among GP fundholders, with (excluding the 'don't knows') 37% of clinics being open to non-site GPs compared with 71% of clinics in non-fundholding practices and 58% in community health clinics. Given the small sample size, these results are

TABLE 40 *GP sharing of clinics in GP practices*

Quality rating	Study	Specialities	Setting	Findings	Samples
I	Bailey, *et al.*, 1994[9,10]	11, including ENT	Primary care	32% of GP outreach clinics took referrals from other practices. This breaks down into 22% of clinics based in GPFH practices, compared with 61% of clinics in non-fundholding practices. Difference is significant ($p < 0.05$).	55 GPFH practices 23 GP-non-fundholding practices
II	Bowling, *et al.*, 1995[88]	5, including ENT	Primary care	63% of GPs (across eight practices, fundholding status not reported) said that their in-house clinics were open to patients from other practices. However, numbers were limited, four being the most. In total, eight participating practices allowed referrals from 13 other practices, nine of which were fundholding.	43 GPs across eight practices
II	Bond, *et al.*, 1997[50]	6, including ENT	Primary care	47% of outreach clinics (mix of fundholding and non-fundholding practices) took patients from other GP practices (range was 1–3 other practices).	19 clinics
III	Abery, *et al.*, 1997[49]	5, including ENT	GPFH practice	50% of practice managers reported that outreach clinics in their practices were also used by other GPs.	12 practice managers
III	Black, *et al.*, 1996[63] Leese, 1996[12]	Dermatology Orthopaedics	GPFH practice	At 2/6 (33%) GPFH practices, patients from other practices were allowed to attend outreach clinic. One was open to patients of just one other GPFH practice; other was open to all practices in area but only because consultant had insisted on this.	6 GPFH practices

TABLE 41 *Audiology technicians' responses to question, 'Are GPs from other sites allowed to refer patients to these sessions?' by type of setting (Community Clinic Survey)*

Setting (with GPs only)	Responses			Sample size
	'Yes, other GPs can refer'	'No'	'Don't know'	
GPFH practices	36%	61%	3%	36
Non-fundholding practices	63%	25%	13%	8
Community health centres with GPs	48%	35%	17%	29

TABLE 42 *Audiology technicians' responses to question, 'Are repair sessions at this site open to all local hearing aid users, or only to patients of site GPs?' by type of setting (Community Clinic Survey)*

Setting (with GPs only)	Responses			Sample size
	'Yes, open to all'	'No, restricted to practice patients'	'Don't know'	
GPFH practices	35%	60%	5%	20
Non-fundholding practices	75%	25%	0%	8
Community health centres with GPs	92%	8%	0%	26

not far off those reported by Bailey for specialist clinics (see above).

For open-access repair sessions there was an even wider division, with only 37% of GP fundholding practices allowing unrestricted access compared with 75% of non-fundholding GPs and 92% of community health clinics.

The social demographics of clinic users

Evidence from the literature review

There are two approaches to looking at social demographics. The first is to investigate the characteristics of localities around community clinic sites and compare these with the general characteristics of the catchment area of the corresponding hospital base. The second is to study the demographics of samples of patients attending at each type of setting.

With regard to the first approach, this review has uncovered no relevant studies which would provide a representative picture. A few studies have reported, mostly briefly, on area characteristics in the context of one particular provider or community clinic but our conclusion is that the findings cannot be generalised beyond the specific localities involved, particularly as there is a clear publication bias: the great majority of studies to report area characteristics have been those in which the community clinics were specifically targeted at disadvantaged areas. In addition, nearly all of these studies were undertaken in the pre-fundholding era and, from reading the literature, a distinct impression is received that, prior to fundholding, community provision was commonly seen as a means of reducing inequity by targeting poorer communities; this philosophy is far less evident in the post-fundholding period.

There is good evidence that GP fundholding practices tend to be concentrated in areas where there is less social deprivation;[8] fundholders have also been found to be more likely than non-fundholders to have specialist outreach clinics, even when controlling for practice size.[8,10] By inference this suggests that community clinics based in fundholding practices are more likely to be serving the better-off elements of the population. However, because of the absence of studies in this area, this has to remain an inference and not a demonstrated result.

With regard to the second approach to investigating demographics – examining characteristics of patient samples – the review uncovered only two studies that provided sufficient detail, and involved a sufficient number of different providers, to warrant inclusion (*Table 43*). These were the major outreach studies by Bond and colleagues[50] and Abery and colleagues.[49] Both studies provided patient-sample information for three demographic variables: social class, employment status and ethnic grouping. Age and gender were also reported but have not been included here, because they have less bearing on the socio-economic background of service users.

The findings of Bond and colleagues[50] are not straightforward. On the basis of the combined results for all six specialities covered in the study, very little difference was in evidence between primary care and hospital base settings with regard to social class, ethnicity or employment status. However, for the results for ENT patients alone, there was quite a considerable social class difference and, also, some difference in ethnicity,

TABLE 43 *Social demographics of patients attending clinics*

Quality rating	Study	Specialities	Type of community setting	Findings*	Samples
I	Bond, *et al.*, 1997[50]	6, including ENT	Primary care	All specialities: very little difference between settings with regard to social class (social class IV–V: 23% vs. 22%, NS) or ethnicity (ethnic minority: 22% vs. 20%, NS) but slightly smaller percentage of outreach patients were of work age but not working (39% vs. 45%). ENT alone: much smaller percentage of ENT patients seen at outreach clinics were from social class IV (16% vs. 33% ($p < 0.05$) or from an ethnic minority (23% vs. 34%). However, unemployment rates were not different (31% vs. 30%). Study does not distinguish between fundholding and non-fundholding practices. It may be that ENT clinics were concentrated in the former.	342–446 vs. 291–424 78–96 vs. 60–83
I	Abery, *et al.*, 1997[49]	5, including ENT	Primary care (mainly fund-holding)	All specialities: fewer outreach patients from social classes IV–V (18% vs. 23%, $p < 0.05$) or from an ethnic minority (1.5% vs. 4.8%, $p < 0.05$), and fewer were of work age but not working (38% vs. 42%), $p < 0.01$). ENT alone: fewer ENT patients seen at outreach clinics from social classes IV–V (14% vs. 30%, $p < 0.001$), or not working (29% vs. 33%, $p < 0.05$), or from an ethnic minority (1.8% vs. 3.2%, NS).	541–711 vs. 454–648 174–219 vs. 135–185

* *NB: authors' percentages have been reworked to exclude students, armed forces members and other distorting groups*

with a higher proportion of the outreach group coming from the better-off social classes and fewer being from ethnic minorities. Unfortunately, Bond's study mixed both fundholding and non-fundholding GP practices, and it is not possible to determine if the ENT clinics were concentrated in the former.

Another important feature of this study is that it focused exclusively on the inner-London area (mainly South and East), where there was a considerable degree of disadvantage and a large ethnic minority population; it is doubtful whether the results can be generalised beyond this area itself, except to a few other specific inner-city areas.

The investigation by Abery and colleagues[49] produced a much clearer result. This study involved a sample of providers distributed widely across 14 different English counties. There was a significant trend for outreach patients to come from the better-off social classes, to be more likely to be working, and to be less likely to come from an ethnic minority group. The same findings were true of ENT patients taken on their own. This study was largely concentrated in fundholding practices (although some were multifund) and thus adds support to the contention that clinics in such settings tend to serve the better-off elements of the population. However, although significant, most of the effects were not large, particularly for the overall sample.

Chapter 11

Impact on the primary–secondary care interface

Communication between GPs and hospital staff conducting outreach clinics

An important issue for outpatient clinics at main hospitals is communication between GPs and specialists. Most communication is by letter and GPs have been criticised by specialists for providing inadequate, and even misleading, information in their letters of referral. Conversely, specialists are criticised by GPs for failing to keep them properly informed about the hospital management of referred patients (for summaries, see Westerman and colleagues,[89] and Sullivan and colleagues[90]). Outreach clinics based in primary care settings have been seen as having the potential to improve this situation by facilitating direct communication, and even joint consultation, between the two parties. It has further been suggested that such clinics can raise standards of GP knowledge and skills, that GPs might manage a wider range of conditions themselves and also make fewer inappropriate referrals.

The evidence for three main aspects of the communication issue are examined here:

- the type and extent of GP–specialist contact at primary care outreach clinics
- communications benefits arising from the clinics
- corresponding educational benefits.

Evidence from the review of literature

The review identified 11 studies of acceptable quality that provided evidence on one or more of these areas (*Table 44*).[9,10,41,45,49–52,55,56,60,63,91–93] With one exception, these are all multi-site investigations, a feature which should reduce publication bias across the studies as a group. However, none of the studies can be regarded as being of top quality, principally because of an absence of attempts to evaluate communication or educational benefits in any fashion other than by canvassing professional opinion.

Type and extent of GP–specialist contact

The evidence on contact is quite conclusive and consistent across studies. Generalising, the implication is that between 40% and 60% of clinics in primary care produce no direct communication between specialists and site GPs and, at sites where there is face-to-face contact, most of this is infrequent and of short duration. In addition, planned meetings or GP-training sessions are held at a minority – one-quarter or less – of clinics and joint consultation is even less frequent (joint consultation took place for only about 5% of individual patients in the studies that reported this). In the one study to measure individual contact events,[91] there was an average of less than one contact per clinic session, of which 70% lasted less than 5 minutes.

The single largest barrier to increased contact appears to be time limitations, which was a factor in five of the studies. This can also seriously disrupt plans for joint consultations, as in the studies by Cooper and Arnold[92] and Spencer.[55]

Contact was higher in schemes where scheduled case-conferences were held on each clinic day, or where joint consultation was the norm. The clinics in Spencer's study[55] were of this type, as were some of those surveyed by Strathdee.[51,52,56] Some of the studies excluded from the review as providing purely verbal descriptions of individual clinics (see page 10) mention this to be a feature.[69,75,94–97] Such clinics are almost invariably in paediatrics, gynaecology or psychiatry. These appear to be specialities in which GPs (and/or practice nurses) show a particular interest and in which they are keen to take on more patient management themselves.

The great majority of primary care clinics, perhaps 75% (or more) of the total, did not include such planned meetings and, as has been seen, contact at these clinics was either non-existent or limited and infrequent. Bailey and colleagues[10] also reached this conclusion; their view was that the potential of outreach for a more integrated pattern of care was not being realised. However, although contact might be infrequent at most

TABLE 44 *GP–specialist communication and education*

Quality rating	Study	Specialities	Type and extent of contact at outreach clinics	Communication benefits	Educational benefits	Samples
II	Darling & Tyrer, 1990[91]	Psychiatry	No scheduled meetings between staff during clinics, so all contact was 'informal'. Psychiatrists initiated 58% of contacts about specific patients and GPs 42%. Contact occurred in various places, from consulting rooms to lavatories. 71% were less than 5 minutes long and only 1% more than 15 minutes. Only 17% of patients being discussed were present at the time. Contacts were in main concerned with clarifying role of staff (47%), conveying information about patients (44%), and/or patient management or advice (38%). 26% of contacts were about patients not currently under psychiatric care. **The reported number of eight clinics per week over a full year, comes to about 400 clinic sessions in all, suggesting an average psychiatrist–GP contact rate of less than once (0.75) per session. Despite this, authors claim that psychiatrists achieved 'considerable face-to-face contact with GPs during the course of clinical work'.**	Authors provide no ratings of communication benefits but clearly consider them substantial.		298 psychiatrist–GP contacts, between 6 psychiatrists and 33 GPs
II	Gillam, *et al.*, 1995[60]	Ophthalmology	40% of GPs took part in hands-on learning sessions with team from hospital, although this amounted to no more than an average of 3 hours each over a full year.		38% reported an increase in knowledge but only 6% reported learning new skills. Higher % of GPs who spent time with team felt better able to manage at least one common ophthalmic condition (42% vs. 18%). 66% altered their practice as a result of clinics, including all who had spent time with team.	47 GPs
II	Helliwell, 1996[45]	Rheumatology	Contact with GPs was usually no more than a greeting in a corridor. Discussion between specialist and GPs occurred in just 5% (19 out of 352) of cases over 12 months. Communication between specialist and other practice staff was said to be more frequent.			352 patients
III	Bond, *et al.*, 1997[50]	6, including ENT	Most common form of contact was by letter. 59% of GPs reported brief face-to-face contact with specialists, while 19% said they held planned meetings with specialists on day of clinic. However, nearly all these (9/11) were in paediatrics or gynaecology. Specialists reported much the same results: 47% indicated they had little or no contact with GPs at clinic; 26% held training sessions; and 21% saw patients with GP present.	74% of specialists rated improved communication with GPs as a benefit of outreach clinics. (GP opinion on this not reported)	32% of GPs agreed that clinics had broadened their skills. None of specialists considered that specialist skills had been improved.	59 GPs 19 specialists
III	Abery, *et al.*, 1997[49]	5, including ENT	Most common form of contact was by letter. 63% of GPs (from 17) reported brief face-to-face conversation but only 28% of specialists did so. Only 1/71 GP said that planned meetings were held but no specialists reported these. No reasons are given for discrepancies between GP and specialists.	74% of GPs rated improved communication with specialists as a benefit, as did 61% of specialists.	44% of GPs agreed that clinics had broadened their skills. Specialists were not asked.	60 GPs 18 specialists

continued

TABLE 44 contd *GP–specialist communication and education*

Quality rating	Study	Specialities	Type and extent of contact at outreach clinics	Communication benefits	Educational benefits	Samples
III	Bailey, *et al.*, 1994[9,10]	11, including ENT	Most common form of contact was by letter. Face-to-face communication with specialists was said to take place at 41% of GPFH clinics and 55% of non-fundholding clinics. Very few GPs indicated that planned meeting were held (21% GPFHs, 7% non-fundholders). GPs were present at only 6/112 outreach clinics. Authors say that although face-to-face contact was reported fairly frequently, in practice this might mean passing in the corridor or exchanging greetings, and that potential for more integrated pattern of care was not being realised. Time limitations appeared to be major stumbling block to greater cooperation.	On an open-ended question, 33% of GPFHs and 39% of non-fundholders listed better communication with specialists as a benefit. 57% of specialists listed improved communication as benefit to GPs but only 28% thought it a benefit to themselves.	On an open-ended question, 26% of GPFHs, but no non-fundholders, listed the educational value of clinics as a benefit.	58 GPFHs 28 non-fundholders 72 specialists
III	Cooper & Arnold, 1994[92]	Ortho-paedics	Although it was agreed at planning stage that GPs should be present at consultation, in practice, for 96% of patients, GP was not present. Main reasons given by GPs for this were time limitations, room for clinic only being available when GPs were away, and GPs considering that their presence would be inappropriate.		Specialists considered that opportunities for GP education had not been taken up.	113 patients
III	Strathdee & Williams, 1984[51] Strathdee, 1987;[52] 1988[56]	Psychiatry	Unspecified number of clinics operated joint specialist–GP consultations. 81% of GPs reported regular clinical discussions with specialists.	65% of specialists agreed that outreach clinics improved liaison with primary care team.	86% of GPs reported improved knowledge of psychiatric treatments. 79% reported improved knowledge of psychiatric disorders.	58 GPs 109 specialists
IV	Black, *et al.*, 1996;[63] 1997[93]	Dermatology Orthopaedics	67% of GPs (4/6) said that they had little or no contact with consultant when he visited practice; only one practice had formal arrangement for GP to attend clinic each month. Reasons given by GPs for lack of contact were principally workload and feeling that attendance would not be appropriate.			6 GPs across 5 practices
IV	Spencer, 1993[55]	Paediatrics	Initially a GP sat in on the clinics at all surgeries but due to workload at some sites this was abandoned and after-clinic discussion sessions introduced instead. Many consultations took place jointly with practice partners.	Main benefits mentioned by GPs included: improved relationship between primary care and secondary care, instant feedback, and ability to discuss patient management.	Only 1/9 GP mentioned educational value of sessions as a benefit.	9 GPs
IV	Walshe & Shapiro, 1995[41]	All specialities	Because of busy schedules it required a commitment to set time aside for contact.	Some specialists found communication improved and some did not. GPs generally agreed that communication was not necessarily much improved by outreach clinics.		8 specialists 4 GPs

clinics, this need not imply that it is ineffective. There is almost no contact, other than by referral letter, at hospital clinics (including peripheral hospitals) and, compared with this, even a small amount of contact at in-house primary care clinics could reap significant benefits.

Communications benefits

The review of purchaser and provider opinion in chapter 6 of this report, found that improved GP–specialist communication was widely regarded by both parties as the second biggest benefit of specialist clinics in primary care (the greatest

benefit being patient access). There were no studies in which this issue was addressed by any method other than professional opinion and, thus, all the evidence about communication benefits presented in *Table 44* is simply a repetition of that reviewed in chapter 6. With few exceptions this evidence showed that high levels of both specialists and GPs (in most cases greater than 70%) reported that communication was improved. However, given the almost complete absence of communication, other than by letter, at hospital clinics, almost anything would be an improvement. Consequently, these high percentages may not mean very much, particularly as they say nothing about the degree of improvement. What is lacking, and what is needed, in this area are more objective and sensitive measures, particularly measures that assess outcomes of communication (e.g. in terms of patient management and clinical efficiency), and which can be used to make comparisons between outreach and main hospital clinics.

Educational benefits

As with communications benefits, virtually all the evidence related to educational benefits comes from professional opinion; this was previously presented in chapter 6. The main point of interest is that the percentages of GPs reporting that such clinics have had educational value for them were typically much lower than the corresponding percentages reporting improved communications; with the exception of Strathdee's sample, most were in the region of 30–40%. In addition, the studies provided no indications of the degree of benefit; thus, the numbers of GPs gaining substantially in terms of new knowledge or skills could be quite small indeed. As in the case of communications benefits, more objective and sensitive measures are required before a clearer assessment of educational benefits can be made.

Evidence from the project surveys

The project surveys did not address the types and extent of contact between audiology staff and GPs at community clinics. With hindsight it would have been useful to have done this, as it could then have been hypothesised that contact here would be even lower than for specialist outreach clinics, partly because the staff are non-medical. Questions were asked, however, with respect to perceived benefits relating to communications and education.

Under the Provider Survey, heads of audiology departments that held clinics in GP premises were of the opinion that communications with GPs was improved, with 37% rating this a 'major benefit' and 40% a 'minor benefit'. A smaller number considered that the sessions had educational value for the GPs – 21% gave a 'major benefit' rating and 39% 'minor'. Fewer again considered that outreach was educational for audiologists themselves (8% 'major', 34% 'minor").

Similar questions were asked of the audiology technicians who were conducting sessions at community sites. These data also allow closer examination of the issue. A breakdown of technician opinion about communications with referring GPs is presented in *Table 45*, according to whether the site was a GP practice, a community health centre with GPs, or a non-GP site (including peripheral hospitals). A very marked difference between settings is evident: 44% of GP practices were rated 'better' or 'much better' for communications with GPs than base clinics, compared with 29% of community health clinics, and only 6% of non-GP sites. This demonstrates that technicians consider many primary care sites to facilitate better communications than either the departmental base or other forms of community setting. However, only four sites (all GP practices) out of 79 were rated as 'much better', which suggests that, in the main, the benefits are not that large.

Technicians were also asked if they considered that the clinics helped to educate GPs about hearing loss issues. *Table 46* shows that a high proportion, 67%, considered that clinics in

TABLE 45 *Technicians' ratings of communication with GPs at outreach sites compared with main base*

Setting	Rating					Sample size
	Much better	Better	Same	Worse	Much worse	
GP practice	10%	34%	49%	7%	–	41
Community health centre with GPs	–	29%	64%	7%	–	28
Sites without GPs	–	6%	84%	9%	1%	81

TABLE 46 *Technicians' ratings of extent to which outreach clinics had educated GPs in hearing loss issues*

Setting	Rating					Sample size
	A lot	Some	A little	None	Don't know	
GP practice	17%	24%	26%	21%	12%	42
Community health centre with GPs	–	9%	6%	73%	12%	33

TABLE 47 *Technicians' ratings of appropriateness of GP referrals at outreach sites compared with main base*

Setting	Rating					Sample size
	Much better	Better	Same	Worse	Much worse	
GP practice	–	14%	78%	8%	–	36
Community health centre with GPs	–	14%	81%	–	5%	21
Sites without GPs	–	1%	95%	2%	1%	81

GP practices did help to educate GPs, with 17% indicating that GPs had learnt 'a lot', 24% 'some' and 26% 'a little'. The educational value of community health clinics was considered to be nowhere near so high, with only 15% rated as having any level of educational impact.

The reported gains from holding clinics in GP practices and community health centres, with respect to both GP communications and GP education, are on this evidence fairly modest at community health clinics but somewhat more substantial at GP practices. Such benefits, however, may not mean very much unless they translate into a change in GP behaviour. In a question pertinent to this, technicians were asked whether they considered that the appropriateness of the GPs' referrals was different at the community clinics. The results are presented in *Table 47*. At 14% of GP practices and 14% of community health clinics (with GPs) referrals were rated as 'better' than base compared with just 1% of all non-GP sites; however, no site, with or without GPs, was rated as 'much better'. The scale of reported benefit was thus quite small and considerably lower than for either GP communications or education. There is thus little indication that these latter benefits are having much impact on GP behaviour when it comes to referral quality and, furthermore, the previous differences between GP practices and community health clinics are no longer in evidence.

Chapter 12

Aspects of effectiveness and efficiency

Severity of case-mix

In the context of medical and surgical specialities, several factors related to medical case-mix can have a bearing on the efficiency and effectiveness of clinics based in particular settings. These have been examined quite extensively in the literature. They include:

- the types and severity of the presenting conditions
- the ratio of new to follow-up patients
- the appropriateness of the referrals
- changes in patient management resulting from setting differences.

With respect to most factors, however, the nature of adult hearing aid clinics is sufficiently different from those in medical specialities for the evidence not to be easily generalised. One exception to this is severity of the presenting conditions, although even here some caution must be exercised.

Severity has been an important issue in the context of specialist outreach clinics. The main concern has been that community-based clinics, particularly those held in GP practices, may encourage GPs to lower their threshold for referral and fill such clinics with patients with minor conditions, many of which the GP may be capable of managing themselves, and might otherwise do so. Specialists might then be dealing with relatively minor ailments at community clinics, whereas their time would be better spent on seeing more serious cases at the base site.

The corollary to this in the context of community hearing aid clinics would be an increase in the proportion of patients with mild losses at GP sites. Up to a point this could actually be a benefit, if it meant that hearing losses were being referred earlier, because of the potential advantages early referral has for patient adaptation to an aid.[98] However, it could become a problem if it led to a substantial increase in referrals with no significant hearing loss, thus consuming audiologists' time with cases for which no intervention is required.

Evidence from the review of literature

All of the available evidence concerning severity comes from studies of specialist outreach clinics. The available studies have been very mixed in their findings (*Table 48*).[44,45,49,50,63,68,71,75,76,93,99,100] Some reported the community group to be less severe in their conditions, some found this group more severe and others found no difference, or reported mixed results. However, a high proportion of the studies were specific to psychiatry (seven of 11, including one in clinical psychology) and the major disagreements are concentrated in these. Why there should be such disagreements is not obvious: potential confounders, such as new versus follow-up patients, and male/female ratios, have not been a significant factor in studies which have controlled for these.

For hearing aid services, it is the non-psychiatric studies which are the most relevant. There were four of these and all found only small differences between base and community settings. In addition, this subset included two of the largest and best studies. In two of the four studies, community patients were reported to be slightly less severe in their conditions;[49,63] in one, mixed results were found, with the community group slightly worse on some measures but a little better on others,[50] and in the last no overall difference was found.[45]

Small differences between settings are not a cause for concern. In fact, as indicated previously, a slight lowering in GP thresholds for referral may actually be advantageous, if the result is earlier referrals. However, a more likely explanation for these small differences is that GPs, including those with on-site clinics, generally send the most urgent cases, which tend to be more severe, to central clinics, partly because of the low frequency of community clinics (often only monthly) and partly because of the wider range of facilities.

The general finding, of only small differences in severity between settings, can be generalised to audiology with reasonable confidence. Both Bond and colleagues[50] and Abery and colleagues[49] included samples of ENT patients in their studies and, when severity measures for these groups were reported, the results were in accordance with those for the full samples. Consequently, hearing aid

TABLE 48 *Severity of case-mix*

Quality rating	Study	Specialities	Measures	Findings	Evidence and comments	Samples (outreach vs. main base)
I	Bond, *et al.*, 1997[50]	6, including ENT	Duke Severity of Illness scale HSQ-12 RAND PGIs	No clear trend but all differences small	The measures produced mixed results. On basis of Duke scale (completed by specialist), outreach group of patients had significantly more severe conditions ($p < 0.05$); this result held after being controlled for proportions of new and follow-up patients. No differences seen on RAND scale but on basis of HSQ-12 and PGIs (based on patient reports), outreach group showed slightly better health and fewer limitations of activity (significant on 10/24 PGIs). However, all differences on any of measures were not large. Authors took results of Duke scale as their principal measure of severity but for no clear reason.	477 vs. 531
I	Abery, *et al.*, 1997[49]	5, including ENT	Duke Severity of Illness scale HSQ-1; RAND PGIs	Outreach group slightly less severe	Taking all four measures together, outreach patients' conditions came out as being slightly less severe, they had better health and experienced fewer limitations on activity. However, very few of comparisons between groups reached statistical significance and majority of differences were quite small. Results were similar when broken down between new and follow-up patients.	618–731 vs. 480–686
II	Strathdee, et al., 1906[8]	Psychiatry	GHQ-30 Social Problems Questionnaire Clinical Interview Schedule Structured psychiatric interview	Outreach group more severe	No differences between outreach and main base groups on either GHQ-30 or Social Problems Questionnaire. Outreach group had significantly higher mean score (i.e. more severe) on Clinical Interview Schedule ($p < 0.02$). This remained true when controlled for different male/female ratios at each setting. Authors commented that there is no evidence that clinics in primary care divert expertise away from care of severely mentally disordered – if anything, care becomes more available to seriously, chronically handicapped, often those who refuse hospital review. Impression was that majority of chronic schizophrenics seen in primary care were those who had refused hospital review, often for years. Reason suggested for difference between these findings and those of Low & Pullen[44] was that in this study GPs referred 95% of patients to outreach clinics.	65 vs. 48
II	Low & Pullen, 1988[44]	Psychiatry	Psychiatric diagnosis	Outreach group less severe	Significantly greater proportions ($p < 0.01$) of patients seen at health centre clinics were in 'less severe' diagnosis groups compared with psychiatric hospital by a factor of about 2:1. District general hospitals were about half-way between the two. Conversely, significantly fewer were in 'high severity' group ($p < 0.01$) compared with psychiatric hospital, with district general hospitals again falling between the two. Authors argued that staffing differences cannot explain result: health centre clinics were staffed by more senior doctors, hence one might expect 'more severe' patients to be referred there if selective referral were operating. They did suggest that setting may influence diagnosis arrived at. To account for difference between their findings and others, e.g. Tyrer and colleagues,[47,48] who found that community clinics had no effect on referral patterns, authors proposed that an effect may only show up once devolution reaches a certain level.	1292 vs. 2945 vs. 7717
II	Tata, *et al.*, 1996[99]	Clinical psychiatry	Hospital Anxiety and Depression scale GHQ Life Satisfaction Questionnaire Number of GP consultations	No difference	No significant differences were found between settings on any of scales. Number of times patients consulted their GP over previous year provided another measure of psychological distress: these were also not significantly different. Authors concluded that results reveal 'a striking absence of differences'.	99 vs. 78

continued

TABLE 48 contd *Severity of case-mix*

Quality rating	Study	Specialities	Measures	Findings	Evidence and comments	Samples (outreach vs. main base)
III	Black, *et al.*, 1996;[63] 1997[93]	Dermatology Orthopaedics	HSQ-12 DLQI	Outreach group slightly less severe	Dermatology: at time of attendance, no significant differences found between outreach and mainbase groups on any of the eight health dimensions of HSQ-12, although for seven the difference favoured outreach patients (i.e. in direction of better health). Difference on DQLI also non-significant, though this also favoured outreach patients. Orthopaedics: at attendance, outreach and main base groups were significantly different on only one of the eight dimensions of HSQ-12 (mental health, favouring community patients), although all but one difference favoured outreach group.	Not reported for HSQ-12 DQLI: 40 vs. 51 Not reported
III	Brown, *et al.*, 1988[71]	Psychiatry	Psychiatric diagnosis	No difference	No significant difference seen in percentage of cases of psychosis (most severe diagnosis) referred to outreach and main base clinics (from same group of GP practices). Also, equal proportions had attended their GP with physical illness in previous year. Authors concluded that there was no evidence that referrals from community clinics were any less severe and noted that this study and others refute claim that primary care clinics serve only the 'worried well'.	91 vs. 55
III	Browning, *et al.*, 1987[100]	Psychiatry	Psychiatric diagnosis	No clear trend	Evidence for 'severity' of cases mixed: a higher rate of psychosis seen at outreach but also more patients were assessed only (i.e. no treatment) and/or were diagnosed as having no psychiatric disorder. In addition, equal percentages from both groups were admitted to psychiatric hospital.	98 vs. 37
IV	Helliwell, 1996[45]	Rheumatology	Rheumatology diagnosis	No difference	No evidence found that easily managed conditions were being preferentially referred to outreach clinics.	50 vs. 521
IV	Todd, 1978[76]	Psychiatry	Psychiatric diagnosis	Outreach less severe	Tendency seen for health centre and general hospital cases to be less severe, mainly owing to urgent cases being seen at psychiatric hospital. Also, non-urgent cases did not like stigma of going to psychiatric hospital.	54 vs. 56 vs. 58
IV	McKechnie, *et al.*, 1981[75]	Psychiatry	Psychiatric diagnosis	Outreach group slightly more severe	Slightly more cases of psychosis seen in outreach sample.	72 vs. 54

patients who have come via ENT outpatient clinics can be expected to match the general finding. In the case of direct referrals from GPs to audiology, although there is no evidence specific to this patient group, there is no good reason for believing that GPs behave substantially differently when making these referrals than when referring to specialist clinics. Even so, it would be useful to have corroborating evidence based on samples of audiology patients *per se*.

Outcomes for patients

Evidence for the review of literature

Evaluation of outcomes for patients, for example with regard to health gain, is of crucial importance when comparing different service settings. Accordingly, a very thorough search of the audiology literature was undertaken for this project and researchers in the field were contacted worldwide, in an attempt to track down relevant studies. Extensive literature was found to exist relating to outcomes of hearing aid fitting, and all these papers were collected and read. The studies examined the impact of various factors on outcomes for patients, including:

- strategies for selecting and fitting aids
- strategies for counselling
- types of aids fitted and aspects of fitting
- recall of patients for follow-up
- provision of home visits
- modifications to ear-moulds.

However, not a single study was found that offered any form of comparison of outcomes in relation to different types of service setting.

A few studies exist in which hearing aid fitting in nursing and residential homes, or in people's own homes, have been considered but these deal with quite specific client groups in quite specific environments and cannot inform on this wider issue. There have also been a number of investigations relating to the screening of samples of adult patients from GP registers for hearing loss.[57,101–103] In these studies the screening, and possibly the hearing aid fitting if required, was generally carried out at the practice itself or in a local setting. This gives the studies a community aspect but without any main-base comparison. In addition, such screening exercises operate in quite a different manner to routine hearing aid clinics and are concerned with different kinds of outcome (principally levels of hearing disability and the take-up of hearing aids). Consequently, such studies offer almost nothing in the way of results which can be generalised from the former to the latter. Two screening studies included a review of patients some time subsequent to hearing aid fitting. Davis and colleagues[103] found a high percentage (90%)of hearing aids still in use 2 years post fitting but the fact that patients were keeping diaries as part of the research effort may have had an influence. Stephens and colleagues[57] reported that after 6 months only one patient from 92 had stopped using his/her hearing aid. This represents a high success rate and could indicate a good outcome as a result of community provision. However, the authors also reported that patients were followed-up after fitting "until it was clear that they were managing well", something which might not happen under routine clinic circumstances.

This complete absence of any specific investigations of outcomes in relation to different service settings has to be regarded as a serious deficiency in the audiology literature.

The only studies that did relate outcomes to settings pertain to the medical and surgical specialities but even here there was a paucity of studies. This review has found only five and all but two of these fall into the lowest category of quality (*Table 49*).

Only one study used a randomised control design[67] but this investigation was seriously marred by the form of intervention differing between locations, thus confounding any setting comparison. Of the remaining four studies, only two[50,63] took measures at baseline as well as post treatment.

By far the largest, best-designed and controlled study was the one by Bond and colleagues.[50] In this investigation, a range of good quality measures were used and no significant differences were found between community and base samples, across 19 clinics in the London area, with respect to changes in health status after a 6-month period. In addition, health measures on the samples proved reasonably equivalent at baseline.

The study by Black and colleagues[63,93] is second to Bond and colleagues in terms of quality; the authors concluded that there was some evidence of better outcomes among patients attending the base site. However, this conclusion can be criticised on two grounds: first, the additional gains made by this group were only sufficient to bring them up to parity with the community sample because of initial baseline differences; second, on 14 of 17 measures the direction of change was in accordance with a simple regression-to-the-mean effect, given the initial differences.

Of the remaining two studies,[42,65] one weakly favoured the outreach setting and one the base, but the effects in both were extremely small and might well be due to uncontrolled variables.

Taken together, these studies do not support either setting in favour of the other. However, there is insufficient evidence to be certain and more high quality studies are needed. The scale and range of the study by Bond and colleagues[50] should have been sufficient to have picked up any major advantage of one setting over the other, if any such had existed, but in order to detect any small-scale advantages, a well-designed RCT would probably be required.

To generalise from clinics in the medical/surgical specialities to outcomes for hearing aid patients is problematic, mainly because the important forms of outcome are quite different. Rather than health gain, the outcomes of concern mainly relate to the quality of the fitting (e.g. how well a hearing aid matches the patient's needs), the patient's ability to use the hearing aid, the benefit obtained, their care of the instrument, their use of support/repair services, and the management of significant ear pathology. In this study, the evidence reviewed from studies of specialist clinics bears little direct relationship to these issues, although it has obvious relevance for the community ENT clinics which audiologists support. Even so, the fact that, on the evidence, community clinics do not appear to affect health outcomes in any major fashion does suggest that there is nothing inherently detrimental in the use of such locations.

TABLE 49 *Changes in health status*

Quality rating	Study	Specialities	Measures	Findings	Evidence	Samples
II	Bond, *et al.*, 1997[50]	6, including ENT	HSQ-12 RAND PGIs	No substantial differences between settings	At baseline, outreach patients demonstrated slightly better health on all three measures, though few of differences reached significance. These small baseline differences do not affect findings reported below. HSQ-12: at 6-month re-interview, outreach patients showed significant improvement on two of six dimensions of HSQ-12, and main base patients showed no improvement. No significant differences seen between two groups in amount of change since baseline, either on these dimensions or on health status items of HSQ-12: when results broken down between new (at baseline) and follow-up patients, only alterations to above pattern of results is that follow-up group at main base show significant improvement at 6 months on one HSQ-12 dimension, and outreach and main base groups are significantly different for change over time on one dimension (scores for outreach group got worse). RAND: both outreach and main base patients significantly improved on just one item from RAND (degree to which their condition worried or concerned them) but no significant difference between settings seen in amount of change over time. PGIs: at 6 months, change in percentages of outreach and main base patients reporting each limitation were not great, with nearly (but not quite) as many from both groups reporting increase in limitation as reported less. Mean number of limitations reported significantly decreased for both community and main base patients but amount of change did not differ significantly between settings.	205–253 vs. 248–277
III	Black, *et al.*, 1996;[63] 1997[93]	Dermatology Orthopaedics	HSQ-12, with 8 subscales) DQLI (for dermatology patients only)	Weakly favours main base setting	At baseline, both dermatology and orthopaedic outreach groups showed higher mean scores on most dimensions, although (except in one from 17) not significantly so. Dermatology: at 3 month follow-up main base group had improved significantly more than outreach group on two of eight dimensions of HSQ-12 (mental health and general health), and also showed significantly greater improvement on DQLI. Orthopaedics: no significant differences seen between groups in changes in health status at 3-month follow-up, although on most dimensions main base group improved more. Authors said that there is some evidence, for dermatology patients at least, that main base patients made more improvement. **However, the differential change in main base group after 3 months is in nearly all instances only enough to compensate for difference between groups at baseline. Furthermore, in 14/17 instances, direction of change observed is what would be expected if regression-to-the-mean effect was operating, a possibility which authors did not discuss.**	Not reported Not reported
IV	Walker, 1991[65]	Physiotherapy	7-point scale of subjective assessment of outcome, ranging from 'completely recovered' to 'marked worsening'	Weakly favours main base setting	No measures of severity of condition at baseline were taken and thus initial comparability of groups is unknown. Outcome measures were taken upon discharge of each patient. For six major diagnostic groups (neck, back, shoulder, knees, osteoarthritis, strains/sprains), outreach patients achieved greater proportion of 'completely recovered' or 'markedly improved' outcome ratings on one (not statistically significant), while main base groups were higher on other five (with only one reaching significance). With exception of significant result, all differences between settings were quite small.	17–204 vs. 41–241
IV	Ferguson, *et al.*, 1992[42]	Psychiatry	CPRS, with 4 subscales Social Functioning Schedule	Weakly favours outreach setting	No baseline measures of 'severity' were taken, although equal percentages at both setting were in more severe diagnostic categories (e.g. schizophrenic illnesses) and equal numbers had had previous admissions. No significant differences found between outreach and main base groups at 3–5 year follow-up on any of subscales of CPRS, total CPRS score, or Social Functioning Schedule. However, a significant difference favouring community group was found for obsessional subscale of CPRS when controlling for social deprivation scores ($p < 0.01$).	103 vs. 78

continued

TABLE 49 contd *Changes in health status*

Quality rating	Study	Specialities	Measures	Findings	Evidence	Samples
IV	Worsfold, *et al*., 1996[67]	Physiotherapy	Nottingham Health Profile (6 subscales, plus grand total) Anxiety component of Hospital Anxiety and Depression Rating Scale Pain and problem size visual analogue scales	Effect of setting completely confounded by type of intervention	All measures completed both at baseline and again after 6 weeks of treatment. Outreach group had higher (meaning worse) median pre-scores on five measures and were lower on none (authors did not perform any tests of significance). Outreach group showed improvement (in median score) on 8/10 measures, while main base group improved on six. On two measures difference between settings was significant, with outreach group improving more. Given that outreach group was poorer initially, regression-to-the-mean might be suspected but size of improvements, and fact that two reached significance suggested not. Unfortunately, type of intervention varied between locations, so it is not possible to say whether any differences between groups were due to setting or to type of treatment.	54 vs. 76

There are factors which could lead to outcomes for hearing aid patients being poorer in the community. These factors are those which technicians highlighted as the biggest disadvantages of community sites (see *Table 28*): noisy test conditions, sub-standard or limited equipment, lack of access to patient notes, and a lack of information on display for patients. The first three factors can affect the quality of hearing aid fitting, while the last could mean that patients do not become aware of sources of support, such as home visitors, support groups and the availability of assistive devices. Conversely, however, there are other factors which might lead to better outcomes for community patients. In particular, there is some evidence that patients are more likely to access repair/counselling clinics when they are local (see chapter 9). Also, if patients, particularly the elderly, being fitted at community sites are more relaxed and less tired (owing to familiar surroundings and less travel), they may retain more of the important information conveyed to them by the audiologist and have fewer initial problems in using and manipulating the hearing aid, something which can be critical with regard to its subsequent acceptance or rejection.

Studies specific to audiology are required in this area. These need to examine the kinds of outcomes mentioned above.

The management of ear pathology

There exists a risk in all systems of health care that some cases of significant and treatable pathology will be managed inappropriately. The question therefore arises whether, with respect to outpatient clinics, the level of such risk is in any way altered when sessions are held at locations away from main departmental bases. From our reading of the literature, this issue appears never to have been raised in the context of specialist outreach clinics – presumably because all patients receive an examination by a qualified doctor irrespective of setting and, therefore, the risk is assumed to be unchanged, or at least no lower. In the case of hearing aid services, however, the question is pertinent, particularly with respect to patients who have been directly referred to audiology, since these patients do not routinely receive examination by an otologist.

Certain active disease processes sometimes result in a loss of hearing and it is important that such cases are identified and appropriate treatment provided. When selecting patients for direct referral, GPs are expected to filter out and exclude cases where pathology is potentially present: such cases need referral to a specialist. As a secondary 'safety mechanism', audiology technicians perform a screen for signs of pathology in patients directly referred to them. They do this using a set of criteria, most commonly the guidelines for direct referral drawn up by the Liaison Group for Technicians, Therapists and Scientists in Audiology (TTSA).[104] The technician 'cross-refers' any patients who fails screening to an ENT specialist or audiological physician. This process puts the onus on, first, the GP to select appropriate patients and, second, the technician to pick up cases of pathology that the GP might have missed.

Concerns have been expressed over the safety of direct referral schemes, even in the context of centralised clinics,[105,106] and reassurance is required that any potential risk is not exacerbated when such clinics are operating from community locations. This has added importance since, by removing

the otologist from the process of aid provision (for appropriate patients) direct referral schemes increase the flexibility of audiology services and have the potential to greatly increase the proportion of work that goes on in the community. The issue of patient safety is also relevant to proposals for reform of the hearing aid services – such as those from the RNID[28] – which advocate an increase in the role of GPs in the management of hearing aid patients, since these also involve removal of the requirement for examination by an ENT specialist or audiology physician.

No studies have been unearthed in this project in which the issue of inappropriate management of pathology have been specifically addressed in relationship to community clinics, either in audiology or in any of the medical specialities. A number of studies have been undertaken, however, in which the performance of GPs and audiology technicians in the detection of ear pathology in a general sense was examined – that is, not related to specific service settings. Since these studies do shed some light on the question at hand, they are reviewed here.

None of these studies were concerned with community provision *per se* and, consequently, they all fall outside of the inclusion criteria for the systematic review proper (see chapter 3). Collection of these studies was therefore undertaken as a separate exercise; this was conducted less thoroughly than a full systematic review, being confined to a search of the electronic databases MEDLINE and EMBASE, plus material known to the research team. A total of ten studies were identified which contained relevant empirical evidence.

The quality of referrals from GPs

All ten studies included an investigation of the quality of samples of referrals made by GPs (*Table 50*). In five, referrals to functioning direct referral schemes were examined,[107–111] while in the remainder the focus was on patients referred to ENT outpatient clinics for a hearing aid or because of simple hearing loss.[105,106,112–114] It is convenient to deal with this second group of studies first. The objective of all of them was to determine to what extent GPs had successfully filtered out those cases with significant pathology, prior to making such referrals, to infer from this whether or not examination by an otologist was necessary, and (in some cases) whether direct referral would be an acceptable alternative.

Two of these studies assessed each referral against the TTSA guidelines for direct referral and both found that about two-fifths failed one or more of the criteria.[106,112] However, many failures were due purely to inadequate removal of wax by the referring GP and such cases are more of an inconvenience than anything else. Of much more importance were those cases which required further otological investigation, or treatment of a medical or surgical nature. All five studies found that a proportion of patients fell into this category, ranging from 9% in the study by Harries and colleagues[112] up to 37% in the investigation by Campbell and Nigam.[114] Of particular concern were cases of asymmetrical hearing loss, since this is commonly associated with many of the more serious forms of ear pathology, such as cholesteatoma. The reported rates of asymmetrical loss ranged between 6%[106] and 16%.[112]

Hawthorne and colleagues[107] pointed to a potential drawback to studies based on referrals to ENT. They argued that referring GPs may not be too concerned about excluding cases with pathology, since the patient will in any case be examined by a specialist. In the context of an actual direct referral scheme, in which GPs are provided with criteria for referral and are aware that the patient may not receive an ENT examination, they may well act more selectively.

In five studies GP referral behaviour was considered in the context of actual direct referral systems.[107–111] However, the studies by Hawthorne and colleagues,[107] Koay and Sutton,[110] and Zeitoun and colleagues,[111] were all based on schemes involved in the multicentre study by Reeves and colleagues,[108] and the patient samples all overlap, to a greater or lesser extent, with that study. For this reason, the results of these four studies are not fully independent.

The methodology in all these five studies was essentially the same:

(i) GPs in the catchment area were informed that a direct referral scheme was being introduced, and were provided with a set of referral criteria, in most cases a cut-down and simplified version of the TTSA guidelines
(ii) patients referred to the scheme were assessed by an audiology technician (in most cases, a senior one) using the TTSA guidelines or similar screening criteria
(iii) for the purpose of evaluating the performance of the technicians, all patients received an examination by an ENT doctor or audiology physician.

TABLE 50 *The quality of referrals from GPs*

Study	Type of sample	Description	Finding
Harries, *et al.*, 1989[112]	ENT	ENT assessment of 100 consecutive patients, aged 60 years or over, referred by their GPs to ENT consultant specifically for a hearing aid. Patients were assessed against TTSA guidelines for direct referral.	46% of referrals failed to satisfy TTSA criteria for direct referral: excluding cases of excessive wax, 34% failed. 9% of patients required medical or surgical management. 16% of patients had an asymmetrical loss.
Prinsley, *et al.*, 1989[113]	ENT	ENT assessment of 119 patients aged 60 years or over, referred by GPs to three different ENT departments over 3-month period for 'simple hearing loss' and fitted with a hearing aid.	19% of referrals required further investigation or treatment (this does not include cases of excessive wax). No patients were treated operatively. Most common reason for further investigation was asymmetric loss (nine patients).
Fox & Sharp, 1994[106]	ENT	ENT assessment of 100 patients, aged 60 years or over, referred to ENT consultant by their GPs specifically for a hearing aid. Patients were assessed against TTSA guidelines	37% of referrals failed TTSA guidelines; excluding excessive wax, 16% failed. 12% of patients had middle-ear pathology, including two cases of cholesteatoma. 6% of patients had an asymmetrical loss.
Bellini, *et al.*, 1989[105]	ENT	ENT assessment of 169 patients, aged 44 years or over, referred by GPs with hearing loss as their main symptom.	18% patients were found to have chronic otitis media but GP referral letters gave no indication of pathology in 61% of these. In another three patients, active ear discharge went unmentioned. 10% of patients had an asymmetrical loss.
Campbell & Nigam, 1991[114]	ENT	ENT assessment of 200 consecutive patients referred by GPs specifically for hearing aids.	37% required further investigation or treatment. 28% had important tympanic membrane abnormalities but in only five instances had this been detected by referring GP.
Hawthorne, *et al.*, 1991[107]	Direct referral	ENT assessment of first 300 GP referrals to new direct referral scheme. All were aged 60 years or over. Patients assessed against criteria for referral based on TTSA and Hearing Aid Council guidelines for direct referrals.	25% of referral forms were incomplete. Of remaining 225, ENT surgeon considered 56% to fail criteria for referral; excluding cases of excessive wax, 46% failed. 9% of patients required medical or surgical management. There were two patients with cholesteatoma. 9% of patients had an asymmetrical loss.
Reeves, *et al.*, 1994[108]	Direct referral	Audiology technician assessments and ENT doctor 'safety-checks' on about 2300 patients seen during course of 1-year 'pilot' direct referral schemes at ten different audiology departments. Technicians assessed patients against TTSA guidelines. A small number of assessments were made by private dispensers. Examinations by two independent ENT specialists of samples of 239 patients directly referred to audiology and 216 referred to ENT and fitted with hearing aids, across nine of the centres.	On basis of assessments by audiology technicians, percentages of inappropriate GP referrals ranged, across centres, between 19% and 60% (these were mainly patients cross-referred by technicans to ENT and those requiring wax removal). Rates of cross-referrals alone ranged between 5% and 44%, with an overall mean of 20%. Rates were no better during second half of 1-year period. Local ENT doctors required further ENT management for 7% of patients (range, 2–15%), of whom 1% were found to have an important form of middle-ear disease. 7% had an asymmetrical hearing loss. The independent ENT specialists considered that ENT management (investigation, treatment, or future review) was required for 11% of direct referral group and 26% of ENT group.
Swan & Browning, 1994[109]	Direct referral	Audiology technician 'screening' and ENT assessment of 248 patients, 55 years old or over, seen during prospective evaluation of direct referral scheme. Technician screen was more stringent than TTSA guidelines.	50% of referrals failed technician screen; excluding excessive wax and cases with normal hearing thresholds, 40% failed. 16% were judged by ENT to require medical or surgical management. One patient had a cholesteatoma. 27% had a potential conductive or asymmetrical impairment.
Koay & Sutton, 1995[110]	Direct referral	Audiology technician and ENT assessment of 208patients, aged 18 years or over, seen during prospective evaluation of direct referral scheme. Technicians assessed patients against TTSA guidelines.	175 patients had properly completed GP pro-formas and attended their appointment. Technicians judged 23% of these to be inappropriate referrals; many were cases of wax or insufficient hearing loss. 10% were judged to be in need of an ENT opinion. ENT required further investigation or treatment in 3% of all cases.
Zeitoun, *et al.*, 1995[111]	Direct referral	Audiology technician assessment of 458 patients referred to direct referral scheme over a 2-year period. For purpose of exercise, technicians assessed patients according to TTSA guidelines. However, they relied on personal clinical judgement when making cross-referrals to ENT (i.e. not the guidelines).	47% of referrals failed TTSA guidelines. 11% were cross-referred to ENT. ENT management of these patients is not reported. 9% had an asymmetrical loss.

All five studies reported that the rate of inappropriate referrals was high. In three studies it was about 50%,[107,109,111] while Reeves and colleagues[108] reported variation across ten centres of between 19% and 60%. In the case of many referrals, however, the reason was quite minor: usually wax or insufficient hearing loss. In the studies that reported it, the numbers of patients considered by technicians to actually require an ENT opinion were quite a bit lower: 10%,[110] 11%,[111] and 20%.[108] ENT doctors, on the basis of their examinations of all the patients referred to the schemes, conducted further management on small but (in most studies) not insubstantial numbers. This varied from 3%[110] to 16%.[109] The overall mean across the ten centres in the study by Reeves and colleagues[108] was 7%, based on about 2300 patients. These results are, on the whole, lower than the corresponding proportions from the studies of referrals to ENT but not dramatically so, and there is a lot of overlap between the two sets of studies.

The discrepancy between the large numbers of referrals which fail the guidelines for referral and the much smaller (relatively) number who go on to receive otological intervention, has led some authors, such as Hawthorne and colleagues[107] and Zeitoun and colleagues,[111] to argue that although GPs frequently fail to adhere to referral criteria, they nonetheless discriminate fairly well. It is possible to test this conclusion, by making a direct comparison of the incidence of significant ear pathology in directly referred patients and the incidence in referrals to general ENT outpatient clinics. Reeves and colleagues[108] made such a comparison, based on examinations of samples from each group of patients by two independent ENT specialists across nine different centres (239 directly referred patients and 216 referrals to ENT who had been prescribed a hearing aid). They found that the prevalence of conditions requiring an ENT opinion among directly referred patients was approximately half the prevalence among ENT outpatients. The prevalence of 'potentially serious' conditions was also about half. Thus GPs were shown to be discriminating to some degree but were nevertheless still failing, as a group, to detect a sizeable proportion of cases with significant pathology.

The performance of technicians in the detection of pathology

The five studies of direct referral systems all examined this issue (*Table 51*). In all five studies

TABLE 51 *Performance of audiology technicians in detecting potential pathology in directly referred patients*

Study	Description	Finding
Hawthorne, *et al.*, 1991[107]	Audiology technician and ENT assessment of first 300 GP referrals to new direct referral scheme. All aged 60 years or over. Patients assessed against criteria for referral based on TTSA and Hearing Aid Council guidelines for direct referrals.	10% of referrals were deemed suitable for direct referral scheme by technician but unsuitable by ENT consultant. In no case did a technician fail to pick up significant or treatable disease, nor was final outcome altered.
Reeves, *et al.*, 1994[108]	Audiology technician assessments and ENT doctor 'safety-checks' on about 2300 patients seen during course of 1-year 'pilot' direct referral schemes at ten different audiology departments. Technicians assessed patients against TTSA guidelines. A small number of assessments were made by private dispensers. Examinations by two independent ENT specialists of samples of 239 patients directly referred to audiology, and 216 referred to ENT across nine centres.	Relative to management decisions by ENT doctors who did safety-checks, technicians failed in their management of 2.2% of all patients (who should have been cross-referred for an ENT opinion but were not); rate varied from 0% to 10% across centres. These represent 30% of all patients ENT deemed to require further management. Potentially serious failures were judged to have occurred in 0.64% of cases (0.56% excluding private dispensers), or 9% of all patients requiring ENT management. Most common condition on which technicians failed was asymmetrical loss, present in 37% of all cases of failure and in two-thirds of potentially serious failures.
Swan & Browning, 1994[109]	Audiology technician 'screening' and ENT assessment of 248 patients, aged 55 years or over, seen during prospective evaluation of direct referral scheme. Technician screening was more stringent than TTSA guidelines.	ENT consultant judged technicians' management to have been insufficient in three patients (1.4%). In one, condition was considered to have developed since the screen; another was smallish asymmetric loss which did not fail the screen but which the otologist considered needed investigation. Third was a case of wax.
Koay & Sutton, 1995[110]	Audiology technician and ENT assessment of 208 patients, aged 18 years or over, seen during prospective evaluation of direct referral scheme. Technicians assessed patients against TTSA guidelines.	Technicians were reported to have successfully identified all patients in need of an ENT opinion.
Zeitoun, *et al.*, 1995[111]	Audiology technician assessment of 458 patients referred to direct referral scheme over 2-year period. For the exercise, technicians assessed patients according to TTSA guidelines, but relied on personal clinical judgement when making cross-referrals to ENT (i.e. not the guidelines).	Over first 18 months of study, all direct referral patients received ENT check. No details given of results of these but authors stated that there were no cases where technician missed significant pathology.

the rate of management failure by technicians – that is, failure to refer on for an ENT opinion – was low. The highest rate was in the study by Hawthorne and colleagues,[107] in which 10% of directly referred patients were thought suitable for the scheme by technicians but not suitable by the ENT specialist. Ultimately, however, none of these patients were found to have significant pathology nor was their management altered. Both Koay and Sutton[110] and Zeitoun and colleagues[111] also reported that technicians had successfully identified all cases with pathology. Swan and Browning[109] reported that technician management was insufficient in three cases (1.4%) but these were all borderline or minor failures.

The large multicentre study by Reeves and colleagues[108] was the only one in which any significant failures of management at all were reported. In relation to the decisions made by their local ENT doctors, technicians failed in their management of 2.2% of all directly referred patients (based on a sample of about 2300 patients across ten centres). However, just 0.64% were judged (by an independent expert audiological physician) to be 'potentially serious' failures, reducing to 0.56% when patients assessed by a small number of private dispensers were excluded from the analysis. This very low rate of failure probably explains why none of the other studies, which used much smaller sample sizes, reported any cases of significant failure.

The study by Reeves and colleagues[108] found that only a small proportion, 7%, of all directly referred patients were considered by ENT doctors to require any form of ENT management and, when put in this context, the technician failure rate appears much higher – 30% of all patients in need of an ENT opinion. 'Potentially serious' failures represented 9% of all those considered to require management. Reeves and colleagues also examined the reasons for technician failure and found that the most common cause by far was a failure to cross-refer patients with asymmetrical losses: this condition was present in over a third of all cases of management failure and in two-thirds of all the potentially serious failures. The authors concluded that technicians were not actually failing to detect these asymmetrical losses but were not cross-referring these patients because they assumed, mistakenly, that the ENT doctor would not wish to take any further action.

To summarise these results, the evidence is that in terms of absolute numbers, technicians miss very few patients who have significant pathology but that these nonetheless represent a substantial proportion of the small number who have a condition in the first place.

Implications for community provision

The results show that there is a risk to patients who come through the direct referral route. This arises partly because GPs do not discriminate sufficiently when selecting patients for such schemes and partly because audiology technicians fail to cross-refer a proportion of the cases that ought to receive the opinion of an otologist. The question arises as to whether these factors alter when services are provided in the community, thus changing the level of increased risk.

With respect to GP performance, this is unlikely to be affected except when clinics are provided at locations with GPs on site; then it might be expected that the interaction between GPs and technicians could lead to an improvement in referral quality. However, the evidence for interaction and for an improvement in referral quality was reviewed in chapter 10, where it was concluded that any impact is small at most, although this does need to be confirmed by better quality studies.

The general standard of GP performance when selecting candidates for hearing aids, whether for referral to ENT or directly to audiology, cannot be said to be good; if reliance were placed solely on GPs to filter out cases of significant pathology, there would be a real risk that a substantial proportion would go undetected. Part of the problem here must stem from the fact very few GPs have undertaken training in otology or audiology and, even when training has been received, it has often been quite minimal.[30,33–37] Another related factor is that GPs are not expected to conduct formal audiometry prior to making a referral and yet asymmetrical loss, which is often associated with significant disease, may be difficult to detect without audiometry. Unless and until there is some substantial improvement in these areas, patient safety under direct referral is going to depend largely upon the abilities of technicians to pick up cases of pathology that GPs have missed.

With regard to the cross-referral behaviour of technicians, there are reasons for thinking that this might be affected negatively in the context of community clinics. One concern is that in the absence of any on-site ENT or audiology physician, technicians could well be reluctant to ask some patients, particularly the elderly, to attend the base site for specialist examination, especially if that site is some considerable distance

away; they may be even more reluctant if they think that the specialist will in any case decide against any further management. Although this is conjecture, it is supported by the finding by Reeves and colleagues[108] that some technicians went against guidelines and did not cross-refer a number of asymmetrical losses, even though they did detect them. Another consideration is the present of background noise – possibly the most widespread disadvantage of community sites – which can affect the results of audiometry and possibly mask the presence of asymmetrical or conductive loss. A limited or poorer standard of equipment (another common disadvantage) might also have an effect on risk levels: for example, tympanometry is often used to screen for middle ear disease that is not accompanied by a significant conductive loss but a tympanometer might not be available at a community site. Although this discussion has focused on the direct referral system, it is relevant to note that some of these factors could also affect standards of safety at ENT clinics in the community, together with repair patients in need of a reassessment.

If community provision does carry an increased risk that some cases of pathology will go undetected, it will be necessary to weight the disadvantage of this against any widening of access to services that results from such clinics. For example, it may be that community clinics attract referrals and patients in need of after-care who would not otherwise have even made contact with services. For such patients, a service with some additional risk attached to it may arguably be better than no service at all.

Patients requiring extra appointments

A proportion of patients seen at community sites may, because of lack of facilities or equipment, require a subsequent (or occasionally prior) appointment for a procedure which is normally done 'on the spot' at base clinics. This represents an extra appointment for these patients, compared with them attending the base clinic in the first place, causing them greater inconvenience and expense.

In the context of hearing aid services, there are several reasons why patients attending community clinics might require an extra appointment, the main ones being: a re-test of the audiometry (e.g. because of noisy conditions at the community site); to have tests for which there are no facilities on site; to have ear-wax removed (when there is no-one on-site to do it); and to obtain an ENT specialist opinion, particularly in the context of direct referral patients.

Evidence from the literature review

No evidence from studies of specialist outreach clinics is presented here because the findings are not considered generalisable to audiology. This is principally on the grounds that the reasons for additional appointments can be quite different and thus the numbers requiring one can also be quite different.

Almond[46] presented some relevant findings on this issue. Audiology service providers were requested to estimate the percentage of patients requiring "a repeat appointment for a treatment/investigation for which facilities were not available at first visit to a community clinic". From a sample of 20 providers, 16 gave estimates of 12.5% or less, while a small group of four gave responses in the range 20–25%. The median response was 10%.

Evidence from the project surveys

The project focused on extra appointments which involved community patients making a trip to the main departmental base, as these represent the greatest degree of inconvenience and increased expense for patients. In all, 17% of heads of audiology services rated the 'number of patients requiring a repeat appointment at base' as a major disadvantage of outreach, and only one item on the disadvantage checklist was rated as less of a disadvantage than this. Technicians rated 37% of community sites as worse for 'repeat appointments elsewhere' but only 5% as 'much worse'.

Additional information on this issue was collected from the centres that took part in the costing exercise. Audiology technicians were asked to estimate, for each specific community site being costed, the proportion of patients seen by them personally who needed a further appointment at the base:

(i) for any reason whatsoever
(ii) for a repeat of the PTA
(iii) for something that could have been done immediately at base.

Because data was collected from only ten centres, this is presented in *Table 52* for the individual sites, classified by clinic type.

TABLE 52 *Technician estimates of percentages of community clinic patients having a subsequent appointment at base site*

Reason for appointment at base clinic	Type of community clinic									
	Audiology support to ENT				Direct referral		ENT + direct referral	Repairs		
	Site 1	Site 2	Site 3	Site 4	Site 1	Site 2	Site 3	Site 1	Site 2	Site 3
Any reason whatsoever	15%	8%	4%	Unknown	5%	2%	5%	10%	4%	2%
For repeat of PTA	5%	2%	0%	3%	0%	0%	1%	N/A[a]	0%	N/A[a]
For something that could be done immediately at base	0%	7%	4%	5%	5%	0%	5%	10%	2%	2%

[a] *N/A, not applicable (PTA not undertaken at clinic)*

All the percentages are quite small and those given for 'any reason whatsoever' concur well with results for the majority of centres in Almond's[46] study. Furthermore, other evidence suggests that these ten centres are quite typical, as a group, of community sites in general: for site features, the technicians rated four of the ten as worse (one 'much worse') than the base site for repeat appointments compared with 37% of the Community Clinic Survey sample (*Table 20*), and seven were rated worse (two 'much worse') for noise compared with 73%.

The overall conclusion is that extra appointments only affect small numbers of the patients seen at most community clinics, and are not a serious drawback to this form of provision.

Patient non-attendance rates

Findings from the literature review

A total of 16 studies reported on the numbers of patients at community and base sites who failed to keep clinic appointments (*Table 53*). None of these studies were RCTs and, unfortunately, many factors can potentially confound the comparison between settings, including clinical case-mix, patient demographics, source of referral (GP or other), previous contact with services and whether the appointment was a first attendance or a follow-up. In some studies a breakdown by this final factor was provided but there were no attempts to control variables other than this.

Despite these caveats, however, all the studies consistently found reduced non-attendance rates at community sites, whether for new patients, follow-ups, or both combined. The degree of reduction varied between studies but, in most cases, the community rate is 25–50% lower than the main hospital rate.

Evidence from the project surveys

A substantial proportion of the heads of audiology services were of the opinion that non-attendance was less of a problem at community sites, with 37% rating this a 'major benefit' of their outreach services. Only 7% considered that non-attendance was worse in the community (see *Table 18* for full data).

The audiology technicians also considered attendance to be generally better away from the main department, rating 28% of community sites as better than the base in this respect, with just 8% worse. This still leaves the majority of sites, 65%, as no different to base and, given that only 3% were actually judged to be 'much better', the impression is that the overall reduction in patient non-attendance is not large. This conclusion, based on technicians' ratings of individual sites, does seem somewhat at odds with the large percentage of service heads who gave a 'major benefit' rating in this area.

Whatever the actual extent of reduction in non-attendance, the real issue is how big a difference it makes in terms of disruption of clinics and wasted time, both at the clinic and subsequently (e.g. in terms of arranging re-appointments), and unfortunately neither the studies from the literature nor the project surveys throw light on this issue. With respect to clinic disruption, large central clinics commonly overbook to allow for a certain level of non-attendance and, even when the workload is low, there are normally plenty of administrative tasks to occupy staff time. Community clinics, however, are typically manned by just one, or sometimes two, staff, making overbooking problematic, and non-attenders or late arrivals can have a relatively greater disruptive impact. Consequently, it is not at all clear just how much of a reduction in non-attendance would be required in order for the benefits to be substantive.

TABLE 53 *Patient non-attendance rates*

Quality rating	Study	Specialities	Findings	Non-attendance rates (outreach vs. main base)			Other evidence and comments	Samples (E = estimated)
				New patients	Follow-ups	All		
II	Bond, *et al.*, 1997[50]	6, including ENT	Overall non-attendance rate slightly lower at outreach clinics.			12% vs. 16%		508 vs. 751
II	Abery, *et al.*, 1997[49]	5, including ENT	Non-attendance rate a little lower at outreach clinics.			All: 10% vs. 16% ENT: 12% vs. 13%	Specialists reported DNA rates to be < 10% at 50% of outreach clinics (9/18) and as > 10% at all comparable main base clinics.	997 vs. 1111 351 vs. 307
II	Perrett, 1997[40]	3	Rate lower for new referrals at outreach clinics.	18% vs. 25%**				2706 vs. 49,337
II	Spencer, 1993[55]	Paediatrics	Overall rate slightly lower at outreach clinics.			20% vs. 25%		
II	Walshe & Shapiro, 1995[41]	8, including ENT	Lower mean rate at outreach across 8 specialities (mean is not weighted for patient volumes). Rate at outreach much lower for ENT alone.			8.5% vs. 13.8% 7.7% vs. 16.6%	DNA rates at outreach lower for 6/8 specialities and slightly higher for two.	2500E vs. 69,000E 510E vs. 7585E
III	Goldacre & Gatherer, 1977[43]	All	Rate was lower at outreach clinics.			8% vs. 12%		1853 vs. 18,232
III	McKechnie, *et al.*, 1981[75]	Psychiatry	Rate substantially lower at outreach clinics.			4% vs. 11%		72 vs. 54
III	Bailey, *et al.*, 1994[9,10]	11, including ENT	Rates lower at majority of outreach clinics.				Specialists reported fewer non-attendees at 63% of outreach clinics.	62 providers
III	Black, *et al.*, 1996[63] Leese, 1996[12]	Dermatology Orthopaedics	Overall non-attendance rate slightly lower for outreach clinics			10% vs. 14%		140 vs. 177
III	Brown, *et al.*, 1988[71]	Psychiatry	Rate lower at outreach clinics, for both new and follow-up patients.	19% vs. 40%	29% vs. 38%			91 vs. 55
III	Zegleman, 1988[115]	Psychiatry	Retrospective study found significantly lower non-attendance rate for new patients at outreach. Prospective study found no difference.	14% vs. 37%*** 25% vs. 30% NS			Main base rate for retrospective study thought to be inflated because defaulters offered a second appointment (which they also tended not to keep); outreach patients were not. However, result is still significant even adjusting for this (14% vs. 23%**). For prospective study, main base defaulters were not sent second appointment. Significant relationships ($p < 0.01$) found between non-attendance and social class (class IV worst rate) and no previous contact but not with age, gender or diagnosis.	171 vs. 263 (retrospective study) 77 vs. 93 (prospective study)

Note: significant differences between settings: ** = p < *0.01;* *** = p < *0.001*

continued

TABLE 53 contd *Patient non-attendance rates*

Quality rating	Study	Specialities	Findings	Non-attendance rates (outreach vs. main base)			Other evidence and comments	Samples (E = estimated)
				New patients	Follow-ups	All		
III	Helliwell, 1996[45]	Rheumatology	Rates marginally lower at outreach for both new and follow-up patients.	2.0% vs. 3.7%	1.3% vs. 2.7%			50 vs. 521 302 vs. 2068
III	Bryden, 1970[66]	All	Non-attendance rate for first appointments lower at outreach.	5% vs. 9%			Compared with two other local main hospitals, outreach rate was lower than one (9%) but equal to the other (5%).	194 vs. 86
IV	Subotsky & Brown, 1990[116]	Child psychiatry	Rate substantially lower at outreach for new referrals but not different for follow-up appointments.	18% vs. 34%*			Author reported no difference in non-attandance rate for follow-up patients but results are not given.	50 vs. 970
IV	Browning, *et al.*, 1987[100]	Psychiatry	Rate slightly lower for new patients at outreach.	14% vs. 18%				114 vs. 44
IV	Leese, *et al.*, 1986[117]	ENT	Rate much lower at outreach clinic (type of site unspecified) than at either a rural general hospital or urban main hospital			3% vs. 19% & 12%***	Study was conducted specifically because rate was high at rural general hospital, so this may be exceptional. However, rate at urban hospital should be representative.	384 vs. 15,653 vs. 44,009

Note: significant differences between settings: * = $p < 0.05$; *** = $p < 0.001$

Chapter 13

The costs of community provision

The project has reviewed the existing literature regarding the relative costs of outpatient clinics in community and main hospital settings, and has also carried out a special costing study of adult hearing aid clinics at a number of centres.

Prior to the design and implementation of the costing exercise, the project employed a health economist (Toby Gosden) from the National Primary Care Research and Development Centre, University of Manchester, to conduct a review of the costing methodologies that have been used in studies of community clinics and to make recommendations regarding the method that this project should adopt.

This review* is presented as appendix 5. The main findings, which relate to the quality of the existent studies and to the methodologies applied, are summarised below as appropriate.

Evidence from the review of literature

Published and unpublished studies pertaining to the relative costs of community clinics were collected and carefully evaluated as part of this project, including all 11 studies reviewed by Toby Gosden and the later investigations by Abery and colleagues[49] and Bond and colleagues.[50] The overall conclusion was that it would be unwise to generalise from these studies to hearing aid clinics, except in the case of patient costs (which were covered in chapter 7), for which the situation is fairly straightforward. The reasons for this conclusion are as follows.

All of the studies related to the costs of community clinics in medical/surgical specialities, and some important differences exist between these and hearing aid clinics.

First, specialist outreach clinics are in nearly all cases hosted by a single consultant working alone, or occasionally with a nurse, whereas base clinics involve consultant 'firms', comprising a specialist and one or more doctors of less senior rank. In the studies, clinics were costed on this basis. The staffing differences between settings have a considerable effect on the costs (expressed per patient), since the presence of non-consultant grade doctors (on lower salaries) at base clinics lowers the mean cost for this location, even if patient throughput (per doctor) is the same. Hearing aid clinics are not of this form, as technicians generally work independently and not in 'teams'; hence, the most meaningful comparison is between sessions held by the same technician in each setting.

Second, specialist outpatient clinics consist of a mixture of new and follow-up patients, and the proportion of follow-up patients is often much higher at base clinics, particularly compared with clinics in primary care. This is partly because more base clinic patients are given follow-up appointments and partly because they also tend to be followed-up more often.

For example, in the national study by Abery and colleagues,[49] the proportion of follow-ups at base clinics was 72% compared with 47% in the community sample; in Bond and colleagues[50] study in London, the corresponding figures were 66% and 23%, respectively. Follow-up appointments often take less time, require fewer tests or procedures and are often assigned to junior doctors (at base clinics, at least); consequently, the costs are lower. Differential follow-up rates can therefore have a considerable impact on the relative costs of the two settings.

The situation is quite different for hearing services. Generally speaking, most new patients, but not all, are offered just one follow-up after hearing aid fitting, irrespective of setting. Consequently, follow-ups are not really an issue in the context of the costs of such clinics. Against this, appointments for hearing aid repairs and other after-care are very common and are a major source of cost; little of what goes on at specialist clinics equates to these.

*NB: the review was completed before the results of the investigations by Abery, *et al.*[49] and Bond, *et al.*[50] became available.

A third factor which mitigates against generalising from the studies of specialist clinics relates to the validity of the cost estimates. Toby Gosden's review came to the following conclusions.

1. The quality of many of the studies was low. The range of costs that were estimated differed considerably and was often incomplete. Many studies provided no justification for including certain costs but not others. There was very often a lack of information about the methods of data collection, the assumptions made, the cost components included and the way in which costs had been estimated.
2. Only one study provided confidence intervals for the cost estimates. Only three used sensitivity analysis as a test of their assumptions and resulting conclusions, even though this would have been appropriate in most cases.

The most comprehensive and complete studies were those by Abery and colleagues,[49] Bond and colleagues,[50] Gosden and colleagues,[64] Cullis and colleagues,[59] and Gillam and colleagues.[60] However, even in these studies, many of the above issues still apply. For example, both Gosden and colleagues and Bond and colleagues (and, possibly, Abery and colleagues) made (different) assumptions about staffing levels at base clinics (since actual staffing was not known) – staffing levels are a major influence on the resulting cost estimates. As another example, in four of the five studies the only components of staff costs included were time at clinic, travel time, and travel costs; all other sources of staff cost were implicitly assumed to be the same across settings or negligible. However, no justification was provided for this. As will be seen later, at least in the context of audiology, there are a considerable number of other factors which contribute to a difference in staff costs between settings.

A fourth factor against generalising is that none of the studies utilised randomisation of any kind, at the level of either patients, providers, specialists or community sites. The representativeness of the findings is therefore an unknown and, with the exception of Gosden and colleagues,[64] none of the studies addressed this issue (e.g. by comparison of key measures with providers or sites that were not costed, or by the use of sensitivity analysis or confidence intervals). The lack of randomisation also meant that personal biases towards or away from community provision could have crept in at any stage: for example, with respect to the initial selection of community sites.

These factors, plus others that have not been mentioned, mean that the costs reported in these studies have to be regarded as very approximate and also as potentially biased in comparison with clinics that have not been costed. This is not to say that they do not have value within the context of the particular specialist clinics that were investigated but rather that, when all the factors are taken together (i.e. the differences between specialist and hearing aid clinics, the quite approximate nature of the cost estimates and the potential lack of representativeness), the basis for generalising from these results to the hearing services cannot be said to be strong enough.

Although the findings for specialist clinics should not be generalised to audiology, they have some relevance for the ENT outpatient clinics for which audiology technicians provide support; hence, some discussion of these finding is appropriate. Owing to the limited quality of most studies, this will be restricted to the five most comprehensive investigations.[49,50,59,60,64] The discussion will also be restricted to staff costs, as it is generally agreed that these represent the marginal costs in this context.

The results for the five studies are summarised in *Table 54*. Staff costs are given in two forms: per patient booking or attendance (the studies vary in this respect) and per new patient. None of the studies included all sources of staff costs, although Cullis and colleagues[59] included more than the others. The main component missing from all studies was clinic administration costs, which tended to be assumed to be the same for both settings, although without any reasoned justification.

On the basis of the components that have been costed, average staff costs per booking/attendance were higher for community clinics in the studies by Abery and colleagues,[49] Bond and colleagues,[50] Gosden and colleagues (for both specialities)[64] and Gillam and colleagues;[60] they were also higher at Oxford in Cullis and colleagues' investigation but lower at Bath.[59] The study by Gillam and colleagues resulted in by far the largest cost differential between settings, with staff costs (for those components which were measured) being four times higher in the community setting.

In addition to the overall costs reported in *Table 54,* both Abery and colleagues[49] and Bond and colleagues[50] provided breakdowns of staff costs by speciality, and these results demonstrate

TABLE 54 *Staff costs from studies of specialist clinics*

Study	Specialities	Price year	Components costed	Cost per booking/ appointment: outreach vs. main base (£)	Cost per new patient outreach vs. main base: (£)
Abery, *et al.*, 1997[49]	5, including ENT	1997	Medical staff time at clinic; opportunity cost of staff travel; travel cost.	16.64 vs. 11.74	28.35 vs. 41.93
Bond, *et al.*, 1997[50]	6, including ENT	1997	Medical staff time at clinic; opportunity cost of staff travel; travel cost.	11.90 vs. 9.12	15.51 vs. 26.98
Gosden, *et al.*, 1997[63]	Dermatology Orthopedics	1995	Medical staff time at clinic; opportunity cost of staff travel; travel cost.	Dermatology: 7.79 vs. 3.62 Orthopedics: 15.68 vs. 6.09	Dermatology: 12.17 vs. 7.53 Orthopedics: 25.66 vs. 14.30
Cullis, *et al.*, 1981[59]	Paediatrics	1977/79	Medical and clerical staff time at clinic; opportunity cost of staff travel; travel cost; adjustment for training of juniors; use of ambulance.	Bath: 4.26 vs. 5.95 Oxford: 5.72 vs. 2.60	Bath: 11.18 vs. 16.76 Oxford: 14.39 vs. 4.69
Gillam, *et al.*, 1995[60]	Ophthalmology	1992/93	Staff time and travel but exactly what these include is not reported.	Unknown	46.70 vs. 11.15

considerable variation. Abery and colleagues findings varied between the community clinics, being 10% cheaper than those at base for general medicine and up to 100% more expensive for cardiology. ENT staff costs were 20% higher for the community clinics. In the study by Bond and colleagues, the range was between ENT, 9% cheaper in the community, and general surgery, 80% more expensive. In both these studies, the distance of the community site from the base showed some relationship with increased cost – which is to be expected because of travelling time and expense. However, this only explains part of the variation: for example, in Abery and colleagues' study the highest travel costs were for general medicine, which was also the speciality with the lowest community staff costs relative to base.

Some authors have argued that it is more appropriate to express costs on the basis of cost per new patient (which provides a reasonable estimate of the cost per unique episode of patient care). One reason for this is that hospital clinics tend to include a much higher proportion of follow-up patients compared with clinics in primary care. This difference does not appear to be related to severity of case-mix but to setting-related factors, such as specialists at primary care clinics being more willing to release patients back into the care of their GPs. Expressing the results on the basis of cost per new patient makes allowance for savings to the hospital resulting from this. There are some problems with this approach, however, not least because a substantial proportion of the follow-up appointments at a hospital may be of patients initially seen in the community.

When the results are expressed in terms of cost per new patient, the findings from the investigations by Abery and colleagues[49] and Bond and colleagues[50] change quite dramatically, and the community clinics switch from being the most expensive to being very much the most economical. The results from Gosden and colleagues' and Cullis and colleagues' studies[59,64] do not alter quite so much, nor do the conclusions arising from them. Gillam and colleagues[60] only give results on this basis and these suggest that the community clinics were very much more expensive indeed.

As a result of the wide variation in results between studies (and even within studies), interpretation of the findings is not simple. In terms of cost per booking/attendance, there is a general (but not complete) consensus that, on the whole, this was higher in the community. However, this was clearly not true for all clinics and might not even be true for anything other than a small majority. In addition, given the variation between studies, the cost components that have not been included, and the assumptions and so on that have been made, it is not possible to put any kind of reliable figure on how much more expensive, on average, community clinics might be, or even whether they represent a small or substantial cost to the NHS. Furthermore, when costs are expressed per new patient, even this level of consensus between studies disappears and it becomes impossible to draw any sort of overall conclusion.

Evidence from the project costing exercise

A special exercise was included in the project to evaluate and compare the costs of community and

main base audiology clinics at a number of centres. The exercise was designed specifically with the characteristics of audiology clinics in mind and tried to avoid, as far as possible, the drawbacks that mar studies of specialist outreach clinics.

Methodology

The review of existing studies (see appendix 5) analysed the methodologies which had been applied, with the following general results:

(i) of 11 studies reviewed, ten were cost–consequence studies (i.e. the consequences associated with different clinic settings were expressed in terms of multiple outcome variables, such as patient satisfaction, waiting times, and professional opinions)
(ii) eight studies took a bottom-up approach to costing, and most used a combination of prospective and retrospective methods of data collection
(iii) the basis for comparing costs between settings was, in the main, per patient attendance, per appointment or per episode of patient care
(iv) very few studies explicitly specified a viewpoint for their cost analysis (e.g. NHS or societal viewpoint).

As a means of evaluating the methodologies, each study was rated according to a checklist of desirable components (with respect to economic evaluations of health care) devised by Drummond and colleagues.[118] By this means those investigations were identified which were considered to represent the best form of methodology. These tended to be those with the following characteristics:

- the widest range of cost factors
- prospective data collection
- bottom-up costing
- a societal costing viewpoint.

In the light of these results, a methodology for the project costing exercise was devised through dialogue between Toby Gosden and the research team. This necessarily had to take account of the resource and time constraints of the project but, within these, the methodology was to have the following key components.

1. The exercise would adopt an NHS viewpoint, as resources would not stretch to a full societal viewpoint which would have involved surveying patients.
2. Whenever possible, within time and resource constraints, a bottom-up approach would be used and data would be collected prospectively.
3. Information would be collected pertaining to NHS staff costs: material and equipment, capital and overhead costs. Owing to resource limitations, however, any involvement of ENT staff in the clinics would not be costed.
4. As wide a range of sources of the above costs would be included as possible.
5. It would not be possible within the exercise to randomise patients between settings but the participating centres would be randomly selected. In addition, as many extraneous variables would be controlled for in the design as possible.

In line with these principles, the design for the study was drawn up. Two key components of this were the selection of the centres and sites, and the forms and methods of data collection.

Selection of centres and community sites

A total of 12 centres were to be involved in the cost exercise, with each centre providing information pertaining to clinic sessions at one community site and to 'comparable' clinic sessions at the main base. To ensure comparability across settings, two stipulations were made. The first was that the principal technician involved in the sessions should be the same person in both settings, thus controlling for potential staff variation. The second was that, for the purpose of minimising case-mix differences, within each centre the sessions in both settings should be of the same type: either audiology support to an ENT outpatient clinic, or a 'direct referral clinic' (with all patients being direct referrals to audiology), or an open-access after-care clinic. This typology ensured that, across the exercise as a whole, a range of types of clinic would be covered. However, 'general' clinics were excluded, on the grounds that these are more variable with respect to patient-mix and would make it harder to maintain comparability between base and community settings.

The overall design plan was that each of the three types of clinic would be evaluated with respect to one community site and the base, at four different centres. Furthermore, the community sites would themselves consist of equal numbers of peripheral hospitals and primary care settings, evenly balanced across the clinic types. A schematic of the design is presented in *Table 55*.

TABLE 55 *Design of the cost exercise*

Community setting	Clinic type		
	Audiology support for ENT outpatient clinic	**Direct referral clinic**	**Open-access repair clinic**
Peripheral hospital	2 centres	2 centres	2 centres
Primary care	2 centres	2 centres	2 centres

In order to select the specific centres invited to participate in the exercise, all those that had taken part in the Community Clinic Survey were first excluded, so as not to make further demands on them. Next, all remaining centres, nationally, that held community clinics corresponding to each of the six possible combinations of clinic type and community setting (as in *Table 55*) were identified from the results of the Provider Survey. With one exception, two centres were then selected at random from within each combination-group and invited to take part. The exception was one provider who had been giving advice to the project throughout, and this centre was automatically invited. All the centres initially agreed to participate.

Several of the selected centres held more than one community clinic of the specified type. In these cases, a choice was made by one of the research team. However, this was not purely random but with a view to ensuring good variability, across centres, with respect to the distances of the sites from the departmental bases. However, no specific detail about the sites themselves was available when this choice was made. In approximately four cases, the head of audiology services expressed a preference for a different community site and these preferences were accepted. The reasons varied but were not related to service quality.

Data collection

Data collection was by questionnaire, followed by a telephone interview where necessary. Four questionnaires were developed, in collaboration with Toby Gosden (see appendix 6). The first of these, for completion by the audiology services manager, collected information for the base site relating to capital charges, overheads, equipment and administration (specific to the type of clinic being evaluated). The second questionnaire was aimed at a practice manager or finance officer at the community site and collected the same information with respect to that site.

The two remaining questionnaires were for completion by the principal audiology technician involved in the clinic sessions. The first of these asked for general information about the community clinic, including details of staff travel, use of equipment and rooms, preparation, and the impact of the clinic on non-attendance, domiciliary visits and the use of hospital transport. For some items comparative information was also collected relating to base clinics. The second technician questionnaire collected detailed data relating to specific clinic sessions: two consecutive sessions at the community site and two consecutive sessions of the same type (though not necessarily the same length) at the base site. All sessions in both settings were to have been conducted by the same audiology technician, so as to control for this important variable. In those cases in which more than one technician was involved, the work performed by the designated person was reported on separately. The details collected included length of session, time spent setting/packing up, patients seen, and procedures performed. It would have been preferable to have gathered data for more than two sessions in each setting but this was not considered practicable, given the other data collection demands that were being made on the centres, coupled with the fact that we were unable to offer any financial remuneration.

Owing to resource constraints, no data was collected relating to the costs of ENT staff involvement in the clinics. Thus, for the ENT outpatient sessions, only the work of the supporting audiology technician (and administration related to this) was costed and, in the case of the direct referral clinics, the costs of cross-referrals to ENT were not estimated. This does put some limitations on certain aspects of the study and these are highlighted in the results section below, as appropriate.

Results

For a number of reasons, the cost exercise was not fully realised as originally planned. One of the 12 centres withdrew and was replaced by a new selection, although non-randomly chosen

TABLE 56 *Characteristics of the community clinics in the cost study*

Centre	Type of clinic	Setting	Distance from base (miles)	Audiology staff attending	Typical length of session (hours)
A	ENT outpatient	Peripheral hospital	23	MTO3, MTO3	2.5
B	ENT outpatient	Peripheral hospital	17	MTO2	2.5–3
C	ENT outpatient	GP practice	1.5	MTO4	2
D	ENT outpatient	GP practice	16	MTO3	3
E	Direct referral	Peripheral hospital	14	MTO4, MTO2	7
F	Direct referral	GP practice	9	MTO4, MTO2[a]	4
G	ENT plus direct referral	Peripheral hospital	7	MTO3	7
H	Repairs	Peripheral hospital	17	MTO3	3.5
J	Repairs	Peripheral hospital	4	MTO1	2.5
K	Repairs	Health centre	8	MTO3 plus one other	2.5

[a] *MTO2 travels out to do repairs*

because of time constraints, and two other centres, although they did not withdraw, failed to return any questionnaires. This meant that a total of ten centres provided data, eight of which had been randomly selected. In addition, one centre misunderstood instructions and provided details of clinic sessions with a mixture of ENT and directly referred patients, rather than of the type intended.

The other area in which there were problems was in the collection of information relevant to capital and overhead costs. Very little of this was forthcoming from the community sites, and even for the base sites the information was, in most cases, incomplete. To pursue this missing information would have taken more time than project staff were able to spare and, therefore, a decision was taken to abandon this aspect of the exercise. Although these fixed costs are important for informing long-term strategic decisions, such as whether to shift an entire service from one location to another, they do not form part of the short-term marginal costs of a particular clinic, since they would be incurred (by the NHS) irrespective of whether the clinic operated or not; hence, the absence of any estimates for them is not a serious deficiency.[118]

Despite the data collection problems encountered, the cost exercise was in most respects very successful and certainly represents one of the best studies so far conducted of community-based outpatient services.

The ten centres which completed the exercise represented a good mix of different kinds of community clinic, and their characteristics are presented in *Table 56*. At six centres the community clinic used for costing was based in a peripheral hospital, while at the other four they were based in primary care sites. Four clinics consisted of audiological support for ENT outpatient sessions, three were for after-care, two were direct referral clinics, and one was a combination of ENT and direct referral. The distance of the sites from the departmental bases ranged between 1.5 miles and 23 miles, and session lengths ranged between 2 hours and 7 hours. In four instances, two audiology technicians jointly attended the clinics while, at six, one technician worked alone.

Case-mix

A factor which could seriously undermine a comparison between settings would be if the patient case-mix differed substantially. The case-mix details are presented in *Table 57*. For simplicity, these are given in the form of types of patient appointments/attendances, according to whether these were first-time ENT outpatients, first-time direct referral patients, hearing aid issues, follow-up appointments, or attendances for after-care. The 'after-care' category includes repairs, aid exchanges, remoulds, reassessments of hearing, battery replacement and counselling. For simplicity, a few instances which did not fit into any other categories have also been included here, such as audiometry not performed at the patient's first appointment. Within each category, the amount of technician time involved should be reasonably constant – with first appointments and issues taking most time, after-care taking least, and follow-up appointments falling between the two. Thus patient throughput at after-care clinics tends to be much higher than at the other types.

TABLE 57 *Details of case-mix*

Centre	Type of clinic		First-time ENT outpatients clinic	First-time direct referral	Hearing aid issue	Follow-up	After-care	Total patients seen
A	Support for ENT outpatients	Outreach	8	–	–	9	–	17
		Main base	5	–	–	5	–	10
B	Support for ENT outpatients	Outreach	9	–	–	–	7	16
		Main base	5	–	–	–	12	17
C	Support for ENT outpatients	Outreach	13	–	–	–	–	13
		Main base	18	–	–	–	–	18
D	Support for ENT outpatients	Outreach	12	–	–	–	7	19
		Main base	9	–	–	–	14	23
E	Direct referral	Outreach	–	7	2	8	14	31
		Main base	–	6	1	1	4	12
F	Direct referral	Outreach	–	6	–	1	7	14
		Main base	–	10	–	–	–	10
G	ENT plus direct referral	Outreach	1	2	2	5	13	23
		Main base	4	4	1	4	4	17
H	Repairs	Outreach	–	–	–	1	26	27
		Main base	–	–	–	–	37	37
J	Repairs	Outreach	–	–	–	1	32	33
		Main base	–	–	–	–	28	28
K	Repairs	Outreach	–	–	–	5	47	52
		Main base	–	–	–	3	45	48
Total across all centres		Outreach	43	15	4	30	153	245
		Main base	41	20	2	13	144	220

Some differences between settings in case-mix exist at the level of the individual centres, most notably at those designated B, D, E, F and G. However, in terms of the overall samples, across all centres combined, there was good comparability: first appointments accounted for 24% of all attendances in the community and 28% of those at base, while after-care accounted for 62% and 65%, respectively. In both settings the numbers of hearing aid issues were very small, representing less than 2% of all attendances. This may be a reflection of the fact that 'general' clinics were excluded by design.

The cost estimates

The various factors which impinge on costs in the current context can be divided into six categories: staff, treatment, material, capital, overhead and patient costs. The main focus of the analysis, however, is on marginal costs, that is, the additional cost resulting from treating an additional patient. This follows conventional practice in economic comparisons of alternative forms of health care.

In the present context, the marginal costs are taken to be equivalent to the staff costs, from an NHS viewpoint, or staff plus patient costs, from a societal viewpoint. For reasons given previously, capital costs and overheads are not considered to contribute to marginal costs. Material costs have been excluded from the margin, on the grounds that it is reasonable to assume that for the same case-mix of hearing aid patients, the use of materials (such as aids and ear-moulds) would not differ substantially between community and base settings. Treatment costs (that is, treatment taking place outside of the evaluated clinic sessions themselves) have only been included for certain circumstances (described later) in which the setting is believed to influence costs. The need for treatment involving specialist medical or surgical intervention, hearing therapy, or referral to other agencies, is assumed to be unrelated to the type of setting in which the patient was seen, and can therefore be excluded on these grounds.

Although material costs have been excluded from the calculation of marginal costs, they are nonetheless of some interest and have therefore been estimated. It is convenient to deal with material costs prior to moving on to the more detailed analysis of staff costs and patient costs.

Material costs

The costs of the materials used in the sessions that were evaluated are given in *Table 58*. The materials included: consumables and depreciation of equipment; ear impression material; ear-moulds; hearing

TABLE 58 *Use of materials and equipment during sessions (all centres combined)*

Item	Cost per unit (£)	Units used: outreach vs. main base	Mean cost per patient seen (£): outreach vs. main base
Instrumentation and consumables[a]	0.15	245 vs. 220	0.15 vs. 0.15
Ear impression	0.45	58 vs. 56	0.11 vs. 0.11
Earmould	6.00	17 vs. 6	0.41 vs. 0.16
First issue of hearing aid	35.00	4 vs. 2	0.57 vs. 0.32
Accessories provided with first issue of hearing aid[b]	3.05	4 vs. 2	0.05 vs. 0.03
Exchange of hearing aid[c]	17.50	8 vs. 4	0.57 vs. 0.32
Repair materials[d]	0.10	80 vs. 77	0.03 vs. 0.04
Issue of batteries[e]	0.60	42 vs. 31	0.10 vs. 0.08
Stationery[f]	0.50	82 vs. 76	0.17 vs. 0.17
Total cost per patient			2.16 vs. 1.38

[a] *Based on Brooks[119] figure, updated for inflation and assumed to be the same for all appointments*
[b] *Includes box for hearing aid storage, instruction booklet, three packs of batteries and information leaflets*
[c] *Assumes that 50% of returned hearing aids are reusable*
[d] *Based on a retubing; other types of repair are very infrequent and few involve material costs*
[e] *Based on issue of pack of six batteries*
[f] *Includes cost of appointment letter with envelope and stamp, plus cost of forms used at appointment – assumed the same for all appointments; open-access repairs are assumed to involve no stationery costs*

aids and related accessories; tubing; batteries; and stationery. Costs are based on information provided by one audiology services manager, with the exception of the cost of consumables and depreciation of equipment, for which the estimate given by Brooks[119] was used, updated to allow for inflation. Because this was only a very small cost, it was decided to use the same figure for each patient attendance, irrespective of the specific equipment and consumables used at that attendance. Other assumptions are indicated in *Table 58,* together with the cost estimates themselves.

The average cost of materials for each patient seen at the base sessions was lower than for those seen in the community – £1.38 compared with £2.16. Nearly all the cost difference between settings was due to a greater number of earmoulds and hearing aids being provided to the community sample. However, provision of these occurred at only three of the ten centres and the differences could well be an artifact of the particular sessions that were evaluated.

The estimates given in *Table 58* do not take account of materials used in repeat or additional appointments for community patients. On the basis of the technician estimates, these affected around 6% of all patients; and, on the assumption that each repeat/additional appointment involves £2.00 in material costs (most probably an overestimate), inclusion of these increases the average material cost per community patient by £0.12, to a total of £2.28.

Staff costs

This is the most important cost category relating to differences between setting types. Because of this, the various components contributing to it were identified in some detail early in the project and the data collection instruments were designed to cover as many of these as was practical. The identified components of staff costs are listed below. The list was intended to cover all factors which might have implications for marginal costs.

- ***Travel to the community site***. There are two components to this – the time staff spend travelling (during working hours), which is time they might otherwise spend with patients and the cost of travel itself (e.g. reimbursement of fares or car costs). Travel between home and the base normally occurs outside of working hours and therefore is not a cost to the health service.
- ***Preparation for a community clinic session***. Each community clinic session usually requires staff to spend some time at the base beforehand collecting together such things as the equipment, materials and notes required for the session. Likewise, this all needs to be put away again afterwards. For base clinics, the time spent preparing is not really distinct from that spent setting-up (see below).
- ***Setting-up/packing-up***. Time is spent at the start of each clinic session in, for example, setting-up equipment, and also in packing-up afterwards. Often the time involved is less at the base, because equipment can remain in place.

- ***Staff time spent on each patient during session***. This cost can differ if patient throughput differs.
- ***Staff time spent on administrative tasks***. Community clinics often involve a shift of administrative tasks away from main-base clerical staff. The shift can be in two directions – partly to clerical staff at the community site and partly to the technical staff conducting the community clinic (whose time is more expensive). The latter can end up performing more administrative work both during the session, and also outside it, for example, updating notes and databases, and even the arrangement of appointments.
- ***Repeat appointments (at base) for PTA***. Poor equipment or noisy conditions can result in some community patients having to attend the base for a repeat of their audiometry.
- ***Additional appointments (at base)***. A proportion of community patients require an 'additional' appointment at the base clinic for a test or procedure which is usually done 'on the spot' at base clinics. Typical examples might be patients in need of wax removal and patients requiring tympanometry. In total, the patient may actually not consume any extra staff time (in comparison to if they had gone to the base clinic initially) but, at the very least, additional administration costs are involved.
- ***Reduction in the number of domiciliary visits***. Some patients are able to get to a community site who would otherwise have been seen on a domiciliary visit. This can save on both staff time and travel.
- ***Reduction in the use of hospital transport***. As above, some patients can get to a community clinic who would otherwise have to have used hospital transport (ambulance or hospital car) to attend the base clinic. This saves driver costs and running costs.
- ***Patient non-attendance***. If non-attendance rates vary between settings, this affects both the medical/technical staff costs and also the administration costs (e.g. as a result of arranging reappointments).
- ***Training of juniors***. Some senior medical/technical staff time at clinics may be spent on supervising/training junior staff. This is more usual at base clinics and time spent on this should not be counted as session time.

Two of the above factors are forms of treatment cost (i.e. resulting from procedures conducted outside the immediate clinic session) which require community patients to attend the base site for an 'extra' appointment: repeat appointments for PTA and additional appointments for test/procedures. These forms of extra appointment come about as a direct result of the community clinic (that is, the patient would not have required these appointments if they had attended the base clinic initially) and, hence, represent an additional cost. Other forms of additional appointment exist which affect patients in both community and base clinic settings (e.g. in some cases the ear impressions have to be repeated) but it is assumed that, for an equivalent case-mix, the proportions of these would be the same in both settings and, therefore, this factor can be excluded from the marginal costs.

The estimation of session staff costs included all of the cost factors described above, with the exception of staff supervision/training. However, not many of the sessions in either setting involved combinations of senior and junior staff where supervision/training might be relevant; hence, this factor is unlikely to have affected costs very much. The details of how each cost component was calculated are presented in *Box 1*. A mixture of information was used, some collected in the context of actual clinic sessions, and some based on staff estimates of the amount of input required on various tasks (e.g. administration, session preparation).

Four of the cost components applied to only a proportion of community patients (and, it was assumed, to no base patients): repeat appointments (at base); additional appointments (at base); domiciliary visits; and use of hospital transport. Technicians were asked to provide rough estimates of the percentages of patients affected by each of these. In the case of domiciliary visits and hospital transport, the interest was in the percentages of community patients who would have required these if the community clinics had not been in existence, since this constitutes a cost saving resulting from the presence of the clinics. The estimated percentages of patients affected by each of these components are given in *Table 59*, together with the associated cost for each patient affected. These results form the basis for the costing of these components in subsequent tables. However, both the percentages and the associated costs are only approximate. Four centres reported that the percentage of community patients who would have required hospital transport, in the absence of the community clinic, was 10%. This seems a somewhat high figure but it is possible that these community clinics attract patients who would be unable to get to the base by themselves. The mean percentage said to require hospital transport, across all

BOX 1 The estimation of staff costs

General notes: Components of costs involving staff time, both audiology and administrative, were costed using the midpoint of the relevant salary scale for a particular staff member. Travel costs were based (in all cases) on the Automobile Association (AA) rate (£0.37 per mile) for use of a private car (to approximate to NHS reimbursement) and the AA running cost rate (£0.13 per mile) if a hospital car was used. Information collected in the form of estimates (e.g. typical times spent by clerical staff on administration), rather than based on actual sessions, was always requested in relation to the specific type of session being costed.

Audiology staff travel: Included the opportunity cost of technician time spent travelling between base and community sites (based on times reported by technicians), plus a car mileage cost. Journeys between home and a site are zero costed (as are journeys between home and base for base clinics). When a car was shared between two technicians, the mileage cost was split evenly between them.

Session preparation: Technicians provided estimates of the time spent at the base preparing for community clinics and on clearing away afterwards. It was assumed that there was no preparation time (as distinct from setting-up time, see below) for sessions at the base.

Setting-up/packing-up time at clinic: Costs are based on times reported by technicians for setting-up equipment, etc., at the start of each of each session being costed, plus the time taken to pack up at the end. Separate estimates were provided for the community and base clinic sessions.

Time spent on patient during session: The average time the technician spent on each patient during a session was calculated from the total session length, minus the setting-up/packing-up time, divided by the number of patients seen. It includes any administrative tasks performed by the technician during the session (e.g. between patients) and also allows for any non-attendees.

Administration by technician outside of session: Technicians provided estimates of the average time spent on administrative tasks, per patient, before and after a session. Separate estimates were provided for patients seen at the community and base clinics.

Administration by community site clerical staff: Information on the time spent by clerical staff at the community sites(and their grades) was obtained from the sites themselves or, in some cases, from the attending technician. In most cases this was zero, or almost zero (e.g. limited to directing patients to the waiting area). Administration tended to be done either by the technician, mostly outside of the session, or by administration staff at base.

Administration by base site clerical staff: Centres provided estimates of how much, and whose, time was spent on administrative tasks per patient before, during and after a session at base. In instances where centre clerical staff undertook administrative work for the community clinic (e.g. making appointments), the cost was based on the 'before' and 'after' times (i.e. excluding 'during'). For audiology support to ENT outpatient clinics, ENT clerical staff undertook all administrative work at base; no direct information was collected about this. Although ENT involvement in the sessions has intentionally not been costed, it was considered that a cost should be assigned in order to maintain comparability with rest of the cost analysis. Thus an estimate was made in such cases of 20 minutes administrative time by a clerical officer at the midpoint of the A&C scale II; the same cost was assigned to both community and base sessions.

Additional administration with respect to non-attendees: This does not apply to the open-access repair sessions, which were not appointment-based. Actual numbers of non-attendees were known for the direct referral and ENT/direct referral clinics. For ENT clinics, technicians provided estimates of non-attendance rates for each site (except B). The additional administration costs generated by each non-attendee were roughly estimated as half the administration costs for a patient who did attend.

Repeat of PTA at base: Technicians provided estimates of the time taken for PTA at the base. This was converted into a cost, to which was added the estimated costs of administration and setting-up/packing-up per patient for the base site.

Additional appointments at the base: These were costed on the basis of (only) 10 minutes technician time, since some will be ENT appointments (which are excluded from the costing) and most will be for short procedures. The estimated administrative and setting-up/packing-up costs per patient were added.

Savings on domiciliary visits: Technicians were assumed to travel, on average, the return distance between the base and community site by private car. Time spent on setting-up/packing-up (at the patient's home) was included, based on the reported community clinic times. Time spent with patients or on administration was not included as this would have been incurred wherever a patient was seen.

Savings on the use of hospital transport: This was costed on the basis of a hospital car and driver travelling the return journey between base and community site, with 10 minutes added to the driver's time for 'portering' the patient.

TABLE 59 *Factors affecting proportions of patients*

Centre	Reduced need to			Reduced need for transport patients to base			Repeat of PTA (at base)			Additional appointment domiciliary visits		
	Outreach patients affected (%)	Cost per patient affected (£)	Mean cost: all outreach patients (£)	Outreach patients affected (%)	Cost per patient affected (£)	Mean cost: all outreach patients (£)	Outreach patients affected (%)	Cost per patient affected (£)	Mean cost: all outreach patients (£)	Outreach patients affected (%)	Cost per patient affected (£)	Mean cost: all outreach patients (£)
A	10	17.48	1.75	No effect			2	9.99	0.20	7	9.43	0.66
B	No effect			N/A			No effect			4	4.98	0.20
C	4	4.14	0.17	No effect			3	6.58	0.20	5	5.20	0.26
D	No effect			10	23.13	2.31	5	10.25	0.51	No effect		
E	10	12.39	1.24		35.07	0.35	1	15.28	0.15	5	12.54	0.63
F	Missing			Missing			No effect			5	6.41	0.32
G	2	6.57	0.13	2	18.27	0.37	No effect			No effect		
H	5	15.67	0.78	No effect			No effect			2	6.39	0.13
J	10	4.79	0.48	5	10.40	0.52	N/A			10	2.56	0.26
K	10	9.58	0.96	No effect			N/A			2	5.59	0.11

centres, was 5.7%, and it is interesting that Cullis and colleagues[59] in their 1981 study found that 5% of 'country' patients travelled to central clinics in Bath by hospital ambulance.

An overall summary of the analysis of staff costs is presented in *Table 60*. It should be noted that, in this table, the cost saving resulting from reductions in domiciliary visits and hospital transport usage have been added to the costs for base patients (rather than subtracted from the community patient costs). This effectively treats the base patients as though they come from the same localities as the community patients (and have the same requirements for domiciliary visits/hospital transport). This is appropriate because the costs of seeing patients in the community should rightly be compared with the costs of seeing the same (or equivalent) patients at the base. At most centres and in both settings, the largest single component was the cost of the time the technician spent on each patient during the sessions. However, administration costs (in total) were nearly of the same magnitude and, at times, even greater.

There is considerable variation in the total staff costs for each centre, summed across all factors. The after-care clinics have the lowest staff costs per patient, which is not surprising considering that these tend to involve the quickest procedures and, hence, patient throughput is much higher; the direct referral clinics tend to have the highest staff costs per patient. At five centres, staff costs were lower in the community (*Table 60*: centres A, E, G, J and K). However, none of the differences were large and in one case (centre A) it was just one penny. At the remaining five centres, costs were greater in the community, in most instances by a greater margin. For each centre, the difference in cost between settings has been expressed as a percentage of the mean cost for the base. On the assumption that all important sources of staff cost have been included, these provide estimates of the relative cost of the community sessions. On this basis, the most expensive community sessions were those at centre H (71% more expensive than the base sessions), while the most economical sessions were those at centre J (39% less expensive than the base sessions). Both of these involved open-access after-care sessions. The range in the ENT and direct referral clinics was somewhat narrower: the community sessions here were between 45% more expensive (centre B) and 11% cheaper (centre G).

The costs for individual centres, however, are probably not particularly reliable, given all the assumptions and estimations that have been made. Overall costs across all centres combined can be expected to give a more reliable estimate. These are presented in *Table 61*, expressed in the form of a comparison between seeing the same community patients either at the community clinic or at a base clinic. For simplicity, some cost components have been collapsed together. The figures given in this table are the mean costs per patient based on the total patient samples (effectively the weighted centre mean).

This analysis yields an overall mean cost for the community clinics of £10.29 per patient, compared

with £8.69 for equivalent patients seen at the base clinic. The single greatest factor in increased costs was staff travel, which contributed £1.31. However, this was very nearly offset by the savings on domiciliary visits and hospital transport, at £1.03. Apart from these factors, the major influences were increased costs form session preparation and setting-up (£0.57), and extra administration (£0.51). The cost of the time technicians spent on patients did not differ greatly between settings. The overall difference between settings was £1.60. This represents an increase in staff costs for the community sessions of 18% over the costs for the base clinic sessions.

TABLE 60 *Session staff costs per patient (£); outreach vs. main base*

Centre	A	B	C	D	E	F	G	H	J	K
Setting	**ENT out-patient**	**ENT out-patient**	**ENT out-patient**	**ENT out-patient**	**Direct referral**	**Direct referral**	**ENT + direct referral**	**Repairs**	**Repairs**	**Repairs**
Audiology staff travel	4.39 vs. 0.00	1.14 vs. 0.00	1.02 vs. 0.00	1.72 vs. 0.00	1.40 vs. 0.00	1.66 vs. 0.00	0.00[a]	2.27 vs. 0.00	0.52 vs. 0.00	0.73 vs. 0.00
Session preparation	0.00 vs. 0.00	0.11 vs. 0.00	0.85 vs. 0.00	1.50 vs. 0.00	0.26 vs. 0.00	0.69 vs. 0.00	0.59 vs. 0.00	0.50 vs. 0.00	0.12 vs. 0.00	0.30 vs. 0.00
Setting-up/packing-up at clinic	0.66 vs. 0.45	0.23 vs. 0.10	0.46 vs. 0.25	0.54 vs. 0.15	0.54 vs. 1.34	0.75 vs. 0.69	0.59 vs. 0.53	0.41 vs. 0.03	0.10 vs. 0.03	0.30 vs. 0.24
Time spent on patient during session	3.65 vs. 7.20	3.74 vs. 2.68	4.96 vs. 4.80	4.10 vs. 4.13	7.18 vs. 7.90	8.73 vs. 8.65	7.95 vs.11.41	2.18 vs. 2.18	1.09 vs. 1.69	1.34 vs. 1.56
Administration by technician outside of session	4.51 vs. 4.51	0.89 vs. 0.89	0.00 vs. 0.00	4.51 vs. 3.39	5.49 vs. 5.49	2.55 vs. 0.00	6.09 vs. 1.58	2.76 vs. 1.58	0.28 vs. 0.28	0.99 vs. 2.33
Administration by community site clerical staff	2.20 vs. 2.20	2.20 vs. 2.20	2.20 vs. 2.20	2.20 vs. 2.20	0.11 vs. 0.00	0.94 vs. 0.00	0.11 vs. 0.00	0.11 vs. 0.00	0.00 vs. 0.00	0.39 vs. 0.00
Administration by base clerical staff[b]					1.75 vs. 2.93	2.74 vs. 2.98	0.00 vs. 3.21	0.00 vs. 0.33	0.00 vs. 0.91	0.00 vs. 0.44
Additional administration re non-attendees	0.07 vs. 0.24	0.00 vs. 0.00	0.11 vs. 0.17	0.25 vs. 0.14	0.30 vs. 0.00	0.15 vs. 0.30	0.00 vs. 0.00	0.00 vs. 0.00	0.00 vs. 0.00	0.00 vs. 0.00
Repeat PTA/ additional appointment at base (all costs)	0.86 vs. 0.00	0.20 vs. 0.00	0.46 vs. 0.00	0.51 vs. 0.00	0.78 vs. 0.00	0.32 vs. 0.00	0.00 vs. 0.00	0.13 vs. 0.00	0.26 vs. 0.00	0.11 vs. 0.00
Domiciliary visits/ hospital transport	0.00 vs. 1.75	0.00 vs. 0.00	0.00 vs. 0.17	0.00 vs. 2.31	0.00 vs. 1.59	0.00 vs. 1.03[c]	0.00 vs. 0.50	0.00 vs. 0.78	0.00 vs. 1.00	0.00 vs. 0.96
Total session staff costs	16.34 vs. 16.35	8.51 vs. 5.87	10.06 vs. 7.59	15.33 vs. 12.32	17.81 vs. 19.25	18.53 vs. 13.95	15.33 vs. 17.23	8.36 vs. 4.90	2.37 vs. 3.91	4.16 vs. 5.53
Difference as percentage of base cost	0	45	33	24	–7	33	–11	71	–39	–25

[a] *Travels from home*
[b] *For ENT sessions, assumes 20 minutes clerical administration per patient*
[c] *Estimate missing – this is the mean for all other centres*

TABLE 61 *Comparison of estimated costs (per patient) for community patients seen at community clinic and at base clinic*

Component	Cost when seen at community clinic (£)	Cost when seen at base clinic (£)	Difference (£)
Staff travel	1.31	0.00	1.31
Preparation and setting-up time	0.85	0.28	0.57
Time spent on patient during session	3.90	3.99	–0.09
Administration	3.90	3.39	0.51
Repeat/additional appointments at base	0.33	N/A	0.33
Domiciliary visits/use of hospital transport	0.00	1.03	–1.03
Overall mean cost (£)	10.29	8.69	1.60

In order to investigate the effect of clinic type, the centres have been divided into two groups: the three with after-care clinics and the remaining seven with ENT/direct referral clinics. Since there were only two direct referral clinics, it was not considered appropriate to treat these separately. The mean costs for the after-care group (weighted means) were £4.65 per attendance at the community session and £4.92 per attendance at the base clinic. Thus, the community sessions were, on average, 5% less expensive. For centres with ENT/direct referral clinics, the means were £15.04 for the community and £12.66 for the base clinic, making the community sessions 19% more expensive (because of a mathematical coincidence, this result is not much different to the figure of 18%, obtained for all ten centres combined).

On this evidence, open-access after-care clinics represent the more economical form of community provision. However, this is only a small sample with very wide variation between centres; hence, this conclusion is very tentative. It is of interest to note that distance is not a factor here, as these clinics remain more economical, even when travel costs and savings on domiciliary visits and hospital transport are left out of the calculations.

Sensitivity analysis of staff costs

The cost estimates presented above are subject to two main forms of statistical error. The first is 'measurement error' resulting from the use of numerous estimates made by technicians (e.g. of the times taken for various activities) and from the fact that they are based on only two clinic sessions in each setting for each centre. However, any measurement errors will be centre-specific and there is no reason to suppose that these have introduced any overall systematic bias in the results. Furthermore, the impact of any such errors will tend to be evened out in the overall costings for all ten centres combined.

The second form of potential error concerns certain 'global' assumptions that have been made in computing the costs. Because these affect all centres equally, any errors in these assumptions could result in a systematic bias across the exercise as a whole. To determine the extent to which this might be influencing the results, a sensitivity analysis was undertaken. The cost components which are most dependent upon assumptions, and thus most likely to have introduced a systematic bias, are those for repeat/additional appointments and domiciliary visits/ hospital transport.

In the case of repeat/additional appointments, a number of assumptions were made, with the most important, in terms of cost, being that these only applied to community patients, that all such appointments took place at the base clinic (hence only these were costed), and that additional appointments consumed an average of 10 minutes of a technician's time. It was also assumed that the numbers of other forms of extra appointment would not differ between settings. The effect of the first two assumptions can be gauged by varying the percentages of patients who required repeat/additional appointments and, provided this is varied enough, there will be no need to also vary the assumptions concerning technician time and other forms of extra appointment. Repeat/additional appointments actually made only a small contribution to overall costs and can be varied quite considerably without there being much effect on the final result. Thus, at one extreme, if it is assumed that as many base clinic patients required repeat/additional appointments as did community patients, the overall mean cost of seeing a patient at the base rises to £9.02, with the community provision being 14% more expensive than this (as opposed to 18%). At the other extreme, a doubling of the numbers of community patients having such appointments results in community costs being 22% higher than those for the base clinic. Even with a quadrupling of such appointments, this only rises to 30%.

Variation of the assumptions relating to cost savings on domiciliary visits/hospital transport has a greater effect because this component carries a higher cost. One important assumption was related to the amount of staff time (technician or driver) spent with the patient. A second was that a return journey, from the base to the patient's home and back, would be involved for each patient affected (in practice, more than one domiciliary visit may be done on the same trip). It was further assumed that all hospital transport would be by hospital car, whereas some might in fact be by ambulance (which would be more expensive), and that for these journeys only running costs (i.e. petrol and oil) would be incurred. If the benefit derived from reductions in domiciliary visits and transport use is doubled, then the cost difference between settings reduces to just £0.57, or 6%. If the benefit is halved, the overall cost for the base clinic drops to £8.17, with community provision being 26% more expensive than this; if it is eliminated completely, the community sessions become 34% more expensive.

As a 'worse case scenario', a halving of the cost savings on domiciliary visits/hospital transport can be combined with a doubling in the community costs of repeat/additional appointments. Under these conditions, the mean cost of seeing a patient in the community becomes £10.62, compared with £8.17 if the same patient was seen at the base clinic – a cost increase of 30%. This figure probably represents a reasonable upper bound on the cost differential between settings under variation in the costing assumptions. The corresponding 'best case scenario' (i.e. a doubling of savings on domiciliary visits/hospital transport and no increase in repeat/additional appointments) results in a lower bound of community costs being 2% higher than base costs.

Patient costs

Although the cost exercise did not include collection of any information from patients themselves, it was considered important to try and obtain at least some rough idea of the financial implications of the community clinics for patients. For this purpose, derived estimates of the cost savings made by patients seen at the community clinics are compared with the costs which would have been incurred if the same patients had attended the base clinic.

In order to derive these estimates, it was assumed that the average community patient saves a travel distance equal to four-fifths of the total return trip between the community site and the main base. The basis for this is that some community patients can be expected to live midway between the two sites and, hence, the mileage saved by these patients is somewhat less than the full distance between sites. Four-fifths was adopted because this was the average additional distance travelled by 'country' patients to the base in the only available study to have examined this.[59] To compute the amount of travelling time saved, an average speed of 30 miles per hour was assumed.

Using the above figures for distance and time saved, estimates have been made of community patient travel expense savings, based on use of a private car at the Automobile Association's marginal running-cost rate of £0.13 per mile, and of patient opportunity-cost savings, based on the Department of Transport figure of £0.02[93] per minute (these assumptions are the same as those made by Abery, *et al.*,[49] Bond, *et al.*[50] and Gosden, *et al.*[64]). The resulting costs (see *Table 62*) should only be regarded as approximate, not only because of the assumptions made but also because no allowance has been made for a number of others factors, with smaller cost implications. Principal among the latter are the probable additional savings resulting from fewer accompanying persons and shorter delays compared with base clinics, and the extra cost resulting from repeat/additional appointments, and from not being seen on a domiciliary visit or not being provided with hospital transport. These effects, however, will be small in comparison to the major travel costs and will also, to some extent, tend to cancel each other out. On the basis of the components that have been costed, the average financial saving per patient resulting from the community clinics, is quite considerable: at five of the individual centres it is more than £4.00, with the overall average saving across all centres being £3.35. This figure is more than twice as large as the estimated additional staff costs.

Sensitivity analysis of patient costs

The estimates of patient costs have been calculated on the basis of an average saving in travel

TABLE 62 *Patient cost savings as a result of being seen in the community*

	Centre										Weighted mean
	A	B	C	D	E	F	G	H	J	K	
Distance of site from base (one-way)	23 miles	17 miles	1.5 miles	16 miles	14 miles	9 miles	7 miles	17 miles	4 miles	8 miles	
Travel distance saved per patient (return trip x 0.8)[a]	36.8 miles	27.2 miles	2.4 miles	25.6 miles	22.4 miles	14.4 miles	5.6 miles	13.6 miles	6.4 miles	12.8 miles	
Travel expenses saved[b]	£4.78	£3.54	£0.32	£3.32	£2.92	£1.88	£1.46	£3.54	£0.84	£1.66	£2.31
Value of time saved[c]	£2.16	£1.60	£0.14	£1.50	£1.32	£0.84	£0.66	£1.60	£0.38	£0.76	£1.04
Total saving	£6.94	£5.14	£0.46	£4.82	£4.24	£2.72	£2.12	£5.14	£1.22	£2.42	£3.35

[a] *Based on assumption that community patients save an average of 80% of distance to main base*
[b] *Assumes all trips by car, costed at AA rate of £0.13/mile running costs*
[c] *Assumes an average travelling speed of 30 mph, costed at Department of Transport rate of £0.0293/minute*

TABLE 63 *Effect of community audiology clinics on social costs (per community attendance)*

Centre	E	F	H	J	K
Type of clinic	**Direct referral**	**Direct referral**	**Repairs**	**Repairs**	**Repairs**
Effect of community clinic on NHS costs per attendance	–£1.44	£4.58[a]	£3.46	–£1.54	–£1.37
Effect of community clinic on patient costs per attendance	–£4.24	–£2.72	–£5.14	–£1.22	–£2.42
Total effect of community clinic on social costs per attendance	–£5.68	£1.86	–£1.68	–£2.76	–£3.79

[a] *Cost savings on domiciliary visits/hospital transport based on mean over all centres*

distance equal to four-fifths the distance between community and base sites. This results in a substantial saving in expenses for patients, which would be even greater should the actual mileage savings be greater than this estimate. Varying the assumption downwards, patients still make notable gains even if the travel distance saved is only about 50%: in this case, the average cost saving (across all centres) becomes £2.09, which is still higher than the increase in NHS costs associated with the clinics.

Social costs

The overall costs to society resulting from the community clinics can be estimated by combining the patient costs with the marginal costs to the NHS resulting from the clinics. However, it is only appropriate to do this for those centres at which the sessions were not lead by ENT. This is because ENT costs have not been estimated and, without these, the full NHS costs are not known. It is quite likely that the ENT costs were higher for the community clinics, just as the audiology costs were; in terms of society, any savings made by patients attending these clinics have to be put in the context of all sources of extra cost that result from them.

The findings for the five centres where the sessions did not involve ENT are presented in *Table 63*. The results are presented in terms of the estimated effect that each community clinic had on the social costs associated with patients attending the clinic. At four of the five centres, the community sessions resulted in a reduction in social costs, with quite a substantial reduction (over £3 per attendance) in two cases.

Implications for services

Across the ten centres which took part in the costing exercise, staff costs for the community sessions that were evaluated were calculated to have been, on average, 18% higher (per attendance) than the costs for the corresponding base clinic sessions. When certain of the assumptions made in deriving this figure are varied, the approximate lower and upper bounds obtained for this result are 2% and 30%. The calculation of these figures, however, involved a number of estimates, provided by technicians, which have not been varied. Even so, with the exception of one centre, on an individual basis the cost difference between community and base settings ranged between +45% and –39%, which suggest that above results may not be far wrong.

It is worth considering the implications of these results when they are assumed to be representative of hearing aid services in general. Davis[39] conducted a survey of all hearing aid centres in England and estimated that the total spend on hearing aid services (including both initial provision and after-care) in 1997 was about £50 million, of which close to 50% went on staff costs and 50% on materials (including aids, ear-moulds, batteries, consumables, etc). On this basis, an increase in staff costs of 18% in the context of community clinics translates into a 9% increase in total costs (staff plus materials) for these clinics, compared with main base provision.

From the Provider Survey conducted under this project, it was estimated that nationally some 30% of all hearing aid work is undertaken in community settings. Combining this result with the above, the suggestion is that the current mix of community and base services costs about 2.7% more than if all services were fully centralised. This is obviously a rough figure, since it is the product of a number of estimates and assumptions. Nevertheless, the finding that the present level of community provision represents only a small increase in total costs should be valid. For example, if staff costs are actually 30% higher in the community, instead of 18%, the figure increases to 4.5%.

It is worth considering what steps could be taken to make the cost differential lower. Most of the increased cost of community clinics results from staff travel. This could be reduced (per head) by providing longer sessions (e.g. full day rather than half-day, if demand allowed it), or by arranging things such that technicians travel out (or to) home, rather than via the main department. There was some evidence, although by no means conclusive, that after-care sessions represent the most economic form of community clinic; this will be partly because clinic numbers are higher, since the procedures take less time. Another source of increased expenditure was the time spent at base preparing for community sessions – it may be possible reduce this by arranging for storage space at the outreach site. Lastly, technicians should not be required to perform administration tasks relating to community clinics if it is possible to pass these to clerical grade members of staff.

All the previous cost analysis has been conducted on the basis of the cost per patient attendance. This implicitly assumes that patient outcomes do not differ significantly between settings. However, this may not be the case. For example, evidence was presented in chapter 8 which suggested that community-based after-care services may attract numerous patients who would not attend centralised after-care clinics. If a successful outcome is defined in terms of a patient's satisfactory use and maintenance of a hearing aid some time after fitting (e.g. at 6 or 12 months), then community clinics may result in a higher proportion of such successes. A number of studies have shown that a considerable proportion of hearing aids are underused or fall into disuse not long after fitting.[83,120–124] It is hard to put a precise figure on this, as studies vary considerably in the measures used, but for standard NHS post-aural analogue aids, 20–30% would not be far off the mark. In addition, a substantial number of other hearing aids may not be functioning optimally for want of proper maintenance. If community clinics act to reduce the proportion of discarded or badly maintained hearing aids, then this alone could compensate for any increase in staff costs. For example, a 9% increase in costs (staff plus materials) in the community would be fully offset if there was a corresponding 9% increase in the 'success rate' for patients seen at those clinics, since this would result in the cost per successful fitting being the same for both settings.

The idea of a reduction in resource wastage is an appealing one. However, one consequence of this would be extra demand for after-care (e.g. from patients who would otherwise have abandoned the hearing aid), possibly necessitating longer or more frequent after-care sessions and increasing material costs. Hence, the total costs of running a service would be greater as a result of higher patient volumes. The same would result if community clinics have the effect of stimulating GP referrals for hearing aids.

Impact of new technology

New hearing aid technologies are in the process of being introduced into the NHS. The NHS introduced its own version of an in-the-ear (ITE) aid in recent years, after a long period in which the behind-the-ear (BTE) format was standard issue. Digital aids are now available in the commercial sector and, as the technology reduces in price and the benefits become clear, these may also be increasingly used within the NHS. The hardware, staff and repair costs associated with the new technologies may be different from those for standard analogue hearing aids, affecting not only the costs associated with fitting and after-care but also the cost differential between service settings.

The cost analysis in this chapter was necessarily based upon current practice at the centres which took part in the evaluation. Some of these centres are known to fit a proportion of patients with the new NHS ITE hearing aids and to very occasionally fit a commercial programmable aid. One thing that was not done in this study was to determine what proportions of patients attending base and community sites were using standard BTE technology and what proportion were using ITE or other types; however, we can be confident that the latter group was very much in the minority. In the future, however, provision of new kinds of hearing aids can be expected to expand.

The important question in the current context is to what extent such an expansion might impact on any cost differential between base and community settings, and at this stage the information to say whether the overall result will be to increase or decrease the differential is lacking. There is also the possibility that new technologies might impact on the types and degree of after-care required by patients, altering patterns of demand for this aspect of the service and, hence, the associated resource requirements.

If new and current technologies were to be used side-by-side within the same community clinic setting then this would introduce a further complicating factor. The logical expectation is that this would raise community costs, since a wider range of stock and equipment would need to be available, thus increasing the costs of preparing for the clinic (e.g. gathering equipment and materials together and setting-up in the community), and, in addition, adding to the complexity of operating a clinic.

Chapter 14

Summary, discussion and recommendations for research

Summary of main findings

The evidence base

The systematic search for literature identified 44 studies which provided evidence pertaining to the provision of outpatient services away from main hospital departments. Of these, 41 studies were conducted in the context of medical and surgical specialities, and only three related directly to adult hearing aid services. Two of the latter were MSc theses, and the third was of quite limited quality and scope. The project supplemented this evidence with the following primary research:

(i) a national 'Provider Survey' of NHS audiology/hearing aid service managers
(ii) a 'Community Clinic Survey' involving a 25% sample of all NHS audiology/hearing aid centres, concerned with service provision and audiology technician views in the context of individual community sites
(iii) a costing study, conducted at ten centres.

Findings from the research literature relating to medical and surgical specialities have only been included when the authors were reasonably convinced that it was appropriate to generalise the findings to include clinics concerned with the provision of hearing aid services. A useful guide here has been consistency of results across a wide variety of specialities, some of which, such as psychiatry, rheumatology and paediatrics, may be as different from each other as they are from audiology. Wherever possible, such generalisations have been corroborated by evidence specific to hearing aid services derived from the project surveys or other sources.

Extent and distribution of community hearing aid services

The surveys conducted under the project provide a picture of the current pattern of community hearing aid provision in the UK. Across the UK, services are provided at one or more community locations by 81% of all NHS audiology departments/hearing aid centres. The remaining 19% are fully centralised. In all, 95% of departments are based in hospitals, with most of the remaining 5% in health authority or trust-owned health centres.

The bulk of community provision is based at peripheral hospitals (including main hospitals without an on-site department). These comprise 47% of all community sites. Another 24% of sites are GP premises and the remaining 29% are community health centres (some with GPs attached) or sites without GPs. The great majority of the GP premises are fundholding.

Half of all community-based hearing aid clinics had been set up since the introduction of GP fundholding in 1991. This includes 76% of clinics in GP premises but only 35% of those at peripheral hospitals. Half of the latter group have been in existence for 10 years or more.

About 70% of all adult hearing aid work (including PTA, fitting, follow-up, repairs, and battery provision) is conducted at main departmental bases. An estimated 17% takes place at peripheral hospitals, 9% at primary care settings (with GPs on site), and the remaining 4% at other community locations without a GP presence. The finding that 9% of work is undertaken in primary care is very consistent with studies of outreach clinics in the medical specialities.

The services most commonly provided at outreach sites are PTA, ear impressions and hearing aid repairs (available at 80%, 90% and 74% of sites respectively). Fittings, follow-ups and battery replacements are all available at about two-thirds of sites, while support for ENT clinics and direct referral schemes both operate at about half of the sites.

There are differences between types of community settings with regards to what is provided: support for ENT clinics is mostly concentrated at peripheral hospitals; direct referral is common at both peripheral hospitals and GP practices (mostly fundholding) but rarely takes place at community health centres or sites without GPs, both of which are the favourite settings for open-access repair sessions.

Benefits and disadvantages according to purchasers and providers

Published studies of community clinics in the medical and surgical specialities have consistently found both specialists and GPs to rate improved patient access as the single biggest advantage of specialist clinics based in primary care. Both groups also put improved GP–specialist communication in second place. From this survey, heads of audiology services likewise considered patient access to be far and away the greatest benefit of community hearing aid clinics, and it was rated a 'major benefit' by 95% of respondents. A majority also considered that community clinics had major benefits in terms of encouraging hearing aid use and maintenance, and in providing continuity of care. Communication with GPs was lower down the list; however, the question was asked in the context of community provision in general and not specifically about clinics in primary care.

The three professional groups (GPs and specialists in the context of specialist clinics; heads of audiology services in the context of hearing aid clinics) demonstrated a moderate level of agreement over three other benefits – reduced patient waiting times, lower non-attendance rate, and the attraction of work into the department. Substantial numbers of audiology heads also claimed benefits in terms of an improved GP willingness to refer and in reductions in domiciliary visits.

There was far less agreement about important disadvantages. Specialists were mainly concerned about the impact on their time; the biggest concern of GPs was the extra administrative work involved in housing clinics; for the audiologists, the greatest drawbacks, by far, were a lack of quiet conditions for testing patients, and the difficulties of arranging cover for clinics when staff were absent. A smaller, but notable, number of audiologists also reported problems in the community with regard to equipment, space, and reduced senior staff time at base for the training/supervision of juniors.

Features of the community sites and the quality of service

As part of the project's Community Clinic Survey, technicians involved in providing services in community settings rated each site individually from a list of 23 different features. Only six features were found to be statistically significantly better at community sites (on the whole) than at departmental base sites: parking of cars; patient non-attendance; patient satisfaction; waiting times; communication with GPs; and technician work satisfaction. Only one of these, carparking provision, was judged to be better than at the base for more than 50% of the individual community sites. Many more features, 14 in all, were rated as significantly worse in the community and six of these were worse at 50% or more of the sites: technician travel time; administrative backup; access to patient records; the range/standard of equipment available; quiet conditions for testing; and information on display for patients. These last two items were very widespread deficiencies, occurring at nearly three-quarters of all community sites. Technician perceptions of what was good and bad about the community services matched well with the views of heads of audiology departments, collected under the Provider Survey.

The different types of community settings were perceived by technicians to differ significantly on eight features. Four of these related to clinical efficiency, which was reported to be at its best in GP practices, and at its worst in non-GP, non-hospital, locations. The other four significant items related to how 'patient-friendly' the sites were, and this was perceived to be worse at larger peripheral hospitals than anywhere else. The three biggest deficiencies of community provision, noisy conditions, lack of information on display and limited equipment, appeared to be equally poor in all types of setting.

From the Provider Survey, 62% of heads of audiology services rated the overall quality of service provided at their community hearing aid clinics as poorer that the service at the main base. Only 6% rated it as better. Despite this, 80% considered the community clinics were worthwhile and only 12% thought not. Technicians (Community Clinic Survey) very much concurred with this assessment: they rated 60% of individual clinics as offering a poorer standard of service, while still regarding 93% to be worthwhile and only 5% not worthwhile. The main reasons technicians gave for their view that a community clinic gave a poorer service were the standard of equipment and noisy conditions; the main reasons for considering such clinics worthwhile were entirely related to patient convenience and access.

Technician ratings of overall service quality did not differ significantly from one type of community setting to another. However, technician ratings of clinic worth differed significantly, with clinics based in larger peripheral hospitals being rated, on the whole, as the most worthwhile, and those in GP practices being rated the least worthwhile.

These ratings appeared to be not so much to do with the setting type *per se* but to certain aspects of the clinics provided in these settings. In particular, technicians were doubtful about the value of conducting sessions restricted to providing audiometric support to an ENT clinic and nothing else, and a disproportionate number of these took place in GP practices. Another factor was low patient numbers; these were often given as a reason for rating a clinic as not worthwhile.

Patient access and satisfaction

The review of the literature identified only one study that had canvassed the views of hearing aid patients with regard to community clinics, and this was very limited in its scope. Accordingly, almost all the evidence on patient opinion comes from studies of patients attending clinics in the medical and surgical specialities (sometimes including ENT).

All studies were in unanimous agreement that patients attending community sites as a group experienced much shorter, quicker journeys, at far less personal financial cost, than patients attending base sites. This was even more pronounced when the comparison was with patients living an equivalent distance from the base to the community group. In addition, far fewer outreach patients needed to be accompanied to the clinic (e.g. to provide transport) and, where there was a companion, far fewer of these lost work time as a result.

All studies reported patient satisfaction to be at high levels in both community and base settings. The largest, best-designed studies reported significantly greater satisfaction among community patients but the actual effect sizes were not large. An important confounding variable here is the grade of staff seen (more likely to be a consultant at outreach sites) and this plus other confounding variables, such as case-mix and demographic differences, make it impossible to say whether the small increases in satisfaction were due to location *per se*.

In the great majority of studies, patient waiting times were shorter at community sites, although usually not to a large degree. On the level of individual clinics, however, there were a few examples of longer waiting times at community sites. Case-mix is a confounding variable here but should generally act to depress average waiting times for patients attending the base site (as a result of urgent cases going there) and thus does not affect the above finding.

There have been no studies of the impact of community services on waiting times for base clinics.

All studies, bar one, agreed that patients seen in community settings exhibited a very high level of preference for that setting (70% or more), and very few would rather have attended a base site. Patients canvassed at base clinics were, by contrast, quite evenly divided in their preferences; however, for a substantial proportion of this group the base site may, in any case, have been their nearest provider. Very similar results were found for clinics in both primary care and peripheral hospital settings. Preference is confounded with the same variables that confound satisfaction levels, particularly the grade of staff seen. However, the size of the effect here, and its consistency across studies, make it unlikely that confounding factors offer an adequate alternative explanation.

An opposite result to the above was reported in just one study – that is, very high preference for base clinics. This was also the only investigation specific to hearing aid patients. The likely explanation for the discrepancy between this study and the rest is that it was strongly implied in the question used that a community-based service was a poorer service. Even so, patients who did not have private transport still expressed an overall preference for the community site. Combining this finding with those from the other studies, the overall implication seems to be that patients generally prefer a community service unless they perceive it to be a substandard one, in which case most will opt for the base clinic, provided that transport is not an issue.

The impact of outreach on GP referral patterns

In studies of the medical/surgical specialities, about 40–60% of referrals from GPs with access to local clinics, either at the practice or nearby, were seen at those clinics. The remainder attended main departmental bases. The reasons were mainly due to: urgency; unavailability of time slots at the community clinic: hospital tests being required; or referral to a particular specialist.

In line with the above, there was consistent evidence across a small number of studies, although none of them high quality or well-controlled, that GPs with specialist clinics on site reduced the number of referrals they made to the main hospital base. However, since on a national basis only something like 5–10% of all referrals are seen

at in-house GP clinics, the impact of these on overall hospital workload must be quite small. A much higher proportion of referrals are seen at clinics in peripheral hospitals, and these have a correspondingly greater impact on reducing patient numbers at the base clinic.

There was consistent evidence from eight out of nine studies that GPs with access to specialist outreach clinics increased their total referral rates: that is, to the clinic and the base, combined; in some cases quite substantially. However, none of the studies was well-controlled for potential confounders and the finding needs to be substantiated by better-designed investigations. In addition, the evidence available does not allow a figure to be put on the overall effect size. It was also the case that the studies were concerned almost exclusively with clinics in primary care; it is not known whether clinics based at peripheral hospitals or other non-GP sites might have a similar impact on referrals. In the case of audiology, the Provider Survey produced some corroborating evidence, although only at the level of professional opinion, with 78% of heads of audiology services agreeing that their outreach services had increased GP willingness to refer. Some evidence was also found although rather limited in quality and scope, that community-based after-care sessions can improve patient use and maintenance of hearing aids and encourage lapsed users to re-establish contact with services.

Effect of outreach services on equity of provision

Studies in the medical and surgical specialities have found that waiting times for patients seen in community locations were, on the whole, reduced compared with waiting times at the main departmental base (see above). In the case of audiology, the project surveys found that, generally speaking, waiting times were only shorter at non-hospital sites. However, the issue of whether longer waiting times at base sites are themselves partly the result of staff spending periods off-site attending to outreach clinics has not been addressed by any study; this could clearly be a source of inequity.

Both in the specialities and in hearing aid services, clinics based in GP practices are mostly restricted to patients of those practices, or at most open to one or two other practices. This finding is particularly true of fundholding practices. This can create inequity within localities.

There have been few quality studies of the social demographics of patients seen in different settings. One large study in the London area involving 18 clinics in a variety of specialities found no overall differences between community and base samples in this respect. However, another large, national study covering 19 specialist clinics found outreach patients significantly more likely to be from less disadvantaged social groups, although the differences were not dramatic.

Since the introduction of GP fundholding, most new clinics in primary care settings have been based in fundholding practices. This has been true of audiology as well as the medical specialities. Fundholding practices themselves have been found to be concentrated in wealthier areas. Prior to the introduction of fundholding, the literature contained many examples of community clinics being established specifically to target disadvantaged areas but few have been reported since.

Impact on the primary–secondary care interface

Published surveys of specialists and GPs indicate that both groups consider improved communication between them to be the second largest benefit of outreach clinics in primary care settings. Many GPs also report educational benefits, although not to such a high or consistent degree.

Unfortunately, there are no sources of evidence for (or against) the above other than statements of professional opinion. In addition, nothing is known about the magnitude of such benefits. In terms of actual contact between specialists and GPs, without which there would be no communication or education, the evidence is that, in most instances, it is quite minimal. The indications are that at about 40–60% of specialist clinics in primary care no contact occurs at all between the resident GPs and the visiting specialist(s); even when there is contact, this tends to be infrequent and short, except when regular meetings or joint consultations are scheduled. In spite of this, such contact as there is could still represent a considerable improvement over hospital-based clinics, at which there is no face-to-face contact between the professions at all.

For community-based hearing aid services, good proportions of the technicians in the Community Clinic Survey considered that both GP communication and GP education were improved at sites where GPs were present, and even more so at premises actually owned or managed by GPs rather than at community health centres. However, there was less conviction that these benefits actually translated into changes in GP behaviour,

with only 14% of technicians saying that referral quality at such sites was better than at the base site.

Aspects of effectiveness and efficiency

The available studies have been very mixed in their findings relating to the severity of medical conditions among patients attending community and base clinics. However, most investigations in this area have been concerned with psychiatry and most of the disagreement was between these studies. Excluding psychiatry studies, all of the other reported case-mix differences have been small. Although direct evidence for hearing aid clinics is lacking, the result has been found to be true for ENT in studies which have included this speciality, and a good proportion of hearing aid patients come via the ENT route.

Patient outcomes are of crucial importance when comparing between service settings. However, despite an extensive, worldwide, search for literature, no outcome studies specific to the issue of community hearing aid services have been found.

Even in the context of outreach clinics in the medical specialities, there exists a paucity of research on outcomes. However, what evidence there is suggests that, in terms of health gain, community and base settings show little overall difference. This suggests that there is nothing inherently detrimental in the use of community locations but, apart from this, the finding has little relevance to community-based audiology. This is because the types of outcome of interest are quite different, being mainly to do with the quality of aid fitting, the benefit obtained, aid use and maintenance, and the management of ear pathology. Some of the features associated with community clinics might lead to expectations of poorer outcomes for some patients, but other features could lead to better outcomes.

A form of outcome of particular relevance to community-based hearing services concerns the risk of significant ear pathology being inappropriately managed. No studies have looked at risk in relation to different service settings but a number have sought to estimate the general extent to which such a risk exists. The studies have been quite consistent in demonstrating that GPs, as a group, fail to detect a considerable proportion of cases with potential pathology when selecting candidates for hearing aids, both when referring to an ENT specialist, and when referring directly to audiology. This finding is not surprising given the generally low level of GP training in otology and audiology, and the absence of pre-referral audiometry.

Studies have also found that technicians fail to manage appropriately some cases of pathology and, although small in absolute number, such cases can nonetheless constitute a sizeable proportion of all patients for whom ENT management would be advised. Although direct evidence is lacking, there are reasons for thinking that the risk may be exacerbated at community sites. Poorer facilities, particularly in the form of background noise and limited equipment, may distort the results from audiometric testing, or restrict the tests that can be performed. It may also be that technicians show a greater reluctance to cross-refer, if this will involve the patient in a lengthy trip to the main base, particularly if they suspect that the ENT specialist will simply discharge the patient. However, any additional risk to community patients, if one exists, needs to be balanced against the likelihood that, in the absence of the community clinic, some of these patients may never have accessed the service at all.

A proportion of audiology patients seen at community sites require a subsequent 'extra' appointment as a result of fewer or poorer facilities at the site, which they would not have required had they attended the base site instead. Evidence pertinent to this is limited but in one survey of 20 audiology providers an overall rate of about one patient in every ten was suggested. The project obtained a similar, or slightly lower, estimate based on ten providers. However, these results were all based on 'guestimates' made by service heads and technicians and, although they suggest that extra appointments are not a serious drawback, harder evidence is required.

A large number of published studies in the medical/surgical specialities have provided evidence concerning patient non-attendance rates. There was uniform agreement across these that rates are reduced at community sites, usually by between 25% and 50%. This remains true when one of the main potential confounders, new appointment compared with follow-up, is taken into account. Other confounders, such as case-mix and demography, lack control in all studies but the non-attendance rates are still lower in the community for studies in which differences in these factors do not occur between settings.

The lower rates of non-attendance in the community do not necessarily imply that disruption to clinics and time-loss are also reduced; central clinics often overbook to allow for non-attendees and staff there are more likely to have other tasks to undertake if a patients fail to attend.

The costs of community provision

For a number of reasons, it was concluded that the results from cost studies of specialist outreach clinics could not be meaningfully generalised to hearing aid clinics. This was partly because of inherent differences in the structure of such clinics and partly because of methodological and quality issues surrounding these studies.

Our own investigation of the comparative costs of community and base adult hearing aid clinics was completed at ten centres, eight of which were randomly selected. At four, the form of clinic evaluated consisted of audiology support of an ENT clinic; at two, it was a direct referral clinic; at one, it was a combination of both these; and at three, open-access after-care sessions. In six cases, the community site was a peripheral hospital and, in four, a GP practice or health centre. Data was collected for two clinic sessions at the community site and for two comparable sessions at the base clinic. Additional information about the sites and clinics was gathered by questionnaire. The analysis focused on staff and patient costs.

For NHS staff costs (including travel expenses), the community sessions were estimated to be more expensive, on the basis of a cost-per-patient-seen, at five centres, less expensive at four, and virtually the same at one. The differences ranged from the community sessions being 39% cheaper at one centre to 71% more expensive at another. Across all centres combined, the community sessions were 18% more expensive in terms of staff costs per attendance than base sessions seeing equivalent patients. Several assumptions were made in deriving the cost estimates and, when these are varied, best and worst case scenarios were that the community sessions, as a whole, are between 2% and 30% more expensive.

There was evidence of a difference between ENT and direct referral clinics, on the one hand, and open-access after-care sessions on the other. The former, as a group, were 19% more expensive when based in the community, while the latter were 5% less expensive. However, as there were only three examples of after-care clinics in the study, this result is fairly tentative.

The factors which made the biggest contribution to increased costs in the community were staff travel (the greatest source); time spent preparing for a session and setting up on site (and packing away afterwards); and administration. Much of the travel cost, however, was offset by reductions in the need to supply hospital transport for patients or to make local domiciliary visits.

Estimates were made of the savings accruing to patients as a result of being seen locally, compared with attending clinics at the base. The average cost saving was found to be between two and three times as great as the increase in staff costs incurred by the NHS. From a societal perspective, therefore, such clinics are clearly economical.

Nationally, staff costs represent about 50% of the total expenditure on hearing aid services (with the other 50% going on materials, such as aids, ear-moulds, and consumables). On the assumption that the results of the cost study can be applied nationally, an increase in staff costs of 18% in the context of community clinics implies an increase in total costs (staff plus materials) per attendance of 9%, compared with main base provision.

Combining this result with a previous finding that about 30% of all adult hearing aid work is undertaken in community settings, the indication is that the current national mixture of community and base clinics costs 2.7% (per attendance) more than if all services were fully centralised. Even if staff costs were 30% higher in the community (instead of 18%), this figure increases only to 4.5%.

The possibility exists that the proportion of underused, discarded, or poorly-maintained hearing aids is lower in areas where a community clinic exists and, if that is so, then the cost per 'successful fitting' may be equal or even lower than for base sites. However, if community clinics do indeed stimulate demand, either for after-care or in terms of GP referrals, then this factor may nonetheless lead to an increase in the total costs of providing a service.

New hearing aid technologies are in the process of being introduced into the NHS. These have implications for the costs of hardware, staff time and repairs, and may also alter the level of demand for after-care. Consequently, the costings reported here may become out of date as use of the new technologies expands.

Discussion and implications for practice

On the basis of all the available evidence, from all sources, community-based hearing aid clinics can be said to represent something of a fine balance of advantages and disadvantages. There are clear advantages in terms of convenience for patients and reduced patient costs. There are also indications that such clinics can increase GP referrals and encourage patient compliance and use of after-care, thus increasing success rates and reducing resource wastage. Large majorities of patients prefer local services, provided quality is not compromised too much, and very high proportions of both heads of audiology services and audiology technicians consider community clinics to be worthwhile. The disadvantages are principally in the form of increased cost to the NHS – although this is not unduly large – and poorer facilities, most notably with regard to background noise, equipment, access to patient records, and the display of information for patients; these are factors which could affect the standard of hearing aid fitting and also reduce patient awareness of support groups and support services. Centres can also experience organisational problems in covering clinics when staff are absent. There must also be concern as to whether the risk of significant pathology going untreated is higher in the community. In the context of clinics held in GP fundholding practices, a degree of service inequity was in evidence, although this may change under the new primary care group arrangements.

Although the advantages and disadvantages of community-based audiology services can be delineated fairly precisely, at this stage it is not at all clear which side of the equation should be given the most weight. In particular, the evidence currently available is insufficient to allow firm recommendations to be made concerning general NHS policy with respect to community provision of these services – most importantly, whether further expansion should be encouraged or discouraged, and to what extent.

Although it would be inappropriate to make recommendations regarding the future of community-based provision, it must be recognised that many such services already exist. Consequently, it is appropriate to offer suggestions that relate to the operation and organisation of existing clinics.

Many of the disadvantages of community sites could in fact be tackled and substantially reduced by improving the facilities. This might involve providing such items as a sound-proof room or booth, better equipment, on-site storage facilities, a remote link to a computerised records system situated at the base, and an information display for hearing aid patients. In terms of remote access to patient records, it is possible to establish a link to a computerised database at the main department via a portable computer and a modem, plugged into any available telephone socket. A few trusts have such systems. In any particular case, the potential benefits of such a link would need to be weighed against the set-up costs involved, although subsequent running costs should be minimal.

- Centres should be encouraged to audit their community sites to ensure that standards of audiometric testing are not being unduly affected by levels of background noise, the availability of equipment, or other potential factors. Where there are problems with the facilities, centres should consider what can be done to ameliorate these.
- If it is not possible to display information at the site, particularly relating to the locations and times of after-care sessions, environmental aids and local support groups, centres should consider providing this to patients in the form of printed handouts.
- Centres should be encouraged to explore the feasibility, potential benefits and costs of establishing remote links to patient record systems from community sites.

The increased costs associated with community clinics could be reduced by various means. The major sources of extra cost were found to be staff travel (the largest source), session preparation and administration. Longer sessions (for example, full-day rather than half-day), where demand would allow it, would result in both travel and preparation costs being spread across a greater number of patients. Storage facilities at the outreach site might reduce the need to travel via the base and also simplify preparation. Whenever possible, administrative tasks related to the clinic could be carried out by clerical staff instead of the presiding technician(s).

- Centres should be encouraged to consider what steps they can take to minimise any cost differential between base and community clinics.

There was some evidence, although more is required, that open-access after-care sessions represent the most economical form of

community clinic. There was also limited evidence that such clinics help address a high degree of unmet need for after-care and can attract lapsed users back into contact with services. Furthermore, problems with noise and equipment, lack of access to patient records and the risk of failing to detect pathology, are, in most cases, not so critical with this group of patients.

This would suggest that a particularly cost-effective method of organising community services may be to have those aspects concerned with initial hearing aid provision largely restricted to the main site – where the facilities are most conducive to making a good hearing aid fitting – while providing easily accessible after-care in the community. The inconvenience to patients of having to attend the base site for their hearing aid is limited by the fact that they only need to go through the process once; whereas, once they become a regular hearing aid user, they may need to avail themselves of after-care, such as batteries, repairs, exchanges and reassessments, on a regular basis for life.

Conversely, a particularly non-cost-effective form of organisation would appear to be one in which aid provision is undertaken at a community site but without any after-care at the same locality. A potential scenario here is that easier access will attract additional referrals who will be fitted in the community at higher cost, only to lapse from using the aid because of the inconvenience associated with accessing after-care, consequently resulting in an overall increase in resource wastage.

- Routine provision of hearing aids to new patients should preferably not be undertaken at a community clinic unless sufficient after-care services also exist at the same site or nearby to provide long-term support to the new user.

There is a risk that community-based provision could compromise standards of patient safety. Some of the potential factors, such as noise and availability of equipment, can be addressed at a practical level, provided the funds to do so are available. The human element is more complex. When selecting candidates for hearing aids, GPs, as a group, fail to detect a substantial proportion of those patients with significant ear pathology. The problem may be partly caused by lack of training and partly by referral decisions being made in the absence of audiometric test results. Given the current state of affairs, proposals for reform which place reliance on GPs alone for patient safety may well result in an unacceptably high level of risk.

Audiology technicians also mismanage some instances of significant pathology, relative to their local ENT doctors. The evidence suggests that a substantial proportion of mismanagement is not the result of a failure to detect conditions but rather because of a failure to cross-refer; perhaps in the belief that the specialist will do nothing more than discharge the patient or perhaps in order to save the patient inconvenience. This latter factor may well have a greater influence on technician behaviour when patients are seen at community clinics that are some way from an ENT base. In addition, technicians working alone at community sites do not have the benefit of another staff member from whom they can obtain a second opinion on matters about which they are unsure. The local head of audiology services has to take ultimate responsibility for the work of the technician(s) assigned to cover each community clinic, and this needs to include making certain that standards of patient safety are upheld, particularly in the context of direct referrals where the risk is at its greatest. One simple way of remaining alert to any slippage in standards would be to conduct a regular check to confirm that the rate of cross-referrals to ENT from community sites is not dropping and is reasonably comparable to rates for the base site.

- Heads of audiology services and otologists should be encouraged to undertake regular audits to ensure that standards of patient safety are not being compromised in the community, either as a result of poorer facilities or through changes in technician behaviour.

There seems to be little to choose between the different types of community site (peripheral hospital, GP practice, community health centre, or other sites) as a setting for community services. GP practices, as a group, were rated the best for a number of aspects of clinical efficiency, while large peripheral hospitals were rated the least patient-friendly. However, clinics in the latter settings were the most likely to be rated as being definitely worth doing, and ratings of 'overall quality of service' did not differ at all between settings. In addition, all types of community setting were equally poor in terms of the three most widespread perceived disadvantages: noisy conditions, standard of equipment and display of patient information. The individual characteristics of each particular site are much more important than the type of setting *per se*, and whether a clinic was considered worthwhile or not appeared to be mainly related to how much it was perceived as improving patient access, the quality of the

facilities and patient numbers. Technicians were also much less convinced that clinics restricted to ENT support, and nothing else, were worthwhile, preferring to offer a fuller range of services.

Although no type of community setting can be said to be generally better than another in terms of service quality, there are other specific issues which arise in connection with clinics based in GP practices. Equity of patient access to services is an important consideration here, as there was clear evidence that a high proportion of GP fundholders do not share clinics on their premises with other nearby practices. This was less of a problem with non-fundholding GPs or when the site was owned by the health authority or trust; however, even with these sites, other GPs can be envisaged as being less willing to refer patients to a location if it is strongly associated with a different practice.

Against any loss of equity, two main arguments are often put forward in favour of clinics in GP practices. The first relates to their potential to increase the numbers of referrals from GPs in the practice – and there is good evidence that this does happen. However, it could be that if the clinic were based in a more 'neutral' local site, it would also boost referrals – and from all practices in the area, not just the one. The second argument is that clinics in GP practices increase interaction between hospital staff and GPs, thus helping to break down barriers between the primary and secondary care sectors. On the evidence available, however, the extent of inter-personal contact at outreach clinics is in most cases quite limited or non-existent, even in the medical specialities, and it has yet to be demonstrated whether GP behaviour has improved as a result. Consequently, without clearer evidence of significant benefits in this respect, it would not be advisable to give much weight to this as a potential advantage when deciding on clinic locations.

Ideally, a community clinic should serve all people in its locality equally. This not only preserves equity but has other important advantages as well. It maximises potential patient numbers, which implies that clinics are more likely to be full and less likely to be cancelled. Clinic frequency will also be maximised, which is an advantage for patients in need of advice, batteries or repairs. The project surveys found weak evidence that community clinics encourage higher rates of use of after-care services and, although stronger evidence is needed, if that is the case then the local impact would logically be expected to be greater in the context of a clinic with unrestricted access. It may also be that the overall impact on GP referral rates throughout the area would likewise be greater, although evidence for this is also needed. In view of these considerations, peripheral hospitals, non-GP sites and community health centres less associated with particular GP practices may well be the preferable choices for clinic locations. A notable exception to this, however, would be fairly self-enclosed localities where the entire population is served by a single GP practice or by a cooperative organisation of practices such as a multi-fund group.

- If community-based clinics have restricted access, they should, whenever possible, be opened out, preferably to the local population in general. Failing that, centres could consider whether greater overall benefit might be achieved by transferring the clinic to a location where access is not restricted.

Research needs

Much of the evidence presented in this report comes not from research into hearing aid services themselves but from studies of community clinics in the medical and surgical specialities. While arguments for generalising from the latter to the former have been presented, the lack of direct evidence clearly weakens the strength of the findings. Primary research specific to audiology services is therefore required. All the areas covered by this study are in need of additional direct investigation, with the possible exception of those aspects of professional opinion addressed by the project surveys, unless specific issues of opinion are being investigated in greater depth.

Two areas stand out as priorities for research. These are:

(i) the impact of community provision on outcomes (e.g. hearing aid use and satisfaction, benefit, management of ear pathology) for hearing aid patients
(ii) the impact of community provision on GP referral rates, the volume of use of after-care services and the associated costs.

Essential evidence relating to both these issues is needed before the debate surrounding the cost-effectiveness of community services can be advanced any further. Consequently, it is the authors' opinion that studies in these areas need to be undertaken before any further work on other issues is undertaken.

For the first of the priority areas – outcomes for patients – the complete absence of studies relating outcomes to different types of service setting (bar the 'special case' of nursing-home populations) has to be regarded as serious deficiency in the research literature. For example, if it were found that patients served at community sites had significantly poorer outcomes, either in terms of the quality of hearing aid fitting and the subsequent benefit obtained or in terms of missed pathology, then this would raise serious concerns about community services. At the very least, centres would be required to be highly selective about the choice of community locations and the types of services provided at them. Alternatively, if community clinics were found to result in a significantly greater proportion of patients successfully using and maintaining their hearing aids without any significant increase in the risk of missed pathology, then a case might be made for a substantial expansion in community-based provision.

The second priority research area relates to the impact the establishment of a new community clinic might have in its local area, with regard to GP referrals and/or the use of after-care by local hearing aid users. If the result is an increase in the demand on services, then there could be positive consequences in terms of more and possibly earlier hearing aid fittings and less resource wastage, but potentially serious implications for overall service costs as a result of increased patient volume. These considerations highlight the importance of obtaining more evidence in this area. For example, it would be very inadvisable to embark on any national expansion of community services – if such were contemplated – without first having a much clearer idea of the likely consequences for service demand and related costs.

Recommendation: A controlled trial is needed to address:

(i) the impact of community provision on outcomes for hearing aid patients, particularly hearing aid use and satisfaction, obtained benefit and management of ear pathology
(ii) the impact of community provision on GP referral rates, the volume of use of after-care services and the associated costs.

Proposed design of a research project

An outline is presented here of a moderate-scale study which would address the two priority areas for research identified above. Many other areas in which further evidence is required can also be addressed within the same study (e.g. patient costs, waiting times and case-mix issues). In terms of the priority areas, the outcomes of main interest can be conveniently divided into four categories (in all cases there is an implicit assumption that a comparison is being made with an equivalent service at the base site).

1. Outcomes for patients related to the fitting of hearing aids at community sites, for example, quality of the hearing aid fitting (including suitability of the fitted aid, amount of use and benefit obtained, patients' understanding of how to manipulate and care for the aid); management of ear pathology; levels of satisfaction.
2. Outcomes for patients related to the provision of after-care at community sites, for example, long-term benefit, long-term use and maintenance of the hearing aid, knowledge of and contact with support groups, problems with the hearing aid, frequency of use of after-care services.
3. Outcomes for services related to the fitting of hearing aids at community sites, for example, impact on GP referral rates, impact on service costs (including total costs, cost per patient and cost per 'success'), effect on services at the base site.
4. Outcomes for services related to the provision of after-care at community sites, for example, impact on attendances for after-care, impact on costs of after-care, effect on services at the base site.

The design suggested is one which aims to evaluate all four outcome groups in one single well-controlled experiment – a controlled trial, to be replicated at a number of different centres. For reasons which will be given later an RCT is not recommended.

The study would be a multicentre trial, involving a number of NHS audiology departments/hearing aid centres around the country, each of which would be required to identify two localities within their catchment area without any current community-based service but where such a service could be established. The use of localities without any current community service is essential to the design of the study, since without this condition it would be impossible to evaluate the impact of the new clinics on key factors such as referral rates and patient use of after-care. The two localities would need to be matched in terms of distance from the main base, demographic background and – as far as possible – size, population density and number

of GPs. After identification, one locality would be randomly selected to be the 'experimental locality' where a new community-based service is to be set up and the other would be the control (and would continue to use centralised services only).

'Baseline' data collection would be undertaken for a period prior to establishment of the new community service. This would gather statistics specific to each locality on referrals, attendances for after-care (at the base), other forms of clinical activity (at the base) and costs. Some of this data collection could be retrospective, derived from patient records. Prospective data would be collected on samples of consecutive patients from each locality, fitted with hearing aids 6–12 months previously. Each patient would be assessed in person, the assessments being of such factors as the quality of the hearing aid fitting; benefit, use and maintenance of the hearing aid; signs of missed pathology; and any other relevant outcomes.

Following collection of the baseline data, the new community service would be implemented at each experimental locality. The service would be comprehensive, providing both hearing aid provision and after-care, to ensure that information is yielded relevant to all outcomes of interest. Data on referrals, clinical activity and other relevant variables would be collected on an on-going basis to allow service utilisation to be charted over time. The use of facilities at the base by patients from both the experimental and control localities would also be tracked over the same period, so that the impact of the community service on base attendances could be monitored. After the community clinic had been operating for a designated period, say 12–18 months, a second sample of consecutive patients, fitted at the site 6–12 months previously, would be assessed in person, using the same battery of measures that was used for the collection of baseline data. Similarly, a second group of patients from the control locality would need to be assessed.

The above design can be expected to generate high quality evidence relating to all the patient and service outcomes of interest, with respect to both aid provision and after-care. The use of a multicentre pre–post design with matched, randomly allocated, experimental and control localities provides a high level of control over potential confounders and minimises the risk that extraneous, uncontrolled factors might confound the experimental factors (e.g. the development of primary care groups during the course of the study, which might impact on GP referral patterns).

To complete the above design, some additional factors need consideration. The first is the scale of the experiment, in terms of patient samples and the number of centres at which to replicate the experiment. With respect to the face-to-face assessments of patients fitted under the schemes, there will be a practical limit on the numbers dependent upon referral rates and the length of time over which the study operates. Given what is known of existing community clinics, a realistic target is probably 50 new patients pre- and post- in both the experimental and control localities (200 assessments in all) within a 12–18 month period. Figures for total clinical activity (including all appointments and after-care) would be much higher. It is recommended that a minimum of ten different centres should be involved; these would yield a total projected sample of 2000 patient assessments – 500 pre- and post- at both the experimental localities and the control areas.

A second consideration is the kinds of community sites that should be utilised. The authors consider it important that the clinics provide unrestricted access for the entire local population or their potential to increase referrals/attendances will not be adequately tested; therefore it would not be good to have them based in specific GP practices. Large community health centres (i.e. trust or health authority controlled) and peripheral hospitals are possibly the best choices, perhaps with the aim of including an equal number of each. There is also no reason why the aid provision and after-care aspects of the community service should not be decoupled, with after-care being based at a different site (even a non-NHS site), provided that it is within the same locality.

A third issue is whether aid provision under the study should be via the route of a community-based ENT clinic or through a direct referral system. This might possibly be left to each centre to decide for themselves. However, in each case it will be important to ensure that all patient samples for a given centre experienced the same form of provision, as the route taken can affect outcomes such as waiting times, patient satisfaction and hearing aid prescription.

Fourth, the design needs to take account of any current or near-future changes to NHS hearing aid provision, in particular the speed at which new digital technology is being introduced. To incorporate this, digital technology could be adopted at a selected subset of the centres. An

alternative would be for pilot studies with new technology to include a community dimension based on aspects of the proposed research.

The experimental design envisaged here does not entail any randomisation of patients, except at the level of whole localities (i.e. the experimental and control localities will be randomly assigned within each centre), and some justification for this is perhaps warranted. The principal reason for not randomising patients within localities is concern that this would interfere with the normal environment within which community clinics operate and thus distort the results. For example, one alternative proposal would be to randomly allocate referrals from each GP practice within a locality so that half receive their service at the community clinic and half at the base. The strength of this would be that it provides optimal matching between the experimental and control groups. The drawback is that it would be very detrimental to any process by which the community clinics might increase referral rates or after-care attendances in the locality, as potential patient numbers would have been cut by half. Another consequence of halving potential clinic numbers is that clinics might either operate for only half the number of hours (thus affecting costs) or at only half the monthly frequency (thus affecting patient convenience). In addition, the time required to achieve the required sample sizes could be doubled, lengthening the study and increasing costs there. Complications would also arise when long-term users (i.e. people fitted with hearing aids before the study) turn up at the community clinic for after-care, since the integrity of the design could only be maintained if a randomly chosen 50% of these were refused service and sent on to the base for after-care. For all the above reasons, it is considered that, in this particular instance, a controlled trial is preferable to an RCT.

Acknowledgements

A very large number of people have contributed in one way or another to this report.

We would like to thank the project advisors, Dai Stephens of the Welsh Hearing Institute and Mary Black of the Public Health Research and Resource Centre at Salford University, for their helpful input. Our thanks are also due to the members of the focus groups for pointing us in the right directions; the numerous researchers who provided us with bibliographies and copies of reports and papers; the many audiology practitioners who helped us hone our questionnaires, and the much larger number who completed them for us. We are also indebted to the referees for their perseverance in reading the report and the quality of their comments.

Finally, we would also like to say a special thank you to all the audiologists who make such a good job of improving the lives of millions of people with hearing difficulties and without whom the world would be a poorer place.

References

1. Ministry of Health. A hospital plan for England and Wales. London: HMSO; Cmnd 1604; 1962.
2. Department of Health and Social Services. The functions of the district general hospital. London: HMSO; 1969.
3. Milne RG, Torsney B, Watson J. The chief scientist reports ... Consultant out-patient services: provision at health centres in Scotland. *Health Bull (Edinb)* 1992;**50**:457–67.
4. Macgregor I, Patterson J, Drummond D, Slater B. Health centre practice in Scotland, part 2. *Health Bull (Edinb)* 1980;**38**:5–22.
5. Department of Health and Social Services and the Welsh Office. Community hospitals: their role and development in the NHS. London: DHSS; 1974.
6. Cavenagh A. Contribution of general practitioner hospitals in England and Wales. *BMJ* 1978;**2**:34–6.
7. Jones R, Tucker H. The role of community hospitals. *Health Trends* 1988;**20**:45–8.
8. Audit Commission. What the doctor ordered: a study of GP fundholders in England and Wales. London: HMSO; 1996.
9. Bailey JJ, Black ME, Wilkin D. Specialist outreach clinics in general practice. *BMJ* 1994;**308**:1083–6.
10. Bailey J, Black M, Wilkin D. Specialist outreach clinics in general practice. Manchester: Centre for Primary Care Research, University of Manchester; 1994.
11. Giles S. Fundholders destroying specialties. *Pulse* 1993;**53**:9.
12. Leese B. Dr Livingstone, I presume? *Health Serv J* 1996;**5**:24–6.
13. Department of Health. The new NHS [White Paper]. Leeds: Department of Health; 1997.
14. Gibson R, Forbes JM, Stoddart IW. Psychiatric care in general practice: an experiment in collaboration. *BMJ* 1966;**i**:1287–9.
15. Kyle D. Contribution of a general-practitioner hospital. *BMJ* 1971;**4**:348–51.
16. Harper WF, Auld AMA. A preliminary report on consultative gynaecological out-patient clinics in a health centre. *Health Bull (Edinb)* 1972;**30**:281–5.
17. Rodger W. Community psychiatry in the health centre: a Devon development. *Practitioner* 1973;**210**:799–802.
18. Thomson W. A review of thirteen health centres in Scotland. *Practitioner* 1971;**206**:538–45.
19. Beevers DG, Duncan S, Nelson CS, Padfield PL. A blood pressure clinic in a health centre. *Postgrad Med J* 1976;**52**:683–6.
20. Macgregor I, Patterson J, Drummond D, Slater B. Health centre practice in Scotland, part 1. *Health Bull (Edinb)* 1979;**37**:240–54.
21. Sichel G, Hall D. The place of general practitioner hospitals in the organisation of hospital services. *Health Trends* 1982;**14**:21–3.
22. Grant JA. Contribution of general practitioner hospitals in Scotland. *BMJ* 1984;**288**:1366–8.
23. Davis AC. The prevalence of hearing impairment and reported hearing disability among adults in Great Britain. *Int J Epidemiol* 1989;**18**:911–17.
24. Brooks DN. The use of hearing aids by the hearing impaired. In: Stephens S, editor. Disorders of auditory function II. London: Academic Press; 1976. p.256–64.
25. Thomas A, Gilhome Herbst KR. Social and psychological implications of acquired deafness for adults of employment age. *Br J Audiol* 1980;**14**:76–85.
26. Stephens SDG, Barcham LJ, Corcoran AL, Parsons N. Evaluation of an auditory rehabilitation scheme. In: Taylor IG, Markides A, editors. Disorders of auditory function. 3rd ed. London: Academic Press; 1980. p.265–73.
27. Royal National Institute for the Deaf. A survey of National Health Service hearing aid services. London: The Institute: 1984.
28. Royal National Institute for the Deaf. Hearing aids: the case for change. London: The Institute: 1988.
29. Stephens D. GPs and the fitting of hearing aids. *Clin Otolaryngol* 1989;**14**:481–4.
30. Humphrey C, Gilhome Herbst K, Fauriqi S. Some characteristics of the hearing-impaired elderly who do not present themselves for rehabilitation. *Br J Audiol* 1981;**15**:25–30.
31. Brooks DN. Hearing loss–hearing aids, and some aspects of NHS provision. *J R Soc Health* 1984;**104**:39–41.
32. Keay DG. Referrals to a hearing aid clinic: scope for improvement. *Br J Gen Pract* 1990;**40**:62–3.

33. Gilhome Herbst KR, Meredith R, Stephens SD. Implications of hearing impairment for elderly people in London and in Wales. *Acta Otolaryngol Suppl (Stockh)* 1991;**(476)**:209–14.

34. Newton VE, Hillier VF, Stephens SD. Prescription of hearing aids for the elderly: the views of general practitioners. *J Laryngol Otol* 1992;**106**:963–6.

35. Bunn MN, Premachandra DJ. Provision of hearing aids in the community [letter]. *Br J Gen Pract* 1990;**40**:166–7.

36. Veitch D, Lewis M, Gibbin K. General practitioner training in ENT in the Trent Region. *J R Soc Med* 1992;**85**:156–8.

37. Rice C, Cooper P, Diamond I, Thornton R. Knowledge and treatment of hearing impairment amongst GPs in Wessex. *Southampton Med J* 1993;**9**(2):36–40.

38. Directory of hospitals and NHS trusts. London: Cartermill; 1997.

39. Davis A. Survey of hearing aid provision in England in 1997. Nottingham: MRC Institute of Hearing Research, Nottingham University; 1998.

40. Perrett K. Specialist outreach clinics in Sheffield: a faster tier of out-patient provision for the patients of fundholding GPs? *J Public Health Med* 1997;**19**:347–53.

41. Walshe K, Shapiro J. An evaluation of outreach outpatient clinics for Wolverhampton Hospitals NHS Trust. Wolverhampton: Wolverhampton Hospitals NHS Trust; 1995.

42. Ferguson B, Cooper S, Brothwell J, Markantonakis A, Tyrer P. The clinical evaluation of a new community psychiatric service based on general practice psychiatric clinics. *Br J Psychiatry* 1992;**160**:493–7.

43. Goldacre MJ, Gatherer A. Peripheral outpatient clinics: use, costs, and benefits. *Br J Prev Soc Med* 1977;**31**:205–8.

44. Low CP, Pullen I. Psychiatric clinics in different settings; a case register study. *Br J Psychiatry* 1988;**153**:243–5.

45. Helliwell PS. Comparison of a community clinic with a hospital out-patient clinic in rheumatology. *Br J Rheumatol* 1996;**35**:385–8.

46. Almond IM. Taking ENT/audiology into the community: survey of current services and provider opinion. [MSc dissertation]. Southampton: University of Southampton; 1996.

47. Tyrer P. Psychiatric clinics in general practice. An extension of community care. *Br J Psychiatry* 1984;**145**:9–14.

48. Tyrer P, Seivewright N, Wollerton S. General practice psychiatric clinics. Impact on psychiatric services. *Br J Psychiatry* 1984;**145**:15–19.

49. Abery A, McClay M, Bond B, Bowling A, Dickenson E. Evaluation of specialists' outreach clinics in general practice. London: CHIME, University College London Medical School; 1997.

50. Bond M, Redfern J, Pope G, Bowling A. Evaluation of costs and effectiveness of specialist outreach clinics in general practice. London: CHIME, University College London Medical School; 1997.

51. Strathdee G, Williams P. A survey of psychiatrists in primary care: the silent growth of a new service. *J R Coll Gen Pract* 1984;**34**:615–18.

52. Strathdee G. Primary care–psychiatry interaction: a British perspective. *Gen Hosp Psychiatry* 1987; **9**:102–10.

53. Pullen IM, Yellowlees AJ. Scottish psychiatrists in primary health-care settings. A silent majority. *Br J Psychiatry* 1988;**153**:663–6.

54. Corney R. Experiences of first wave general practice fundholders in South East Thames Regional Health Authority. *Br J Gen Pract* 1994;**44**:34–7.

55. Spencer NJ. Consultant paediatric outreach clinics – a practical step in integration. *Arch Dis Childhood* 1993;**68**:496–500.

56. Strathdee G. Psychiatrists in primary care: the general practitioner viewpoint. *Fam Practitioner* 1988;**5**:111–15.

57. Stephens SD, Callaghan DE, Hogan S, Meredith R, Rayment A, Davis AC. Hearing disability in people aged 50–65: effectiveness and acceptability of rehabilitative intervention. *BMJ* 1990;**300**:508–11.

58. Totten C. The hearing aid service: what does the consumer want? [MSc thesis]. Southampton: University of Southampton; 1993.

59. Cullis JG, Heasell S, Weller S. The economics of outpatient clinic location: the paediatrics case. Aldershot: Gower: 1981.

60. Gillam SJ, Ball M, Prasad M, Dunne H, Cohen S, Vafidis G. Investigation of benefits and costs of an ophthalmic outreach clinic in general practice. *Br J Gen Pract* 1995;**45**:649–52.

61. Goble REA, Gowers JI, Greene GC, Nichols PJR. Out-patient physiotherapy: patterns of provision. *Rheumatol Rehabil* 1979;**18**:248–56.

62. Kerr HM, Lawson CW, Weller SDV. Paediatric clinics in district and peripheral hospitals. *Public Health* 1976;**90**:53–7.

63. Black M, Gosden T, Leese B, Mead N. The costs and benefits of specialist outreach clinics in general practice in two specialities: summary report. Manchester: National Primary Care Research & Development Centre, University of Manchester; 1996.

64. Gosden T, Black M, Mead N, Leese B. The efficiency of specialist outreach clinics in general practice: is further evaluation needed? *J Health Service Res Policy* 1997;**2**:174–9.

65. Walker A. Physiotherapy in primary care. Exeter: Exeter Health Authority; 1991.

66. Bryden J. Ought out-patient consultation to take place in a hospital complex? A study of decision-making in community out-patient referrals from a Scottish new town [MSc thesis]. Strathclyde: University of Strathclyde; 1970.

67. Worsfold C, Langridge J, Spalding A, Mullee MA. Comparison between primary-care physiotherapy education clinics and traditional hospital-based physiotherapy treatment – a randomized trial. *Br J Gen Pract* 1996;**46**:165–8.

68. Strathdee G, King MB, Araya R, Lewis S. A standardized assessment of patients referred to primary care and hospital psychiatric clinics. *Psychol Med* 1990;**20**:219–24.

69. Cain ARR. Consultant paediatric clinics in group practice. *BMJ* 1976;**i**:33–5.

70. Hindler C. Psychiatric outreach clinics held in a general practice setting and community mental health centre. *Psychiatr Bull* 1995;**19**:470–4.

71. Brown RM, Strathdee G, Christie-Brown JR, Robinson PH. A comparison of referrals to primary-care and hospital out-patient clinics. *Br J Psychiatry* 1988;**153**:168–73.

72. Gruer R. Economics of outpatient care. *Lancet* 1971;**i**:390–4.

73. Hawkes R, Drummond M. An evaluation of a general practice-based orthopaedic clinic. York: Centre for Health Economics, University of York; 1993 [unpublished].

74. O'Cathain A, Frogett M, Taylor MP. General practice-based physiotherapy: its use and effect on referrals to hospital orthopaedics and rheumatology outpatient departments. *Br J Gen Pract* 1995;**45**:352–4.

75. McKechnie AA, Philip AE, Ramage JG. Psychiatric services in primary care: specialized or not? *J R Coll Gen Pract* 1981;**31**:611–14.

76. Todd NA. Psychiatric consultation in a health centre. *Health Bull (Edinb)* 1978;**36**:115–19.

77. Khunti K, Carr M. Impact of an audiology clinic in one general practice. *Br J Gen Pract* 1997;**47**:643–4.

78. Carstairs V. Utilisation of hearing aids issued by the National Health Service. *Br J Audiol* 1973;**7**:72–6.

79. Oswal V. The National Health Service and the Social Services link-up for rehabilitation of hearing aid users. *Br J Audiol* 1977;**11**:25–30.

80. Ward PR, Gowers JI, Morgan DC. Problems with handling the BE10 series hearing aids among elderly people. *Br J Audiol* 1979;**13**:31–6.

81. Ward PR. Effectiveness of aftercare for older people prescribed a hearing aid for the first time. *Scand Audiol* 1981;**10**:99–106.

82. Upfold L, Wilson D. Hearing aid distribution and use in Australia: the Australian Bureau of Statistics 1978 survey. *Aust J Audiol* 1980;**5**:20–6.

83. Brooks DN. Factors relating to the under-use of postaural hearing aids. *Br J Audiol* 1985;**19**:211–17.

84. Warland A, Tonning F. In-the-canal hearing instruments. Benefits and problems for inexperienced users given minimal instruction. *Scand Audiol* 1991;**20**:101–8.

85. Gimsing S. Utilization of hearing aids issued by the public health service. Hearing aid use in Ribe County, Denmark. *Scand Audiol* 1992;**21**:177–83.

86. Ovegard A, Ramstrom A. Individual follow-up of hearing aid fitting. *Scand Audiol* 1994;**23**:57–63.

87. Ferguson B, Posnett J, Sheldon T. Concentration and choice in the provision of hospital services, Part III. York: NHS Centre for Reviews and Dissemination, University of York: 1997.

88. Bowling A, Dickenson E, Stramer K, Windsor J, Murphy O, Marriott L. Report on the first phase of the study of outreach clinics in England. London: CHIME, University College London Medical School; 1995.

89. Westerman RF, Hull FM, Bezemer PD, Gort G. A study of communication between general practitioners and specialists. *Br J Gen Pract* 1990;**40**:445–9.

90. Sullivan F, Hoare T, Gilmour H. Outpatient clinic referrals and their outcome. *Br J Gen Pract* 1992;**42**:111–15.

91. Darling C, Tyrer P. Brief encounters in general practice: liaison in general practice psychiatry clinics. *Psychiatr Bull* 1990:592–4.

92. Cooper JDA, Arnold A. Evaluation of orthopaedic outreach clinics: pilot scheme. Wakefield: Wakefield Healthcare; 1994.

93. Black M, Leese B, Gosden T, Mead N. Specialist outreach clinics in general practice: what do they offer? *Br J Gen Pract* 1997;**47**:558–61.

94. Marsh G, Tompkins A. Paediatric care in general practice: an experiment in collaboration. *BMJ* 1969;**ii**:106–8.

95. Modell M, Boyd R. A consultant in a health centre. *Practitioner* 1984;**228**:968–71.

96. Blair M, Horn N, Polnay L. General practitioners use of hospital and community based paediatric out-patient services in Nottingham. *Public Health* 1997;**111**:97–100.

97. Mansour D, Orpet L, Guillebaud J. Setting up a community gynaecology clinic in general practice. *Br J Fam Plann* 1995;**20**:105–7.

98. Stephens D, Callaghan D, Meredith R, Rayment A, Davis A. Early intervention with the elderly hearing impaired. *Br J Audiol* 1989;**23**:41–2.

99. Tata P, Eagle A, Green J. Does providing more accessible primary care psychology services lower the clinical threshold for referrals? *Br J Gen Pract* 1996;**46**:469–72.

100. Browning SM, Ford MF, Goddard CA, Brown AC. A psychiatric clinic in general practice: a description and comparison with an out-patient clinic. *Bull R Coll Psychiatr* 1987;**11**:114–17.

101. Wilson PS, Fleming DM, Donaldson I. Prevalence of hearing loss among people aged 65 years and over: screening and hearing aid provision. *Br J Gen Pract* 1993;**43**:406–9.

102. Sangster JF, Gerace TM, Seewald RC. Hearing loss in elderly patients in a family practice. *Can Med Assoc J* 1991;**144**:981–4.

103. Davis A, Stephens D, Rayment A, Thomas K. Hearing impairments in middle age: the acceptability, benefit and cost of detection (ABCD). *Br J Audiol* 1992;**26**:1–14.

104. Bamford J. TTSA guidelines for hearing aid direct referrals. *Br Assoc Audiol Sci Newsletter* 1988;**13**:16–17.

105. Bellini MJ, Beesley P, Perrett C, Pickles JM. Hearing-aids: can they be safely prescribed without medical supervision? An analysis of patients referred for hearing-aids. *Clin Otolaryngol* 1989;**14**:415–18.

106. Fox GC, Sharp JF. Direct hearing aid referral: the effect upon outpatient waiting times in a district general hospital. *J R Soc Med* 1994;**87**:215–16.

107. Hawthorne MR, Nunez DA, Clarke GP, Robertshaw D. Direct referral hearing aid provision in the over sixties age group. *J Laryngol Otol* 1991;**105**:825–7.

108. Reeves D, Mason L, Prosser H, Kiernan C. Direct referral systems for hearing aid provision. London: HMSO; 1994.

109. Swan IRC, Browning GG. A prospective evaluation of direct referral to audiology departments for hearing aids. *J Laryngol Otol* 1994;**108**:120–4.

110. Koay CB, Sutton GJ. Direct hearing aid referrals: a prospective study. *Clin Otolaryngol* 1996;**21**:142–6.

111. Zeitoun H, Lesshafft C, Begg PA, East DM. Assessment of a direct referral hearing aid clinic. *Br J Audiol* 1995;**29**:13–21.

112. Harries MLL, Baguley DM, Moffat DA. Hearing aids – a case for review. *J Laryngol Otol* 1989;**103**:850–2.

113. Prinsley P, Premachandra DJ, Madden G. Dispensing hearing aids in the community [letter]. *Lancet* 1989;**ii**:500–1.

114. Campbell JB, Nigam A. Hearing aid prescribing: is the specialist opinion necessary? *Clin Otolaryngol* 1991;**16**:124–7.

115. Zegleman FE. Psychiatric clinics in different settings – default rates. *Health Bull* 1988;**46**:286–91.

116. Subotsky F, Brown RM. Working alongside the general practitioner: a child psychiatric clinic in the general practice setting. *Child Care Health Dev* 1990;**16**:189–96.

117. Leese AM, Wilson JA, Murray JA. A survey of the non-attendance rate at the ENT clinic of a district general hospital. *Clin Otolaryngol* 1986;**11**:37–40.

118. Drummond M, Stoddart G, Torrance G. Methods for economic evaluation of health care programmes. Oxford: Oxford Medical Publications; 1997.

119. Brooks DN. Hearing aid fitting costs in the NHS [letter]. *Br J Audiol* 1990;**24**:357–9.

120. Ewertsen HW. The use of hearing aids (always, often, rarely, never). *Scand Audiol* 1974;**3**:173–6.

121. Birk Nielsen H. Rehabilitation of hearing-impaired adults: use and benefits from hearing aids. In: Taylor IA, A, editor. Disorders of auditory function III. London: Academic Press; 1980. p.249–56.

122. Henrichsen J, Noring E, Lindemann L, Christensen B, Parving A. The use and benefit of in-the-ear hearing aids. A four-year follow-up examination. *Scand Audiol* 1991;**20**:55–9.

123. Upfold LJ, Wilson DA. Factors associated with hearing aid use. *Aust J Audiol* 1983;**5**:20–6.

124. Hickson l, Hamilton l, Orange SP. Factors associated with hearing aid use. *Aust J Audiol* 1986;**8**:37–41.

125. Reeves D, Reid A, White A. If it's Tuesday, this must be Shepton Mallet. *ENT News* 1995;**4**(2):37.

Appendix 1

Summaries of points emerging from the meetings of the three focus groups

Summary of points from the meeting of the focus group of hearing aid users (first focus group)

(7 May 1997, Muriel Stot Conference Centre, University of Manchester)

Participants

Users: nine users of NHS hearing aids.

Project members: Alison Alborz, Research Fellow; John Bamford, Professor in Audiology; Frances Hickson, Audiology Lecturer; David Reeves, principal researcher.

Access to services

- There was a consensus in the group that community-based services were a good thing. When asked, group members said that, given the choice, they would prefer to use services based at sites local to them rather than travel to the main departmental base. They might also attend more frequently because of the increased convenience of the location.
- However, local services may not suit everybody: for some people the main base may be nearer their place of work (e.g. in a city) and easier for them to attend during the day. Also, some may view the main base as providing a higher quality service.
- The group contained a fair number of younger adults, one of whose concerns was that services be made more accessible to people in full-time work. This could be by the provision of evening and/or weekend sessions.
- Parking fees at main hospitals were considered excessive and somewhat deterring when people were only making short visits, for example, to collect new batteries.
- It was suggested that social workers should be allowed to recommend people for assessment for assistive listening devices.

Information needs

- The needs of both new and longer-term users for appropriate information emerged as an important issue for members of the group. This theme was returned to several times during the day.
- Although an audiology technician may provide a lot of verbal information at the time of hearing aid fitting, much of this is not retained or completely understood by the person being fitted. It is, therefore, important that written information is also provided and that users receive at least one post-fitting follow-up appointment. The information requirements of longer-term users should also not be ignored. Hence, information has to be available as and when required.
- The types of information required included:
  - basics on how to use a hearing aid and what to expect from it in different situations
  - a 'trouble-shooting' guide, including such things as expected life-spans of the hearing aid, tubing, mould and batteries
  - types of hearing aids available
  - new types of hearing aids as they become available
  - hints for people who live alone (e.g. how to set the correct TV volume)
  - assistive listening devices
  - availability of lip-reading groups/classes
  - when to seek professional assistance.
- It is important for information to be provided to family members or carers. They need to be made more aware of what it is like to wear a hearing aid, so that they can provide adequate support. Also, 'failure' with a hearing aid can be related, for example, to the unrealistic expectations of family members. The information provided should include most of the points listed above and also:
  - communications skills (e.g. face the hearing-impaired person when holding a conversation; do not carry on a conversation from another room; speak clearly, do not shout)
  - problems the hearing aid wearer may experience (e.g. the ear can become very sweaty in hot weather.
- There was considered to be a particular lack of easily available information about assistive listening devices. Some participants at the group had received no information about

these from their hearing aid centre and had only found out about them by chance.
- People must be able to get information easily when they require it. Making this available from GP's surgeries might be useful. Another possible source would be a district resource centre.
- It would be useful at clinics to have information clearly on display or freely available from racks. This is often not practical at outreach sites and could be to their disadvantage.
- One participant spoke highly of talks given (freely) to groups by British Telecommunications about the aids that they could supply.
- One advantage of joining some form of voluntary support organisation is for the information available through them.

Support needs

- The range of hearing aids available through the NHS needs to be improved. The current ones are rather limited compared with some privately available models.
- Speech therapy should be made more readily available. Hearing loss affects speech and therapy would be helpful, particularly for voice pitch and clearness of speech. Links between audiology and speech departments need to be improved; some areas do not currently employ a speech therapist.
- Being a member of a voluntary support organisation was generally considered valuable. Such bodies are good sources of both practical and social support. One participant had initiated a lip-reading class in her area and this had proved beneficial in several ways.
- It was suggested that staff from retirement/nursing homes could be trained to deal with minor problems with hearing aids.
- Some participants considered that occasional (e.g. annual) appointments at the hearing aid centre for a 'check-up' to monitor hearing and aid performance, for example, would be useful.
- Hearing Concern has recently trained 100 voluntary, unpaid helpers to provide assistance to users at home, including re-tubing and battery replacement. Some NHS centres already have voluntary helpers and others might consider developing similar schemes in their areas.
- Voluntary support activities might usefully be based at GP practices, for example, lip-reading classes, evening seminars, simple repairs. A familiar location might encourage people to attend.

Repairs and batteries

- The provision of repair sessions and batteries at community sites are considered a user priority. In particular, it was considered that it would be useful if GP practices gave out batteries. The lip-reading class that one participant had organised had an arrangement with a local hospital whereby the class could collect a batch of batteries and distribute them.
- A fast repair service is very important to those who rely heavily on their aids. A problem of outreach repair sessions is that they are often infrequent. Consequently, it is important to maintain frequent repair sessions at the central site in addition to outreach sessions.
- A postal battery service, while convenient, has the drawback that it can lead to users losing touch with the department and possibly to delays in obtaining help. Users can also miss out on information; for example, when new makes of hearing aid become available. Users attending for new batteries also provides an opportunity to raise problems and for the technician to check on potential problems in a fairly informal atmosphere. Clearly some kind of balance needs to be struck between convenience and the risk of problems going undetected.
- Some users would like a 'spare aid' in case of breakdown. However, for departments to give out a second hearing aid on a general basis would prove very expensive.
- Some departments lend users a spare aid in case of breakdown when, for example, they are going on holiday. This was considered to be a good idea and should be more widespread.
- In the past, some departments gave out long lengths of tubing so that people who wanted to could carry out their own re-tubes. More recently, tubes have been glued into place, thus making attendance at clinics necessary. This consumes both user and technician time.
- Pharmacists could possibly take on the tasks of re-tubing and exchanging batteries. This would provide a very accessible service and reduce pressure on NHS repair sessions.

Attitudes of professionals

- The attitudes of some professionals can be off-putting and may deter users from seeking assistance when they have problems. Users did not like being made to feel a fool, which sometimes happened, or being talked down to.
- Staff need training in the basics of communication with hearing impaired people. For example, they should not:

  - talk with their back to the patient
  - call out the patient's name in a noisy waiting room.
- Some basic sign-language training may also be helpful.

Aspects of service organisation

- More attention should be paid to showing new users how to use a hearing aid in different circumstances (for example, viewing TV, using the telephone). However, although facilities for this could possibly be organised at the main base, it is probably not feasible at most outreach sites.
- There can be a marked contrast between the way in which a hearing aid performs on site during fitting and how it performs in everyday environments. For example, it may not be good practice to send just-fitted people out into the street wearing the aid, as the noise can be frightening and confusing and such an experience can discourage people. More attention needs to paid to making people aware of what they can expect from the aid in different circumstances.
- Problems with hearing aids may be missed at follow-up appointments if the acoustic environment is very different to everyday, or if none of the family or friends a user lives and works with are involved.
- Users prefer to be dealt with by the same staff member(s) each time. This fosters a friendly relationship, means that users do not have to repeat their history every time they attend, and encourages people to come back if they have problems.
- One user expressed concern about seeing advertisements for private aids in an NHS hospital. This was considered to give the impression that NHS aids were second rate.

GP-related issues

- GPs need more training in the problems of hearing impairment and how to get the best for their patients from services.
- Some GPs are reluctant to make referrals for hearing aids. They need to be made aware that patients have certain rights in this respect.
- It was considered that GP practices may be good places at which to provide information, because people visit their GPs more often than a hospital. In particular, information could be made available on assistive listening devices and also about such things as support groups and new devices. Possibly someone at a practice could be made responsible for all hearing-related matters.

Summary of points from the meeting of the focus group of professionals in audiology, ENT and primary care (second focus group)

(14 May 1997, Muriel Stot Conference Centre, University of Manchester)

Participants

Professionals: six in total – ENT consultant, audiological physician, manager of hearing therapy services, audiology technician, audiological scientist, GP.

Project members: Alison Alborz, Research Fellow; John Bamford, Professor in Audiology; Frances Hickson, Audiology Lecturer; David Reeves, principal researcher.

What are the driving forces behind the development of outreach services and what are its aims?

- To reduce patient waiting times.
- To improve patient access; this can be true of urban as well as rural areas.
- Threat of losing work to private providers/ other trusts.
- To secure income for the trust.
- GP requirement for services on their premises to save them money.
- GP requirement for local services for their patients.
- Elderly patients appreciate going to their 'local' (peripheral) hospital.

What kinds of audiology services are best suited to outreach provision?

- Subject to location, all aspects of the service are suited bar diagnostic tests which require soundproof conditions or specialised equipment.
- Those more suited to older people (60 years of age or more) because younger adults require more sophisticated diagnostics.
- Outreach provision may be appropriate as an initial screen for younger adults with formal testing being undertaken at base.
- Hearing therapy may not be suited to such locations because of the need to have a range of assistive listening devices available for demonstration.
- As many services as possible should be provided at community sites.

How good are the facilities at outreach locations?

- With the right room in the right location, almost anything is possible. However, most locations represent something of a compromise.
- Facilities at some centres are poor – there may be problems knowing where to find consumables.
- Ambient noise levels at some sites mean that only straightforward cases can be handled adequately.
- The equipment available is often old or lacking.
- Only one participant had experience of a mobile unit. Access was considered difficult for patients with poor mobility and it was difficult to escape in an emergency.
- Patients attending with wax were not considered a major problem, provided GPs are encouraged to remove wax prior to first appointment.
- Locations should be selected at which expertise in wax removal is already available

How does outreach impact on specialists and audiologists?

- Unequal workloads can result owing to providing service in a variety of settings/ circumstances (e.g. backup to ENT or open access to public).
- Group members felt 'uncomfortable' competing for work against colleagues from neighbouring districts.
- Outreach sessions are not popular with younger staff because not 'glamorous'.
- Strong motivation is required from leader to offer good service.
- Staff may get in and out as quickly as possible because they do not feel part of the setting:
  - 'open access' may result in being swamped by work with no time for such things as counselling
  - 'appointment system' can result in problems of non-attendance and waste of staff time.
- Staff need managerial skills as well as audiology skills in order to deal with organisation of the service at the outreach setting.

What are the benefits and disadvantages to patients of outreach?

- Locations are more convenient, especially for older patients.
- A local service may improve take up and use of hearing aids. For example, by reducing the 'distance barrier' to getting aids serviced.
- It may be easier to involve the whole family in the process of hearing rehabilitation.
- The risk of pathology being missed is seen as no more of a problem than at main base.
- Some patients might not want to attend outreach if they perceive it as representing a low quality service.
- Informational literature and support services are not always on hand.
- Some patients will require an additional appointment at the main base.
- There may be no time for counselling if the outreach session is popular and, hence, the workload is heavy compared with main base.
- Two organisations providing service at the same setting (e.g. on different days) can cause problems of cross-over, with patients of one provider turning up at clinics of second provider who has no record of them.
- Infrequently held sessions are problematic for patients who are experiencing difficulties.
- Where outreach sessions are held a long way from the main base, patients needing a main base appointment can have a long journey.

What issues does outreach raise with respect to GPs?

- There is a need for education in audiological matters among GPs and other purchasers.
- The present system provides very little opportunity for educating GPs.
- Education is only likely to happen when the parties involved have special interests and make special efforts.
- At outreach, GPs and hospital staff rarely come face-to-face; thus the educational value is low.
- It must be recognised that audiology is only one small area of a GP's brief. It may be unrealistic to expect them to give more time to this over other concerns.
- The governments intentions for fundholding are not entirely clear but are expected to have implications for outreach in primary care.
- Induction courses for GPs wishing to use direct referral would be beneficial but are probably unrealistic. GPs would be unlikely to attend unless such courses were compulsory.

What impact does outreach have on service costs?

- The extent to which outreach services can be developed is limited by the funds trusts are prepared to put into them.
- Securing work wherever possible can lead to the establishment of some inefficient services.

- A reduced service may be provided if the purchaser is only willing to fund a low level service.
- Hearing therapy receives some funding through Social Services Department.
- The cost of a correctly furbished room should be included in the contract to provide an outreach service at a particular location.
- If outreach increases the demand for hearing aids, then this will increase the overall cost of the service.
- There would be a negative impact on main base budget if all hearing aid provision moved away from main base.
- Outreach tends to stretch existing resources rather than generating enough income to fund itself.
- An increase in demand without a corresponding increase in resources can lead to departments running out of money before the end of the financial year, leading fittings being suspended.
- Market place inhibits quality.

Service organisation

- GP clinics are an inefficient use of staff time when providing backup to ENT.
- Outreach sessions in primary care are more worthwhile when nearby GPs are allowed to refer.
- Sessions at locations many miles from the main base mean excessive staff travelling even though other providers may be more local.
- The operation of the market make it more difficult for departments to plan effective local services.
- Outreach sessions need to be staffed by fairly experienced audiologists.
- It is easier for quality to slip when a lone audiologist is doing outreach sessions. This suggests a need for some form of quality control.
- The more staff are engaged in outreach, the harder it is to arrange cover in the case of illness or absence.

What direction should future service developments take?

- Prescribable aids? Remember this is a 'service' not just for the provision of hearing aids.
- Combined services for housebound people with a community nurse trained to identify problems (not deliver service).
- Outreach service for younger adults would require a higher level of refurbishment/equipment/calibre of staff.
- Sites need thorough investigation – the right site will require no major capital expenditure.
- There may be problems if people walk in off the street and get private hearing aids without medical checks.
- Private dispensers should not be certificated for wax removal.
- ENT and audiology departments need to run in parallel for one-stop service.
- Staged follow-up is required – at present there are not enough staff; this requires specific funding.
- A voluntary support group is required to act as 'catalyst' for first-time users – this should be GP-based.
- Awareness and counselling re expectations of hearing aid are important for both user and family.
- Proactive service required because many people are put off getting a hearing aid until too late.
- Training of 'ancillary' workers at outreach site is desirable.
- Advertise to tap unmet need (on television).
- A sudden increase in demand could not be coped with at present.
- Advertising-induced increase would be unwelcome to GPs whose surgeries may be blocked – particularly if they have to refer on to ENT rather than audiology department due to cost.
- It may be possible to train staff for hearing aid fitting only and employ them on a sessional basis – assuming there is a separate support service for follow-up.
- District nurse referral rights are the single most efficient route to get at unmet need.
- District nurses could be trained in re-tubing and could provide batteries.
- Referral guidelines are needed for direct clinics for hearing assessment.
- 'Service' needs defining – fitting, diagnostic, proactive?
- Dedicated facilities, properly resourced, community-based and run by committed and enthusiastic staff.
- Highly trained community audiologists with support from centre (hospital).
- Larger departments to provide flexibility without having to rely on locums.
- Batteries should be available at community sites, such as GP clinics, post offices, pharmacists.
- Private dispensers are an under-used resource.
- Problem with private dispensers is poor training – they could handle 60+ years age group provided they had referral guidelines.

Miscellaneous/other

- Need for consistent staffing so that relationship with patients can be maintained.

Summary of points from meeting of the focus group of service managers (third focus group)

(19 May 1997, Muriel Stot Conference Centre, University of Manchester)

Participants

Managers: nine managers of audiology and ENT services.

Project members: Alison Alborz, Research Fellow; John Bamford, Professor in Audiology; Frances Hickson, Audiology Lecturer; David Reeves, principal researcher.

What are the driving forces behind the development of outreach, and what are its aims?

- The biggest single aim is to improve patient access. This can be in terms of geographical location of outreach sites, frequency of sessions, and the times of day that services are available.
- Since the healthcare reforms, financial considerations play a greater role. Competition between trusts and the need to generate income have led trusts to use outreach as a means of protecting their existing business and of generating new business.
- One participant produced some graphs showing that, at his service, the establishment of outreach repair sessions (which were well-attended) had not reduced levels of attendance at main base repair sessions. The implication was that the outreach sessions were attracting additional patients, perhaps those who had previously given up with their hearing aid, rather than taking patients away from the base. He therefore saw outreach as a means of increasing patient compliance.
- GPs like a services on their premises because it is cheaper for them. This has led GP fundholders to pressurise centres to provide such services. The more fundholders there are in an area, the greater this source of pressure.
- One participant suggested that some ENT surgeons are keen to undertake outreach clinics (ENT outpatient) because they can use them to generate private work.

What kinds of audiology services are best suited to outreach provision?

- The ENT consultant who was participating viewed outreach ENT outpatient clinics as representing a 'second-class' service compared with the main base. This was partly because of equipment requirements. A high-quality ENT outreach clinic would require a lot of expensive equipment. He estimated that it would cost £50,000 to get such a clinic up to an acceptable level.
- It was generally agreed that it is possible to provide a good service for elderly patients at outreach sites, particularly when it is based on direct referral. The lack of ENT presence was not seen as a major drawback. GPs, practice nurses and, possibly, technicians can remove wax. Other problems would need to be referred back to the GP. One participant, however, considered that even for elderly patients a soundproof booth was required and would not use a location that did not have one.
- Diagnostic audiology in young adults was not considered suited to outreach, because of the requirements for special equipment and soundproof conditions for testing.
- Fitting of hearing aids is suitable for outreach, as the environment only needs to be reasonably quiet.
- Providing audiology support to ENT outpatient clinics in outreach settings is often inefficient: they produce an uneven workload, with the audiologist sometimes being over- and at other times under-occupied. However, one centre had overcome this problem by letting the audiologist see the GP referral letters prior to a clinic. The technician could then adjust the workload by booking in extra patients for follow-up appointments or by rescheduling some appointments for the following week.
- Where it is possible to provide a full audiology service (i.e. from testing through to repairs), this would be preferable to a limited service because it is possible to pick up and deal with more patient problems.
- The indications that outreach repair sessions can improve compliance favours the provision of this type of service. However, the local user base needs to be large enough to make such sessions viable. Users who are heavily dependent on their hearing aids (e.g. those with large losses or who need them for work purposes), may require repairs at short notice, so infrequent outreach repair sessions cannot substitute for a high-frequency central service. One participant considered that repair sessions were the most effective type of outreach service but, unfortunately, their trust wanted them to do more fittings for the sake of income generation.
- The ENT specialist felt that in rural areas with a scattered population a 'second-class' ENT screening service might be appropriate.

Implications of outreach for resources

- The possibility that outreach repair sessions may attract additional patients, without reducing attendance at main base, implies that they require extra resources (staff time, aids, tubing, batteries, etc.) rather than a re-distribution of what already exists.
- It was not clear whether outreach also increases the numbers of referrals for hearing assessment and, hence, fittings. However, if it does, this will, in turn, further increase the demand for post-fitting services.
- Mobile vans were considered very expensive but may have a use in areas where suitable premises are not available.
- Outreach sessions need to be staffed by experienced seniors who can work by themselves, have good organisational skills and who are able to recognise and manage problems. This has implications for the employment of staff: first, by making seniors more in demand and, second, by possibly reducing the demand for lower grades and particularly trainees. This latter factor, if serious enough, could contribute to a shortage of qualified staff in future years.
- It is possible for experienced lower grade staff to conduct outreach repair sessions but there is a risk of missing patient problems (of which there can be many). For example, some patients coming for repairs actually require retesting (e.g. their hearing loss may have deteriorated) and less experienced staff might not realise this.

Service costs

- The group had no doubt that it is more expensive to provide outreach services than a centralised service. However, the extra cost may be offset to some degree by the extra income generated by increased referrals.
- The extra costs are for: setting up; staff travel; work-time lost while travelling; time lost in packing and unpacking equipment and so on; duplication of equipment; using senior staff for tasks that more junior staff would undertake at base; insurance for cars and equipment. There may also be: extra administrative costs; a charge for room use; and, at ENT outpatient clinics, wasted audiologist time waiting for patients.
- While staff are working at an outreach site, there is extra space/rooms available at the base which can be used for other things. This represents a cost saving.
- Outreach repair sessions can be expensive for centres because it is not possible to charge directly for repairs (the cost has to be allowed for in the charges for testing and fitting). Some financial compensation may accrue, however, if patients who attend are found to require a re-referral (e.g. for a new hearing test).
- The additional costs of outreach need to be seen in the wider context of the social costs of hearing loss. If outreach leads to more people being fitted and/or obtaining better use from their hearing aids, then the value to society of such gains may outweigh the additional service costs.
- A careful costing of a service needs to be made before it is set up, in order to avoid running into financial difficulties later.
- Problems arise when patients for whom a centre has no contractual funding (e.g. from a neighbouring health authority) attend outreach sessions run by that centre. There can be considerable delays in obtaining payment for work done with such patients.

Implications for service effectiveness and efficiency

- There was a general consensus that it is more efficient to provide services at the main base than at outreach sites. However, effectiveness (in terms of compliance and meeting peoples' needs) may well be better at outreach. Several ways in which outreach may improve effectiveness were suggested: increased compliance; less non-attendees; local users more willing to attend; GPs more willing to refer to clinics based in their premises; many patients' problems recognised.
- When hearing aids are fitted but then not used, this constitutes a considerable waste of time and resources. If outreach sessions substantially contribute to compliance, then they could significantly reduce this wastage.
- Patients seen at outreach sites appear to be a mix of: those who would otherwise been referred to other providers ('poached' patients); those who would otherwise had been seen at the main base; and those who would not have been seen at all.
- The ENT consultant considered that ENT outreach could be particularly inefficient as many patients require a second appointment at main base for procedures that cannot be performed at outreach. Some ENT outreach clinics operate with no audiology backup, with the consultant doing the necessary audiometry. This was considered to be very inefficient, as it is wasteful of expensive specialist time.
- Outreach sessions at a given location are normally 'owned' by a specific staff member and this allows a good relationship to be built up with site staff and patients, thus contributing to effectiveness. The convenience of outreach

locations for patients also encourages a continuing and beneficial relationship. In addition, staff regard outreach sessions as 'theirs' and take a pride in them. This is good for staff morale as well as for patients.
- It was considered that the likelihood of patients being referred on to other specialities was lower at outreach sites than at the main base.
- Use of untrained people to issue batteries, or to do retubes, may result in lost opportunities to recognise problems – the main base may never see the person again. Similarly, provision of batteries at local sites by non-audiologists can lead to problems being missed. However, if post-fitting services are made too inconvenient then users may bypass services altogether (e.g. obtain their batteries from a local supplier instead); this would be counter-productive.
- The efficiency of an outreach session depends largely upon patient volume. An ideal clinic is neither too large nor too small.
- The number of outreach clinics needs to be optimised so that work at the main base does not suffer because senior staff are away leaving mainly juniors.
- The numbers of patients attending with ear-wax can be problematic unless steps are taken to control this. It was generally agreed that the best course was to require GPs to remove wax prior to first appointment; practice nurses could be trained to do this and it should be understood that this is part of their role.
- Fundholders with limited budgets will not be willing to fund a comprehensive service or will limit the numbers of patients seen.

Managing and organising services

- It is more difficult to maintain quality of service at outreach sites because there is less control over conditions and the audiology service manager is not present. Hence, some form of auditing for quality control is needed.
- One participating manager would not provide outreach sessions at sites less than 30 minutes drive from main base. Another used the criteria of 15 minutes driving time. Others refused to provide outreach clinics if they considered the facilities were not up to standard. It was acknowledged that, in some cases, the settings are by no means ideal but it can be difficult to refuse when a purchaser is taking the lead. It was suggested that, in such cases, GPs could be discouraged by being quoted an overly high charge.
- Organisation of outreach sessions is made easier if all referral letters come to the main base, from where appointments at the outreach sites may be allocated.
- Evening sessions are more popular than Saturday morning sessions for people in full-time work. They are also convenient for relatives who want/need to accompany a patient. Evening sessions may pick up people who are unable to attend at any other time. Elderly (retired) patients prefer daytime sessions. In general, weekend sessions are not well-attended.
- Although many patients prefer evening sessions, afternoons are generally more convenient for centres, because it is easier to arrange staff cover in times of illness/absence.
- Most participants considered that making batteries available at community sites or via a postal system was a good idea. One manager, however, disputed this, arguing that it led to many patient problems being missed. In this case, the practice had been stopped and users were now required to attend for batteries so that they could be monitored.
- It was considered to be impossible to undertake serious training of juniors away from main base. If outreach expands to take up a large amount of senior staff time, this could cause problems with training.
- Outreach should only be established in areas (and sites) where the patient base is large enough to sustain a viable service, otherwise the result can be under-attendance and cancelled sessions. A patient base of 60,000–70,000 was suggested as a minimum.
- A possibly more economic alternative to outreach in some areas would be to arrange a 'shuttle bus' from outlying regions to the main base.
- Staff time management was considered to be tighter with outreach. Outreach sessions are typically manned by just a single technician, which can cause problems in arranging cover for illness or holidays. It was suggested that larger sessions, involving two or more staff members, might ease this problem.
- One participant used voluntary assistants to help out at outreach repair sessions. The volunteers received training in basics, such as re-tubes and providing advice. They tended to be older, more mature people who, consequently, were very good with patients.
- One manager reported that, in her area, the increase in GP fundholders holding ENT clinics on site had resulted in an ENT outreach clinic at a community hospital becoming non-viable, despite the fact that the clinic was well-equipped and the clinics at GP sites were 'second-class'.

An additional problem was that the community hospital clinic continued to operate for the sake of the sole remaining non-fundholding GP.

- One manager operated a system of conducting a number of half-hour repair sessions at different inner-city sites on the same day, on a regular basis. Others queried the efficiency of such a system.
- If services were expanded in an attempt to reduce the general level of unmet need in the population, main base sites might not have the space to cope with increased capacity. In this case, outreach might be the only logical way forward.
- Problems can arise when ENT consultants take outreach sessions at GP sites outside of their own area. If the GPs then send patients who need hearing tests/aids to the local centre, that centre will want to make a charge and may refuse to fit without a consultant's letter. This causes delays. Different problems can arise, however, if the consultant sends the patients to his own audiology department. In some cases, the audiologists may consider that further investigation by ENT is required but the GP may be reluctant to make a re-referral to hospital. In addition, patients' notes may not be available.

The future

- Most participants considered that batteries should be made freely available at health centres. One participant, however, was strongly opposed to this, on the grounds that it led to centres losing contact with their patients.
- Good information services need to be developed. Patients in general are not made sufficiently aware of important factors, such as: what their service entitlements are; the kinds of problems they may encounter; what to expect of a hearing aid; and so on.
- It was suggested that perhaps service providers should be looking to establish outreach bases in shopping centres and on the high street (e.g. in national pharmacy chains).

Appendix 2

Covering letters and questionnaires used in the surveys

Contents

Community Provision of Hearing Aids and Audiology Services Project.

Hester Adrian Research Centre, University of Manchester, Oxford Road, Manchester M13 9PL

Dear Audiology Services Manager,

United Kingdom Survey of Adult Hearing Services

We are undertaking a research project, funded by the Department of Health, concerned with the provision of hearing aids and related audiology services to adults at community, or 'outreach', sites. For your additional information, a summary sheet about the project is enclosed, should you wish to read it.

Among the enclosures you will find:

(1) a questionnaire headed **Audiology Services Manager Questionnaire**
(2) an envelope labelled **Outreach Sites Questionnaire Pack**.

The **Audiology Services Manager Questionnaire** has been distributed to all NHS Audiology departments/Hearing Aid Centres in the UK. On average the form takes about 30 minutes to complete.

The **Outreach Sites Questionnaire Pack** has gone out to just 25% of departments, selected on a random basis, of which your department is one. Although this pack looks bulky, you should find that it consumes very little of your own time: there is one two-sided questionnaire to be completed for each outreach site, each takes about 10 minutes, and they are intended to be completed by staff who go out to the sites.

We recommend that you deal with the two questionnaires as completely separate exercises. The only common factor between them is that they should both be completed with reference to the same set of outreach locations.

Instructions on how to complete the Outreach Sites questionnaire are provided inside the pack of questionnaires. The rest of this letter deals with the **Audiology Services Manager Questionnaire**.

Hester Adrian Research Centre

David Reeves: 0161 275 3536
Alison Alborz: 0161 275 3337
Email: alison.alborz@man.ac.uk
Fax: 0161 275 3333

THE UNIVERSITY of MANCHESTER

The Centre for Audiology, Education of the Deaf & Speech Pathology
John Bamford: 0161 275 3366
Frances Hickson: 0161 275 3372
Email: frances.hickson@man.ac.uk
Fax: 0161 275 3373
Minicom: 0161 275 3364

The **Audiology Services Manager Questionnaire** is about the services your department provides related to **hearing aid provision** and **related after-care for adults**. It has two sections: **Section 1** contains general questions about your department and what you provide at your main base; **Section 2** is concerned with any outreach services you provide. The front page of the questionnaire defines the scope of the survey in more detail.

Please note the following:

- **If your department provides no outreach services for adults, complete section 1 only (it is only just over one page long) and then return the questionnaire in the enclosed envelope.**

- **If you feel that the survey does not apply to your service at all (for example, if yours is strictly a paediatric, learning disabled, or military service), then ignore the questionnaire and simply post back the Freepost card enclosed for this purpose.**

- **If you receive more than one copy of the questionnaire (e.g. at different sites), then please write 'DUPLICATE' on the front page of any additional copies and return them to us.**

We are aware of the busy schedules that most audiologists have and have tried to keep the questionnaire as short and quick to complete as possible without sacrificing essential information. For purposes of clarity, a few of the terms used in the questionnaire are defined in detail overleaf.

We are also extremely keen to receive copies of any reports that departments have produced themselves relating to their outreach services, whether these be patient surveys, audits, cost analyses, or whatever, as these could provide us with valuable information. Please send copies to the address at the top of this letter.

Subject to approval from the Department of Health, we shall be providing you (and all other departments) with a report on the findings of the project early next year. Your cooperation in making this survey a success will be very much appreciated.

Please return the completed questionnaire by 31 August at the latest.

If you have any queries about the survey, please do not hesitate to contact me, either by telephone (0161 275 3536), fax (0161 275 3333), or email (David.Reeves@man.ac.uk).

Yours sincerely,

David Reeves, project leader; Professor John Bamford;
Frances Hickson; Alison Alborz

Enclosures:
Audiology Services Manager Questionnaire and return envelope
Project summary sheet
Reply card for Departments to whom survey does not apply
Outreach Sites Questionnaire Pack

Glossary of a few terms used in the survey questionnaire:

Outreach For the purposes of this survey, 'outreach' is used to refer to sessions undertaken by departmental staff, in person, at fixed locations away from the main departmental base on a regular basis. By 'regular' we mean held at least once every 3 months. Note that domiciliary visits are not included in this definition.

Accelerated referral (Questionnaire, page 3) This is a system whereby a patient is referred by their GP to an ENT specialist who decides, on the basis of the GP's letter, whether the patient's only requirement is a hearing test and, possibly, hearing aid fitting. Such patients are then either (i) passed straight across to audiology without any examination by an ENT doctor, or (ii) given an ENT check (often by a junior doctor) at a dedicated accelerated referral clinic before being passed across.

Direct referral (Questionnaire, page 3) This is a system whereby GPs can refer patients who, in their opinion, only require hearing testing and, possibly, hearing aid fitting, directly to the audiology department, without the need for a referral to ENT. The audiology technicians cross-refer to ENT any patients they feel require an ENT opinion.

Diagnostic audiology in young adults (Questionnaire, page 3) 'Diagnostic audiology' refers to tests performed as a check for sinister pathology. 'Young adults' means people in the age range 18–50 years, or thereabouts.

Community Provision of Hearing Aids Project

Audiology Services Manager Questionnaire

Important: Please read the following, it defines the scope of this questionnaire.

This questionnaire is about services your department provides that are:

- for **adults** (though they may also apply to children)
- to do with **hearing aid provision** and **related after-care services**
- provided by your staff **in person** at your main departmental base and/or at any 'outreach' sites (see below)
- exclude any **private work** staff may do (e.g. as a registered dispenser). However, if you employ a dispenser on contract to the trust, include their NHS work.

The aspects of service in which we are interested include: support for ENT outpatient clinics; direct and accelerated referral systems; hearing testing; diagnostic audiometry; hearing aid fitting; follow-ups; hearing therapy; repairs and batteries (where provided by department staff in person).

Outreach is defined as sessions undertaken by departmental staff, in person, at fixed locations away from the main departmental base on a regular basis (that is, at least once every 3 months). Some departments call these '**satellite clinics**'. Note that for convenience we are **not** including domiciliary visits in this definition of outreach. The questionnaire distinguishes between three categories of outreach location.

1. **Peripheral hospitals** Any type of hospital, irrespective of size or type, that is visited by your staff, including district general hospitals, infirmaries, community, cottage and GP hospitals.

2. **GP premises** Sites owned and/or managed by GPs, including GP practices, GP group practices and GP-run health centres.

3. **Other community locations** For example, community (not GP) health centres, village and church halls, community centres.

Note:
All departments should complete **section 1** of the questionnaire.
Only departments that provide outreach services for adults need also complete **section 2**.

Section 1: General questions

1.1 Name of respondent .....

1.2 Job title .....

1.3 What is the name of your service? .....

1.4 Is your department part of an NHS trust? ☐ Yes ☐ No

If Yes, is it a: ☐ Hospital trust or ☐ Community trust?

1.5 Location of main base (give name of site) .....

1.6 What type of site is this?

☐ Hospital ☐ GP premises (owned/managed by GPs) ☐ Other community location

1.7 Is this also the main base of your ENT department? ☐ Yes ☐ No

1.8 Does your department make:
Domiciliary visits to nursing homes/hostels: ☐ Yes ☐ No
Domiciliary visits to private dwellings: ☐ Yes ☐ No

1.9 Do you operate a 'mobile' audiological unit (i.e. a specially fitted-out van)? ☐ Yes ☐ No

1.10 How many new patients did your department fit with hearing aids in 1996? (An approximate figure will be sufficient) .....

Approximately how many of these were done as domiciliaries? .....

1.11 Approximately what proportion of the total adult hearing aid work (including PTA, fittings, follow-ups, repairs, batteries, etc.), performed by the staff of your department **in person**, is done at each of the following types of location:

Your main base:
☐ None ☐ 1–25% ☐ 26–50% ☐ 51–75% ☐ 76–99% ☐ All

Peripheral hospitals:
☐ None ☐ 1–25% ☐ 26–50% ☐ 51–75% ☐ 76–99% ☐ All

GP premises:
☐ None ☐ 1–25% ☐ 26–50% ☐ 51–75% ☐ 76–99% ☐ All

Other community locations:
☐ None ☐ 1–25% ☐ 26–50% ☐ 51–75% ☐ 76–99% ☐ All

(Note: for a definition of these categories of location, see page 1)

1.12 Which of the below developments have occurred in your area over the past few years?

Increase in GP use of private dispensers of hearing aids/audiology services:
☐ Yes ☐ No ☐ Don't know

Other NHS trusts setting up hearing services at locations within your traditional catchment area:
☐ Yes ☐ No ☐ Don't know

Your department setting up services in areas beyond your traditional catchment area:
☐ Yes ☐ No

1.13a This question is about hearing services your department provides **for adults** at its **main base**. If the department does not have a designated main base, then treat the site where most hearing services are provided as the base. Tick all the boxes that apply.

	Currently provided	**Would like to provide if funded**	**Do *not* want to provide**
Audiology support to ENT outpatient clinics	☐	☐	☐
Accelerated referral system	☐	☐	☐
Direct referral system	☐	☐	☐
Pure Tone Audiometry	☐	☐	☐
Tympanometry	☐	☐	☐
Diagnostic audiology in young adults	☐	☐	☐
Ear impressions	☐	☐	☐
First issues of hearing aids	☐	☐	☐
Modification of ear-moulds	☐	☐	☐
Follow-ups	☐	☐	☐
Hearing aid repairs	☐	☐	☐
Battery provision	☐	☐	☐
Hearing therapy	☐	☐	☐
Tinnitus assessment and/or counselling	☐	☐	☐

1.13b Are their any items on the above list that you have found particularly problematic to provide at your main base? ☐ Yes ☐ No

If Yes, please give details: .....
.....
.....

Section 2: Adult hearing services provided at outreach sites

All questions in this section are to do with **outreach services for adults**. If your department does not operate any such services, tick this box: ☐ and skip the rest of the questionnaire.

For a definition of outreach see page 1

2.1a This question is about hearing services your department provides for **adults at outreach sites**. Tick all the boxes that apply (**even if it applies to only one site out of many**).

	Currently provided	**Would like to provide if funded**	**Do *not* want to provide**
Audiology support to ENT outpatient clinics	☐	☐	☐
Accelerated referral system	☐	☐	☐
Direct referral system	☐	☐	☐
Pure Tone Audiometry	☐	☐	☐
Tympanometry	☐	☐	☐
Diagnostic audiology in young adults	☐	☐	☐
Ear impressions	☐	☐	☐
First issues of hearing aids	☐	☐	☐
Modification of ear-moulds	☐	☐	☐
Follow-ups	☐	☐	☐
Hearing aid repairs	☐	☐	☐
Battery provision	☐	☐	☐
Hearing therapy	☐	☐	☐
Tinnitus assessment and/or counselling	☐	☐	☐

2.1b Are there any items on the above list that you have found particularly problematic to provide at any outreach sites? ☐ Yes ☐ No

If Yes, please give details .....
.....
.....

2.2 What are the aims of your outreach services?

	An aim at all sites	**An aim at some sites**	**Not an aim**
To improve accessibility/convenience for patients	1	2	3
To attract referrals and income for hospital/trust	1	2	3
To reduce patient waiting times	1	2	3
To extend service catchment area	1	2	3
To improve communication with GPs	1	2	3
To increase job satisfaction for audiologists	1	2	3
To prevent 'poaching' by other service providers	1	2	3
To reduce pressure on clinics at main base	1	2	3
Other aims (please specify):	1	2	3

2.3 Have any GPs ever threatened to stop referring to your service unless you provided them with outreach services? ☐ Yes ☐ No

2.4 Does your department hold any outreach sessions:
In the evening: ☐ Yes ☐ No
During the weekend: ☐ Yes ☐ No

2.5 Are any of the adult sessions at outreach sites also open to children? ☐ Yes ☐ No

2.6 This question only applies if you hold outreach sessions at GP premises. On what basis do GPs pay for this service (if varies from site to site, tick all that apply)?
☐ Paid for as part of block contract
☐ A set rate for each patient you see
☐ A set rate for each session (irrespective of the number of patients seen)
☐ No charge to GPs
☐ Other (please specify) .....

2.7 Within the last year or so, have you **completely withdrawn** all services from any outreach locations?
☐ Yes ☐ No

If Yes, please give details below:

Site (specify type: PH, peripheral hospital GP, GP premises)	**Services withdrawn and reasons**
(1) PH/GP/Other	....
(2) PH/GP/Other	....
(3) PH/GP/Other	....
(4) PH/GP/Other	....

2.8 What, in your opinion, are the **benefits** of your outreach services?
(For items where you feel the reverse of the statement is true, circle R, the reverse applies.)

	Major benefit	**Minor benefit**	**Not a benefit**	**The reverse applies**
Improved convenience/access for patients	1	2	3	R
Reduced waiting times for patients at outreach sites	1	2	3	R
Educational for the audiologist	1	2	3	R
Educational for GPs	1	2	3	R
Improved communication with GPs	1	2	3	R
Increased job satisfaction for audiologists	1	2	3	R
Fewer non-attendees at outreach sites	1	2	3	R
Improved willingness of GPs to refer	1	2	3	R
Secures work for the department	1	2	3	R
Provides better continuity of care	1	2	3	R
Encourages hearing aid use and maintenance	1	2	3	R
Reduces the number of domiciliary visits	1	2	3	R
Other major benefits (please specify):				

2.9 What, in your opinion, are the **disadvantages** of your outreach services?
(For items where you feel the reverse of the statement is true, circle R, the reverse applies.)

	Major disadvantage	**Minor disadvantage**	**Not a disadvantage**	**The reverse applies**
Harder to organise staff timetables	1	2	3	R
Harder to arrange cover when staff are ill or absent	1	2	3	R
Less senior staff time available for training/ supervision of juniors	1	2	3	R
Repeat appointments for patients who need tests, etc. at main base	1	2	3	R
More time spent on administration	1	2	3	R
Insufficient cooperation from outreach site staff	1	2	3	R
Time lost due to staff travel	1	2	3	R
Lack of quiet conditions for testing	1	2	3	R
Limited range or standard of equipment	1	2	3	R
Lack of space for sessions at outreach sites	1	2	3	R
Lack of information on display for patients (e.g. about support groups, assistive devices, etc.)	1	2	3	R

Other major disadvantages (please specify):

2.10 In your experience, have you found that outreach sessions based in GP premises have any notable **benefits** over outreach sessions in non-GP settings?
☐ Yes ☐ No ☐ Don't know ☐ Not applicable

If Yes, what benefits?.....
.....
.....

2.11 In your experience, have you found that outreach sessions based in GP premises have any notable **disadvantages** compared with outreach sessions in non-GP settings?
☐ Yes ☐ No ☐ Don't know ☐ Not applicable

If Yes, what disadvantages? .....
.....
.....

2.12 What effect would you say the development of your outreach services has had on referrals/ attendances at your main base?

With regard to new referrals from GPs:
☐ Reduced ☐ Increased ☐ No effect ☐ Don't know
With regard to attendances for repairs/batteries:
☐ Reduced ☐ Increased ☐ No effect ☐ Don't know

2.13 Would you say that your outreach services stimulate the demand for hearing aids?
☐ Yes ☐ No ☐ Not certain

2.14 Would you say that your outreach services have encouraged people who had given up or were failing with their hearing aids to get back into contact with services?
☐ Yes – a lot of people ☐ Yes – some people ☐ No ☐ Not certain

2.15 Has the development of your outreach services made your department more or less likely to want to employ trainee audiologists?
☐ More likely ☐ Less likely ☐ No effect

2.16 In your opinion, do the sessions done at outreach sites represent a worthwhile use of audiology staff time?
☐ Definitely yes ☐ Probably yes ☐ Undecided ☐ Probably no ☐ Definitely no

2.17 On the whole, how would you rate the quality of service you are able to provide at outreach sites (taking into account the rooms, backup, etc.) compared with quality of service at your main base?
☐ Much poorer ☐ Somewhat poorer ☐ Same ☐ Somewhat better ☐ Much better

2.18 Are there any sites at which your department provides services even though it would rather not (e.g. only do so because the trust or ENT directorate want you to, or for financial reasons)?
☐ Yes ☐ No

If Yes, please explain the circumstances: .....
.....

2.19 In which of the following ways (if any) would you like to see your outreach services develop in the near future (assuming the necessary funding was available)?

Provision at peripheral hospitals:

Number of sites at which services are provided	☐ Increase	☐ Decrease	☐ Stay the same
Frequency of sessions at existing sites	☐ Increase	☐ Decrease	☐ Stay the same
Range of services provided	☐ Increase	☐ Decrease	☐ Stay the same

Provision at GP premises:

Number of sites at which services are provided	☐ Increase	☐ Decrease	☐ Stay the same
Frequency of sessions at existing sites	☐ Increase	☐ Decrease	☐ Stay the same
Range of services provided	☐ Increase	☐ Decrease	☐ Stay the same

2.20 In the following table, list all the outreach sites which staff from your department attend in person to provide services to adults. For each site, detail the type of site, the distance from your main base, the years in operation, etc.

Name of site	Type of site (see#1, bottom of page)	Distance from main base (miles)	Years in operation as outreach site	Sources of patients seen (please tick)			Services/procedures provided 'as standard' by your staff (please tick) Note: 'as standard' means as a regular part of the service						
				ENT referrals (see #2)	Direct referrals	Patients for repairs	Support to ENT outpatient clinic	PTA	Diagnostic audiometry in young adults	Ear impressions	First issues of hearing aids	Follow-ups	Dedicated open-access repair session
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													
PH/GP/O													

#1: Type of site: PH, peripheral hospital; GP, GP premises; O, Other.
#2: ENT referrals – New patients (including accelerated referrals) who have come through ENT, at this site or others, being seen for either testing, impressions, fitting, and/or follow-up.

Community Provision of Hearing Aids and Audiology Services Project.

Hester Adrian Research Centre, the University of Manchester, Oxford Road, Manchester M13 9PL

Dear Audiology Services Manager

United Kingdom Survey of Adult Hearing Services
Outreach Sites Questionnaire

This envelope contains a set of **Outreach Sites Questionnaires**. These questionnaires are being used with a random sample of 25% of all Audiology Departments/Hearing Aid Centres, in a small-scale survey being conducted alongside the main survey of Audiology Service Managers. The aim is to collect more detail about individual outreach sites. Your department has been selected as part of this random sample and we would be extremely grateful for your cooperation in this survey as well as in the larger one. **It will take up very little of your own time**. If your department does not conduct any outreach sessions or you feel the survey does not apply to you, please ignore this pack of forms (but do complete any relevant parts of questionnaire for the survey of Audiology Service Managers).

The outreach site survey involves the completion of a short, two-sided, questionnaire for each outreach site that your department visits. **These should correspond exactly to the sites you listed in the table on the last page of the Audiology Services Manager questionnaire. We enclose ten copies of the Outreach Sites Questionnaire**, each with a reply envelope attached. For departments with more than ten outreach sites, an additional ten copies of the questionnaire are also enclosed.

For each site, the form should be filled in by a member of your audiology staff who undertakes sessions at that site. We have several reasons for conducting the survey in this way. First, many of the questions require a good knowledge of the site itself; second, we wish to canvas directly the opinion of staff who perform outreach work, to complement the survey of service managers; third, it spreads the burden of completing the forms.

The procedure we would like your staff to follow is explained in an accompanying information sheet. We enclose three copies of this, which can be circulated to the staff completing the questionnaires.

Please return the completed questionnaires by 31 August at the latest.

If you have any queries about the survey, please do not hesitate to contact me, either by telephone (0161 275 3536), fax (0161 275 3333), or email (David.Reeves@man.ac.uk).

Yours sincerely

David Reeves, project leader; Alison Alborz;
Professor John Bamford; Frances Hickson

Enclosures:
10 copies of the Outreach Site Questionnaire with return envelopes
10 additional copies of the Outreach Site Questionnaire
3 copies of the information sheet

Community provision of hearing aids project – outreach site questionnaire

Dear Audiologist

This short questionnaire is part of a national survey into the provision of hearing services **for adults** at 'outreach' sites (i.e. fixed locations away from the main departmental base, such as peripheral hospitals, health centres, and GP practices). We are seeking your assistance in this survey because you conduct sessions at outreach sites. The questions are all about the services you provide and your opinions about them and about the sites themselves.

Our hope is to get one copy of this form completed for each outreach site (e.g. three sites = three forms). Please complete one form for each site at which you are the sole person going out from your department. For sites where other staff also provide services, arrange between you who is to fill in the form.

When completed, give the forms to your head of department for return, or return them directly to us in the attached envelope. All information you provide will be treated with complete confidentiality.

Remember that the questionnaire is about hearing services for adults.

1. Your name ..... 2. Staff grade (e.g. MTO3, MTO4) .....

3. The name of your trust/service .....

4. Outreach site to which your answers pertain .....

5. What type of site is this?
   ☐ Hospital ☐ GP premises (owned/managed by GPs) ☐ Other
   .....

6. On average, how many sessions do you personally do at this site per month? .....

7. What is the average length of a session (in hours, excluding travel time)? .....

8. How many other staff from your department (i.e. apart from yourself) usually attend these sessions?
   .....
   What grades are they? .....

9. What classes of audiology patient are seen at this site?
   ☐ ENT referrals* ☐ Direct referrals ☐ Patients for aid repairs
   *New patients (including accelerated referrals) who have come through ENT, at this site or others, being seen for either testing, imps, fitting and/or follow-up.

10. Which of the following services to adults are you involved in providing at this site?
    ☐ Audiology support for ENT outpatient clinics ☐ Pure tone audiometry
    ☐ Ear impressions ☐ First issues of hearing aids ☐ Modification of ear-moulds
    ☐ Follow-ups ☐ Hearing aid repairs ☐ Battery provision
    ☐ Other (please specify) .....

11. When you do a session, roughly how much **working time** (i.e. not your own time) is spent travelling:
    To the site? ..... Away? .....

12. Roughly how much other **working time** is taken up **in total** on necessary pre- and post-session activities (e.g. collecting equipment together, putting it away again)?
    .....

13. On the whole, how would you rate the quality of service you are able to provide at this site (taking into account the facilities, backup, etc.) compared with the quality of service at your main base?
    ☐ Much poorer ☐ Somewhat poorer ☐ The same ☐ Somewhat better ☐ Much better

    Please give reasons for your answer .....
    .....

Now please turn over

14. Do you feel that the sessions you do at this site are worthwhile?
☐ Definitely yes ☐ Probably yes ☐ Not certain ☐ Probably no ☐ Definitely no

Please give reasons for your answer .....
.....

15. In the following table, indicate how you feel this site **compares with your main departmental base** by ringing the appropriate response (N/A = not applicable).

	Much better than base	**Better**	**Same**	**Worse**	**Much worse**	
Access for patients in wheelchairs	1	2	3	4	5	N/A
Patient satisfaction with service (in your opinion)	1	2	3	4	5	N/A
Quiet conditions for testing	1	2	3	4	5	N/A
Car parking facilities for patients	1	2	3	4	5	N/A
Having the range and/or standard of equipment you need	1	2	3	4	5	N/A
Space available for sessions	1	2	3	4	5	N/A
Facilities for patients	1	2	3	4	5	N/A
Communication with referring GPs	1	2	3	4	5	N/A
The time it takes you to travel to and from the site	1	2	3	4	5	N/A
Obtaining ear-wax removal when required	1	2	3	4	5	N/A
Numbers of patients needing repeat appointments elsewhere for tests/procedures	1	2	3	4	5	N/A
Availability of ENT specialist advice when needed	1	2	3	4	5	N/A
Patient waiting times	1	2	3	4	5	N/A
General standard of premises as a place to work and see patients in	1	2	3	4	5	N/A
Administrative backup	1	2	3	4	5	N/A
Personal satisfaction you get from the work you do	1	2	3	4	5	N/A
The information on display for patients	1	2	3	4	5	N/A
Range of hearing aids available for patients requiring exchanges/replacements	1	2	3	4	5	N/A
Access to patient records when you need them	1	2	3	4	5	N/A
Continuity of the care patients receive	1	2	3	4	5	N/A
The rate of patient non-attendance	1	2	3	4	5	N/A
Amount of counselling time you are able to give to individual patients	1	2	3	4	5	N/A
Appropriateness of referrals from GPs	1	2	3	4	5	N/A

The remaining questions are only relevant to outreach sessions at GP premises. Please ignore these questions if they do not apply.

16. Are GPs from other sites allowed to refer patients to these sessions?
☐ Yes ☐ No ☐ Don't know

17. Are repair sessions at this site open to all local hearing aid users, or only to patients of site GPs?
☐ Open to all ☐ Restricted to patients of GPs based at this site ☐ Don't know ☐ Not applicable

18. How much difference do you think running sessions at this site has made to the GPs' understanding of the issues involved in hearing loss?
☐ A lot ☐ Some ☐ A little ☐ None ☐ Don't know

19. Do site GPs or a practice nurse routinely conduct pure tone audiometry on patients?
☐ Yes – elderly patients only ☐ Yes – all ages ☐ No ☐ Don't know

If Yes, how often do you have to redo the test for your needs? ☐ Often ☐ Sometimes ☐ Never

THANK YOU VERY MUCH FOR COMPLETING THIS FORM

Appendix 3

List of terms used in the searches of electronic databases

Databases searched

MEDLINE
EMBASE
PsycLIT
BIDS
Index to Theses
Database of Abstracts of Reviews of Effectiveness
NHS Economic Evaluation Database

Terms used to search each database

The terms could appear in reference titles, abstracts, or lists of keywords.

Access*
Audiolog*
Aural
Community clinic
Community hospital
Cottage hospital
ENT
Equity
Fundholding
General practitioner hospital
GP hospital
Health centre
Hearing, plus General Practitioner
Hearing, plus GP
Hearing, plus primary care
Hearing, plus screening
Hearing aid*
Hearing tactics
Otolaryn*
Otorhino*
Outpatient care
Outpatient clinic*
Outpatient health service*
Outpatient* (titles only)
Outreach
Patient satisfaction
Peripheral hospital
Primary care clinic
Primary health care
Satellite clinic
Specialist with clinic

Appendix 4

Summary of all studies included in the evaluation stage of the review

A total of 44 studies were included in the evaluative stage of the systematic review of the literature. These are summarised in *Table 64*.

TABLE 64 *Studies evaluated*

Study and design (type of paper)	Specialities	Description (date of fieldwork)	Outreach (community) sites	Main departmental base sites	Data collected (response rate)	Commentary and quality rating
Abery, *et al.*, 1997[49] Prospective cohort with concurrent controls, plus surveys of professionals (Final report to Department of Health)	ENT General medicine Rheumatology Cardiology Gynaecology	Evaluation of 19 outreach clinics at 17 primary care settings (across England) and comparison with hospital outpatient clinics (1995–96)	19 clinics (6 ENT, 1 general medicine, 4 rheumatology, 3 cardiology, 5 gynaecology) across 17 different GP practices/ health centres (2 community health centres, 13 GPFHs, 2 multifunded)	Comparative hospital outpatient clinics for 18 outreach clinics at 14 hospitals	GP record sheets completed for 475 outreach patients (65%). Specialist record sheets completed for 647 outreach and 480 main base patients. Patient questionnaires completed by totals of 732 outreach patients (82%) and 688 main base patients (74%) at targeted sessions. Also, 6-month follow-up: outreach, 546/732 (75%); main base 514/688 (75%). GP questionnaires completed by 60 (57%). Practice manager questionnaires completed by 16/19. Specialist questionnaires completed by 18/19.	Large, well-designed study involving a good number of outreach sites. Partial control for potential confounders. Adjustment for confounders in some analyses. Case-mix and demographic differences mostly small. **Quality rating: I**
Almond, 1996[46] Survey of professional opinion (MSc thesis)	ENT Audiology	Results of survey of ENT departments in England and Wales by Reeves and colleagues[125] (84% response rate) were used to select 22 centres for face-to-face interviews. Selection was on basis of good range of community-based ENT and audiology services, evenly distributed across England with equal numbers of rural and urban and inland and coastal locations. To these were added three centres that had recentralised their services. (1995)	Not relevant to design.	Not relevant to design.	Information obtained from ENT consultant at 19 centres (76%). Information obtained from 20 chief audiologists (80%).	Method used to select centres may have created bias towards those with good experience of outreach, although this mitigated by inclusion of all centres that had recentralised. **Quality rating: III**

continued

TABLE 64 contd *Studies evaluated*

Study and design (type of paper)	Specialities	Description (date of fieldwork)	Outreach (community) sites	Main departmental base sites	Data collected (response rate)	Commentary and quality rating
Bailey *et al.*, 1994[9,10] Survey of professional opinion (journal article; report)	Dermatology General medicine Paediatrics Palliative care Rheumatology ENT General surgery Gynaecology & obstetrics Ophthalmology Orthopaedics Psychiatry	Survey of random sample of 50 hospitals in England and Wales to identify outreach clinics at GP practices and health centres (peripheral hospitals were excluded), followed by questionnaire surveys of GPs and specialists involved in clinics. A further survey made of 122 lead partners at fundholding practices within same districts for purpose of identifying any further arrangements. (February–June 1993)	Not relevant to design.	Not relevant to design.	Completed questionnaires received from 69 specialists (72%), 46 GPs (52%) identified by specialists and 72 GPs (59%) from the fundholder survey. These provide information from specialists on 72 outreach clinics and from GPs on 86 (58 fundholding, 28 non-fundholding).	Despite using up to three reminders in all surveys, response rate from GPs is rather low (59%). **Quality rating: III**
Black, et al., 1996[63,93] Leese, 1996[12] Gosden, *et al.*, 1997[64] Prospective, cohort with concurrent controls (project report and journal articles)	Dermatology Orthopaedics	Evaluation of costs and benefits of six outreach clinics in primary care settings in two specialities. (1995)	Six distinct outreach clinics (three dermatology, three orthopaedic) at five different GPFH practices.	Compared with six respective outpatient clinics at five different hospital bases.	Clinical activity data for 242 patients (outreach plus main base combined; separate figures not reported). Questionnaires on 83 outreach patients (86% response rate) and 81 main base patients (75% response rate) aged 18 years or over. Sample size per speciality is not reported. Follow-up questionnaires were completed by 70/83 outreach patients (84% response rate) and 63/81 main base patients (77% response rate). Questionnaires completed by six GPs (five different practices – one practice held both dermatology and orthopaedic clinics). Questionnaires completed by three dermatology and three orthopaedic consultants running sessions.	Includes multiple community sites. Partial control for potential confounders, and adjustment in some analyses. Demographics not reported. Moderate differences in case-mix. Some of the analyses are questionable. **Quality rating: II**
Bond, *et al.*, 1997[50] Prospective, cohort with concurrent controls plus surveys of professionals (Report to Department of Health)	General medicine General surgery Paediatrics ENT Rheumatology Gynaecology	Evaluation of 19 outreach clinics in six specialities at 13 primary care settings (8 GPFH?, 5 non-fundholders?) and comparison with hospital outpatient clinics. Patients completed second questionnaire 6 months after clinic visit. (1996–97)	19 clinics (4 general surgery, 3 general medicine, 3 rheumatology, 2 paediatrics, 4 gynaecology, 3 ENT) across 13 different GP practices (8 fundholding, 5 non-fundholding).	Comparative hospital outpatient clinics for all 19 clinics.	Specialist patient record sheets: outreach 506 (84%), main base 551 (87%). GP record sheets for outreach patients: 232 (38% response rate). Patient questionnaires: outreach 447 (74% response rate), main base 477 (76% response rate). At follow-up: outreach 263 (59% or 263/603), main base 291 (61% or 291/634). GP questionnaires: 59 (66% response rate). Practice manager questionnaires: 15 (79% response rate). Specialist questionnaires: 19 (100% response rate).	Large, well-designed study involving a good number of community sites. Partial control for potential confounders. Adjustment for confounders in some analyses. Case-mix and demographic differences mostly small. **Quality rating: I**

continued

TABLE 64 contd *Studies evaluated*

Study and design (type of paper)	Specialities	Description (date of fieldwork)	Outreach (community) sites	Main departmental base sites	Data collected (response rate)	Commentary and quality rating
Bowling, *et al.*, 1995[88] Prospective, cohort with concurrent controls plus surveys of professionals (Report to Department of Health)	ENT Endocrinology Rheumatology Cardiology Gynaecology	Evaluation of 12 outreach clinics in five specialities at eight GP settings and comparison with hospital outpatient clinics. This was pilot study for main study by Abery, *et al.*, 1997[49] (above). Patient samples were merged into that study, hence only results not covered by main study were included in this study. (1995)	12 clinics (3 ENT, 2 endocrinology, 3 rheumatology, 1 cardiology, 3 gynaecology) across eight different GP practices (fundholding status not reported).	Comparative hospital outpatient clinics for nine outreach clinics.	Specialist record sheets completed for 198 outreach (96% response rate) and 170 (82% response rate) main base patients. GP record sheets completed for 111 outreach patients (54% response rate). Patient questionnaires completed by 168 outreach patients (80% response rate) and 148 main base patients (71% response rate). GP questionnaires completed by 53 (62% response rate). Specialist questionnaires completed by 11. Practice manager questionnaires completed by 11.	Large, well-designed, multisite study. Partial control for potential confounders. No significant differences between settings on all major demographic variables. Some small case-mix differences. **Quality Rating: I**
Brown, *et al.*, 1988[71] Retrospective cross-sectional (journal article)	Psychiatry	Evaluation of psychiatric outreach clinics at two GP practices to determine whether they have changed pattern of referrals from these sites to hospital base. (Unspecified, but early-to-mid 1980s)	Two GP practices in south-east London.	One main hospital base.	Activity data on all 91 patients referred over 3-year period to the two outreach clinics, and 55 referred to outpatient clinics at the base.	No control for potential confounders. Small main base sample. Some differences in demographics and case-mix. **Quality rating: III**
Browning, *et al.*, 1987[100] Retrospective cohort with historical controls (journal article)	Psychiatry	Retrospective study of patients seen at health centre psychiatric outreach clinic over 18-month period and comparison with all psychiatric referrals from GPs at health centre to main hospital clinics for 12 months before establishment of outreach clinic (10 years previously). Data extracted from clinic letters and GP notes. (Outreach service June 1983–December 1984, main base service 1972 (full 10 years earlier)).	One health centre in an inner-city area.	One main hospital base.	Clinical activity data for 114 referrals to outreach clinic, over 87 clinic sessions; also for 44 referrals to main hospital clinics.	No control for potential confounders. Main base sample relatively small. Demographic and case-mix differences small to moderate. Large time gap (10 years) between main base and outreach data-sets may bias comparison. **Quality rating: IV**
Bryden, 1970[66] Retrospective cohort with concurrent controls (MSc thesis)	All medical and surgical specialities	Study of all new outpatient referrals (to a GP health centre, main base, and 19+ other hospitals) from a GP health centre in a Scottish new town over 4-month period. All referrals followed-up for minimum of 3 months. Outreach clinics held at health centre by specialist staff from main hospital (Falkirk Royal Infirmary). (1969)	One GP health centre.	One main hospital and another 19+ hospitals to which GPs made referrals.	Activity data on 194 outreach clinic referrals and 660 referrals to various hospitals.	Single-site study but reasonably large and includes follow-up of patients. Partial control for potential confounders (site acts as its own control). No report on demographics or case-mix. **Quality rating: III**

continued

TABLE 64 contd *Studies evaluated*

Study and design (type of paper)	Specialities	Description (date of fieldwork)	Outreach (community) sites	Main departmental base sites	Data collected (response rate)	Commentary and quality rating
Cain, 1976[69] Retrospective before and after study; prospective cross-sectional (journal article)	Paediatrics	Evaluation of impact of establishment of specialist paediatric clinic in GP practice. Referrals and patient management compared for 1 year before start of scheme and 2 years after. (Pre-1976)	One GP practice (pre-fundholding).	One main hospital.	Activity data for 53 children referred (to main base) in year before start of outreach clinic and for 133 referred to outreach clinic in first 2 years of operation. Questionnaire survey completed by 30 sets of parents (? response rate).	Single-site study, fairly small-scale. No control for potential confounders. Before-and-after study did not use control GP site(s). Criteria for referral and follow-up were changed after first year of outreach clinic. **Quality rating: IV**
Cavenagh, 1978[6] Retrospective cross-sectional (Journal article)	All specialities	Survey of stratified one-in-seven random sample of all GP hospitals in England and Wales to determine contribution they made to overall hospital workload. (1976)	53 GP hospitals.	Not relevant to design.	Questionnaires on hospital activity statistics completed by a GP at all 53 sites (100% response rate).	Well-designed study but gives limited information about outpatient work. Uses multiple sites. **Quality rating: II**
Cooper & Arnold, 1994[92] Prospective, cross-sectional (Report)	Orthopaedics	Evaluation of 'pilot' orthopaedic outreach clinics at six general practices (fundholding status not specified) in Wakefield area of West Yorkshire over 3-month period. Covers patients seen at 14 clinics. (1994)	Six GP practices fundholding status (not specified).		Questionnaires completed by 113 outreach patients. Questionnaires and telephone interviews with unspecified numbers of consultants (involved in outreach clinics), GPs, practice and hospital managers.	Includes multiple community sites. No main base control sites. **Quality rating: III**
Corney, 1994[54] Survey of professional opinion (journal article)	Gynaecology Dermatology General surgery General medicine Orthopaedics Rheumatology Urology Chest medicine ENT Psychotherapy	Postal survey of all 15 'first-wave' GP fundholding practices in SE Thames Regional Health Authority after first fundholding year. (1992)	Not relevant to design.	Not relevant to design.	All 15 practices replied (100% response rate), nine of which had developed consultant outreach clinics (a total of 31 outreach clinics across ten specialities).	Small-scale survey. Poor reporting of results. **Quality rating: IV**
Cullis, *et al.*, 1981[59] Prospective cohort with concurrent controls (Book)	Paediatrics	Surveys in Bath and Oxford of patients attending paediatric clinics at main hospital and at peripheral sites. Study aimed to expand on work of Kerr, *et al.*[62] (Bath, 1977–78; Oxford, 1977)	Bath: nine GP hospitals. Oxford: three community sites (two health centres and one GP hospital).	Bath: one main hospital (Bath Royal United) Oxford: one main hospital (Radcliffe Infirmary).	Questionnaires completed by three groups of patients: country residents seen at base clinics (Bath, *n* = 572; Oxford, *n* = 109); country residents seen at peripheral clinics (Bath, *n* = 850; Oxford, *n* = 145); main town residents seen at base clinics (Bath, *n* = 643; Oxford, *n* = 66). For our purposes, this last group is excluded.	Large, well-designed study involving multiple community sites. Partial control for potential confounders. Distinguishes between 'town' and 'country' patients seen at main base (in town). Demographic and case-mix variables not reported. **Quality rating: I**
Darling & Tyrer, 1990[91] Prospective cross-sectional sample of contacts (journal article)	Psychiatry	Evaluation of face-to-face contacts between psychiatrists and primary care staff over 1 full calender year, within context of outreach clinics in primary care settings. (Date unspecified but pre-1990)	Six community sites (five health centres, one GP surgery) in inner-city area of Nottingham, with total of eight clinics per week.	None.	351 contacts between psychiatrists and all primary care workers, of which 18 were excluded due to incomplete data. Contacts were between three psychiatrists, a part-time psychiatric consultant, senior registrar, registrar, and up to 33 GPs and their teams. There were no scheduled meetings between staff during clinics, hence all contact was 'informal'.	Includes multiple community sites. No entirely clear about method by which data were collected. Only study to attempt quantitative evaluation of specialist–GP communication. **Quality rating: III**

continued

TABLE 64 contd *Studies evaluated*

Study and design (type of paper)	Specialities	Description (date of fieldwork)	Outreach (community) sites	Main departmental base sites	Data collected (response rate)	Commentary and quality rating
Ferguson, *et al.*, 1992[42] Prospective and retrospective cohort with concurrent controls (journal article)	Psychiatry	Follow-up, after 3–5 years, of samples of patients treated by psychiatric services in Nottingham, comparing those who had full treatment at community sites with those treated exclusively at hospital. (1986–88)	Unspecified number of outreach clinics in non-fundholding GP practices around Nottingham.	One main hospital base (Mapperley hospital).	Interview data from stratified random samples of patients identified as having been treated in 1983 by either outreach or hospital-based psychiatric service (and who had only received treatment within that service). Samples drawn from Nottingham Case Register on stratified random basis and matched for age, gender, and type of contact. Final samples consisted of 103 outreach patients and 78 main base patients (62% response rate in all but lower for main base patients).	Partial control for potential confounders (matched samples). Lowish response rate. **Quality rating: II**
Gillam, *et al.*, 1995[60] Prospective cohort with concurrent controls (journal article)	Ophthalmology	12-month pilot study of ophthalmology outreach clinics established at 17 GP practices (65 GPs) in Barnet, London; 17 matched practices selected as control group. Some limited comparative data collected for hospital ophthalmology outpatient department. (1992–93)	17 outreach clinics (GP practices); 17 control sites (GP practices).	One main hospital department.	Activity data for 1309 new outreach clinic attendees; all opthalmology referrals for year. Referral rates over 12 months from control sites (unspecified sample size). Questionnaires from 157 outreach patients across six sites (75% response rate); 150 hospital-based patients (61% response rate). Questionnaires from 47 participating GPs (86% response rate). Interviews with 17 GPs (one per site).	Large, well-designed study involving multiple community sites. Partial control for potential confounders. Uses matched control community sites. No report of demographics or case-mix. **Quality rating: II**
Goble, *et al.*, 1979[61] Prospective cohort with concurrent controls (journal article)	Physiotherapy	Interview survey of physiotherapy outpatients in Devon and Oxfordshire, seen at six community hospitals, two geriatric day hospitals and two district general hospitals. (1977)	Four community hospitals in Devon, two community hospitals in Oxfordshire (geriatric day hospitals excluded for our purposes).	One district general hospital in Devon and one in Oxfordshire.	Interviews with 341 outreach and 158 main base patients in Devon; and with 215 outreach and 138 main base patients in Oxfordshire.	Large, well-designed study involving multiple sites. No control for potential confounders. Some large differences reported on case-mix and demographics. **Quality rating: III**
Goldacre & Gatherer, 1977[43] Retrospective cohort with concurrent controls (journal article)	All main medical and surgical specialities	Census of outpatient bookings at all hospitals and health centres in Oxfordshire for main medical and surgical specialities, over 4-week period, with comparison of findings for main hospital and peripheral (outreach) clinics. (June–July 1975)	Ten peripheral sites (not specified whether peripheral hospital or health centres).	Two main hospitals (Oxford and Banbury).	20,085 outpatients (data extracted from booking lists and case-notes).	Large study including all outreach and main base sites in area. No control for potential confounders. No age or gender differences but other demographic or case-mix variables not reported. **Quality rating: III**
Gruer, 1971[72] Prospective cohort with concurrent controls (journal article)	All medical and surgical specialities	Study of all new outpatient referrals from Scottish Border counties to main hospitals and community clinic sites. (DATE??)	Five cottage hospitals, a 'small' number of local authority owned sites.	One regional centre (Edinburgh), one general hospital (Peel).	Clinical activity data on unstated (but large) number of new referrals over unstated period. More detail available in research report (Scottish Home and Health Department) but unable to obtain copy of this.	Large-scale study. Includes multiple sites. Paper only contains limited information on study. **Quality rating: III**

continued

TABLE 64 contd *Studies evaluated*

Study and design (type of paper)	Specialities	Description (date of fieldwork)	Outreach (community) sites	Main departmental base sites	Data collected (response rate)	Commentary and quality rating
Hawkes & Drummond, 1997[73] Prospective cohort with concurrent controls (Report)	Orthopaedics	Evaluation of six consecutive orthopaedic outreach sessions at one GPFH practice. Evaluation commenced with third session to be held at site. (1992)	One GPFH practice.	Unspecified number.	Activity data for 84 patients seen at outreach clinics (total of 116 consultations, including follow-ups). Limited data for another 88 patients from practice referred to hospital clinics, with diagnoses data for 58 of these.	Not well designed. Partial control for confounders (both outreach and main base samples came from same GP practice). Samples small. No report on demographics; case-mix differences small. Author could have made more of data. **Quality rating: IV**
Helliwell, 1996[45] Prospective and retrospective cohort with concurrent controls (journal article)	Rheumatology	Evaluation, over 12 months, of established community rheumatology service, involving four sites, each visited once monthly by a consultant. (1993–94)	Four community sites (three health centres with GPs attached; one cottage hospital with GP cover).	One hospital base.	Retrospective activity data on 2589 hospital consultations and 352 outreach consultations (not all different patients). 102 (62% response rate) patient questionnaires completed at main base; 33 (94% response rate) at outreach.	Large study. No control for potential confounders. No age or gender differences but other demographics not reported. Case-mix differences small. **Quality rating: III**
Hindler, 1995[70] Prospective cross-sectional (journal article)	Psychiatry	Interview survey of patients attending psychiatry outreach clinics at two community sites over 9-month period. (pre-1995)	One GP practice and one community mental health centre in disadvantaged inner-city area of London.	None.	Interviews with 57 patients (100% response rate), 40 at community mental health centre and 17 at GP practice.	Small sample size. No main base controls. Patients interviewed by treating physician, which may have biased their replies. **Quality rating: IV**
Kerr, *et al.*, 1976[61] Prospective cohort with concurrent controls (journal article)	Paediatrics	Survey of patients attending paediatric clinics at Bath Royal United Hospital and at 11 peripheral GP hospitals. (1975?)	11 peripheral GP hospitals, at a distance of 10–27 miles away. Clinics held by one consultant once a month at each site.	One main hospital (Bath Royal United).	Questionnaires completed by three groups of patients: country residents seen at Bath clinics (n = 62); country residents seen at peripheral clinics (n = 148); Bath residents seen at Bath clinics (n = 69). For our purposes, this last group is excluded.	Large study involving multiple community sites. No control for potential confounders. Distinguishes between 'town' and 'country' patients seen at main base (in town). Demographic and case-mix variables not reported. **Quality rating: III**
Khunti & Carr, 1997[77] Retrospective before and after study (journal article)	Audiology	Retrospective evaluation of audiology clinic in inner-city health centre in Leicester, over 8 months; comparison with referrals from site for 'deafness' to main base ENT department for same 8 calendar months of year before start of outreach clinic. (1990–91)	One inner-city GP practice at a health centre.	None.	Ten referrals to main base ENT clinics before start of outreach clinic; 53 patients referred to outreach clinic.	The only published evaluation of a community audiology scheme. Single-site and small-scale. No main base control sample. Effect of outreach service completely confounded by simultaneous introduction of direct referral scheme at site. **Quality rating: IV**

continued

TABLE 64 contd *Studies evaluated*

Study and design (type of paper)	Specialities	Description (date of fieldwork)	Outreach (community) sites	Main departmental base sites	Data collected (response rate)	Commentary and quality rating
Leese, *et al.*, 1986[117] Prospective cohort with concurrent controls (journal article)	ENT	Study of ENT outpatient non-attendance rates at rural general hospital, urban main hospital and outreach clinic over 2-year period in Scotland. (1983–85)	One peripheral clinic site (type not reported).	One rural and one urban hospital.	All ENT bookings for 2-year period: rural hospital 15,653; urban hospital 44,009; outreach 384.	Single community site but large-scale. No control for potential confounders. Study implemented because rural hospital appeared to have high non-attendance rate, which is likely to have exacerbated any differences. No information on demographics or case-mix. **Quality rating: IV**
Low & Pullen, 1988[44] Retrospective cohort with concurrent controls (journal article)	Psychiatry	Analysis of psychiatric diagnoses recorded for all new referrals and domiciliary visits at the Edinburgh adult psychiatric service, using Edinburgh Psychiatric Case Register. Results broken down by health centres, peripheral hospitals, main hospital base and domiciliary visits. (1981–85)	Ten health centres.	Three district general hospitals, one psychiatric hospital (Royal Edinburgh).	Case register data for a total of 12,741 patients.	Large study covering good time-span. No control for potential confounders. Includes all outreach and main base sites in area. Demographics not reported; some small to moderate case-mix differences. **Quality rating: II**
McKechnie, *et al.*, 1981[75] Retrospective cohort with concurrent controls (journal article)	Psychiatry	Evaluation of 2 years' work at psychiatric outreach clinic in GP practice, and comparison with referrals from similarly-sized GP practice in different town to clinics at a general hospital. (1975–77)	One GP practice (pre-fundholding) plus one control GP practice without in-house clinic.	One general hospital.	Clinical activity data for 72 referrals to outreach clinic and 54 referrals to hospital.	Single site, and small samples. Used a matched control community site (GP practice). Partial control for potential confounders. No differences on demographics. Case-mix not reported. **Quality rating: III**
Milne, *et al.*, 1992[3] Prospective cross-sectional (journal article)	General medicine General surgery Dermatology Ophthalmology ENT Paediatrics Orthopaedics Obstetrics Psychiatry Geriatrics	Survey of extent of consultant outpatient services at all health centres in Scotland. (1991)	188 health centres surveyed (not all had outreach clinics).	Not relevant to design.	188 health centres were identified, 100% response rate (presumably because survey done at behest of the Chief Scientist).	Questionnaire presumably completed by a GP at each health centre but this not made clear in paper. Numbers of new outpatients are estimated rather approximately. **Quality rating: III**
O'Cathain, *et al.*,1995[74] Retrospective cohort with concurrent controls, plus retrospective cross-sectional (journal article)	Physiotherapy	Evaluation of pilot scheme of GP-based physiotherapy as alternative to direct access hospital service. Comparison of utilisation and referral rates over first year of scheme. (1992–93)	Six non-fundholding GP practices participating in scheme plus 35 non-fundholding practices not in scheme.	One hospital base.	Activity data (first contacts and referrals) for physiotherapy, orthopaedics, and rheumatology over 2-year period (sample size?). Referral forms on 549 outreach patients seen over 6-month period (60% of all referrals).	Partial control for potential confounders. Uses multiple community sites. Compares community sites with group of control community sites (similar but not formally matched). No report on demographics or case-mix. **Quality rating: III**

continued

TABLE 64 contd *Studies evaluated*

Study and design (type of paper)	Specialities	Description (date of fieldwork)	Outreach (community) sites	Main departmental base sites	Data collected (response rate)	Commentary and quality rating
Perrett, 1997[40] Retrospective cohort with concurrent controls, plus survey of professionals (journal article)	Gynaecology Orthopaedics General surgery	Analysis of routinely collected outpatient data from Sheffield District Health Authority's outpatient database for 1 full year. Plus questionnaire survey of all GPFH practices known to house outreach clinics. (1994–95)	11 GPFH practices; for comparison purposes, 13 GPFH and 95 non-fundholding GPs without outreach clinics.	Not reported but minimum of one.	Clinical activity data covering 52,000 first referrals and 122,000 follow-up appointments. Questionnaires from 24 GPFH practices (100% response rate).	Large, well-designed study involving multiple sites. Partial control for potential confounders (uses control group of GPFHs without outreach clinics). No demographic differences regarding age or gender, no information on other variables. No information on case-mix. **Quality rating: II**
Pullen & Yellowlees, 1988[53] Survey of professional opinion (journal article)	Psychiatry	Initial postal survey of all 215 consultant psychiatrists in Scotland (90% response rate) identified those conducting clinics in primary care settings. Followed-up by second, detailed survey of participating psychiatrists (*n* = 104). (1986)	Not relevant to design.	Not relevant to design.	Completed questionnaires from 65/104 consultant psychiatrists (63% response rate).	Final response rate a little low (63%). **Quality rating: III**
Spencer, 1993[55] Prospective and retrospective cohort with concurrent controls, plus survey of professionals (journal article)	Paediatrics	Retrospective review of 10 years experience of paediatric outreach clinics in Sheffield area, plus limited evaluation of new referrals to hospital base over 12-month period. Retrospective review covered unspecified 10-year period (starting early 1980s). Evaluation exercise undertaken in 1983.	18 outreach clinic sites (four health authority child health centres, 14 GP practices) around Sheffield.	One main hospital base (Northern General).	Activity data on over 4600 children seen at community sites over 10-year period. Activity data on 177 hospital referrals. Questionnaires completed by 108 patients. Questionnaire completed by 36/70 GPs circulated (nine at sites with outreach clinics, 27 at sites without) (51% response rate).	Large study involving multiple community sites. No control for potential confounders. Demographics not reported but community sites in disadvantaged areas. Case-mix differences small. **Quality rating: II**
Strathdee & Williams, 1984[51] Strathdee, 1987;[52] 1988[56] Survey of professional opinion (journal articles)	Psychiatry	Initial postal survey of all 1133 consultant psychiatrists in England and Wales (88% response rate) used to identify those conducting clinics in primary care settings. Followed up by subsequent surveys of participating psychiatrists and, where known, senior GPs (*n* = 154 and 95). (1982)	Not relevant to design.	Not relevant to design.	Completed questionnaires from 109/154 consultant psychiatrists (71% response rate), of whom 95 provided name of senior GP. Of these, 70 (74%) responded to basic questionnaire and 58 (61%) provided further details.	Final GP response rate was a little low (61%). **Quality rating: II**

continued

TABLE 64 contd *Studies evaluated*

Study and design (type of paper)	Specialities	Description (date of fieldwork)	Outreach (community) sites	Main departmental base sites	Data collected (response rate)	Commentary and quality rating
Strathdee, *et al.*, 1990[68] Prospective cohort with concurrent controls (journal article)	Psychiatry	Comparison of sample of consecutive patients referred to two psychiatric liaison clinics in South London with consecutive attendees to general psychiatry outpatient clinics at hospital. Assessment was by questionnaire and psychiatric interview and concentrated on case-mix and patient preferences. (Before 1990)	Two outreach clinics in GP settings; deprived inner-city areas of London.	One psychiatric teaching hospital in South London (Greenwich District).	Clinical activity data for 65 consecutive outreach referrals and 48 consecutive hospital referrals.	Partial control for potential confounders. Standardised evaluation instruments used. Small samples. Demographic and case-mix differences small to moderate. **Quality rating: II**
Subotsky & Brown, 1990[116] Retrospective cohort with concurrent controls (journal article)	Child psychiatry	Review of referrals to child psychiatry clinic at health authority health centre over 3-year period and comparison with referrals to base hospital unit; London area. (1984–86)	One health authority health centre.	One hospital base.	Clinical activity data for 41 outreach and 643 main base new referrals.	Single community site. No control for potential confounders. Small outreach sample. Some large demographic differences, and case-mix not reported. **Quality rating: IV**
Tata, *et al.*, 1996[99] Prospective cohort with concurrent controls (journal article)	Clinical psychology	Investigation of whether primary care-based clinical psychology clinics attract different medical case-mix than hospital outpatient clinics. Data collected over 8-week period across four London boroughs. (pre-1996)	Only reported as 'a range' of primary care sites.	Only reported as 'a range'.	Questionnaire interviews completed by 99 outreach patients and 78 main base patients (88% response rate, not broken down by setting).	Multiple-site study (both outreach and main base) but numbers not reported. No control for potential confounders. All patients at both settings interviewed by same psychologist. Reports that practices at outreach clinics were not different from those referring to main base in terms of number of partners, list size or socioeconomic area; however, no matching attempted. Some moderate to large differences in demographic variables. **Quality rating: III**
Todd, 1978[76] Retrospective cohort with concurrent controls (journal article)	Psychiatry	Comparison of new referrals over first 8-month period of new outreach clinic in health centre with new referrals during same year to outpatient clinics at general hospital and psychiatric hospital; Glasgow area. (1975)	One large health centre, used by 11 GP practices (pre-fundholding).	One general hospital and one psychiatric hospital.	Clinical activity data for: 54 new referrals to health centre; 56 to general hospital; 58 to psychiatric hospital.	Single site and small samples. No control for potential confounders. No information on demographics or case-mix. **Quality rating: IV**

continued

TABLE 64 contd *Studies evaluated*

Study and design (type of paper)	Specialities	Description (date of fieldwork)	Outreach (community) sites	Main departmental base sites	Data collected (response rate)	Commentary and quality rating
Totten, 1992[58] Prospective cross-sectional (MSc thesis; journal article)	Audiology	Questionnaire surveys of patient opinion regarding various aspects of NHS hearing aid service, including provision at GP practices and direct referral to audiology departments; Southampton area. (1991)	Not relevant to study design (GP practice involved did not operate audiology outreach).		Questionnaires from random sample of 439 patients aged 60–79 years from GP register (81% response rate). Questionnaires from random sample of 100 hearing aid users registered with audiology department at local hospital (86% response rate).	Large sample size. Wording used in questionnaire likely to have had a big effect on responses. **Quality rating: III**
Tyrer, 1984;[47] Tyrer, *et al.*, 1984[48] Retrospective cohort with concurrent controls, plus prospective cross-sectional (journal article)	Psychiatry	Evaluation of five psychiatric clinics in GP settings: Nottingham. (1979–81)	5 GP practices (pre-fundholding) in disadvantaged areas.	One main hospital.	Activity data over 2.5 year period (includes 6 months pre-clinics and 185 patients seen at outreach). Questionnaires completed by 100 consecutive referrals from community sites (includes some emergency referrals seen at hospital).	No control for potential confounders. Demographics not reported but community sites in disadvantaged areas. Moderate case-mix differences. **Quality rating: III**
Walker, 1991[65] Prospective cohort with concurrent controls (report to funder: Exeter Health Authority)	Physiotherapy	Evaluation of physiotherapy service at eight GP practices (eight different physiotherapists) and comparison with service at three hospital sites (5 different physiotherapists). (1989–90)	Eight GP practices and health centres (fundholding status not reported), with mix of rural, semi-rural and urban areas.	Three hospital bases.	Service activity data on 911 outreach and 1352 main base patients. Questionnaires completed by 43 outreach and 43 main base patients (response rates not given).	Includes multiple community sites and large sample. No control for potential confounders. Completely different staff at each setting type. Differences in age; other demographic and case-mix variables not reported. **Quality rating: III**
Walshe & Shapiro, 1995[41] Prospective and retrospective cohort with concurrent controls (report to funder)	All specialities	Evaluation of outreach outpatient services provided by Royal Wolverhampton Hospitals NHS Trust and comparison with hospital-based outpatient clinics. (1994–95)	43 outreach clinics based in GP practices/ health centres (number of sites not given).	Number of hospitals not given.	Outpatient activity data for 6-month period (October 1994–March 1995) from trust's patient management system, covering 97,336 hospital attendances over 6006 clinic sessions, and 2286 outreach attendances over 280 clinic sessions. Questionnaire survey of a total of 137 patients at four outreach and four main base clinics (one pair each of ENT, ophthalmology, gynaecology, and dermatology) (99% response rate).	Large, well-designed study. Includes all outreach and main base sites in area and all clinical activity over 6 months. No control for potential confounders. **Quality rating: II**
Worsfold, *et al.*, 1996[67] RCT (journal article)	Physiotherapy	RCT, over 12 months in Southampton area, comparing physiotherapy education/ advice given by two senior physiotherapists in primary care settings with traditional hospital-based treatment. (1993–94)	Unspecified number of community sites but involved 43 GPs.	One local hospital.	54 patients seen at community sites; 76 at hospital (55% of original allocated sample). 17 GPs returned questionnaires (40% of those involved).	The only RCT. Same staff at both settings. Type of intervention differed between settings, thus con founding any setting effects. High non-attendance rate (41%). Small samples. **Quality rating: III**
Zegleman, 1988[115] Prospective and retrospective cohort with concurrent controls (journal article)	Psychiatry	Examination of non-attendance rates at psychiatric clinics at health centre and main hospital in south-west Edinburgh. (1984–86)	One outreach site (health centre).	One main hospital (Royal Edinburgh).	Retrospective data (over 1 year) on appointment attendance for 171 first referrals to outreach and 263 first referrals to main base. Prospective data collected (over 6 months) on appointment attendance and patient characteristics for 77 first referrals to outreach and 93 first referrals to main base.	No control for potential confounders. Moderate demographic differences and case-mix differences small. Analysis could have been improved. **Quality rating: III**

Appendix 5

Review of costing methodologies used in economic evaluations of outreach clinics

T Gosden

National Primary Care Research and Development Centre, University of Manchester, UK

Introduction

There is a growing body of literature in which estimates of the costs and effects or consequences of outreach clinics (where hospital-based staff, such as consultants, hold outpatient clinics in general practices or community settings) are compared with outpatient clinics. However, the quality of these studies, in particular, the costing elements of some of them, has never been assessed.

This is unsatisfactory for two reasons. First, the need for accurate and reliable information on costs is undeniable, since we live in a world of scarce resources, and information on costs will enable the allocation of NHS resources to their most productive uses. The notion of opportunity cost is most important here: resources such as nurse's or GP's time spent treating one patient cannot be re-used to treat others and it is important to estimate the value of this sacrificed benefit. Since, however, in most cases it may be difficult to estimate the opportunity cost in terms of lost health benefit, it is common practice to use market valuations of resources instead. In the context of outreach clinics, one important research issue is whether spending £10 providing an outreach clinic would yield more benefit to society than spending £10 providing outpatient clinics. If such decisions are informed by inaccurate approximations of opportunity costs, then healthcare policy will be misguided. Second, if substandard costing methodology is employed in a number of studies, then it may unfortunately become a precedent for future studies in the area.

It is recognised that there is much variation in the quality of economic evaluations.[1] This is despite a multitude of textbooks[2] for those who undertake economic evaluations, and guidelines for those who peer review economic evaluations so that published studies conform to some common standard.[3]

The aim of this review is to assess the quality of the methods used **in practice** to estimate costs of outreach clinics so as to be able to recommend a costing methodology for a national survey of audiology outreach sessions. The **principles** of 'good' economic practice are explored more generally in the discussion section, with reference to the economic evaluation methodology literature. The paper concludes with the compilation of recommended features of a costing exercise to be designed for the national survey of the costs of audiology outreach sessions.

Methods

The aim of this paper will be achieved in three steps.

1. Identifying economic evaluations of outreach clinics compared with outpatient clinics, not necessarily held by specialists or consultants, in any speciality.
2. Summarising the results and key methodological characteristics of economic evaluations of outreach compared with outpatient clinics.
3. Critically appraising the costing methodologies; this will involve commentary on the methodology used in identified studies and a scored checklist for assessing the quality of economic evaluations.

Published and unpublished reports of studies comparing hospital outpatient clinics with outreach clinics based in either community (community hospitals, GP cottage hospitals, health centres) or general practice settings, were identified by three methods. First, by attendance at conferences on outreach clinics and contact with key researchers in the field. Second, by searching BIDS ISI Science citation index, EMBASE and MEDLINE for all relevant years using the following keywords together with 'clinic': outreach, peripheral, general practice-based, health centres and community. Third, handsearching

of bibliographies of articles on outreach clinics. Studies were included in the review if they contained estimates of the costs associated with an outreach clinic compared with a (main) hospital-based outpatient clinic and there was some information about the methodology used. Only UK, English language studies were included in the review.

The only method of assessing the quality of economic evaluations, to the author's knowledge, has used checklists to investigate whether a study has several desirable components. There are a number of checklists in existence;[1,4,5] however, the one employed in this review is by Drummond and colleagues,[2] which has been used in other studies.[6,7] In an attempt to derive some explicit study quality ranking, a scoring approach has been used in conjunction with checklists of this nature.[8] A similar approach is adopted in this review. The possible responses to each question in the checklist (see *Table 65*) were yes, no, or not applicable. A 'yes' response to a question scored 1 for that study, a 'no' response scored 0, and 'not applicable' also scored 0. For all except questions 2a and 5a, 'yes' was a positive indicator of study quality and, thus, the study with the most points could be considered to have the highest quality economic evaluation. Question 5a (see *Table 65*) was changed from the original wording – "Were any of identified items omitted from measurement? If so, does this mean that they carried no weight in the subsequent analysis?"– to "Were any of the identified items omitted from measurement likely to carry weight in the subsequent analysis?" This was so that one response could be given and scored. For this and question 2a, a 'yes' response scored 0 and a 'no' response 1. Also, in the original checklist, questions 1c and 1d were combined but then separated for scoring purposes. Questions 1a, 2b and 5b were not scored because, in the author's view, a 'yes' or 'no' response did not indicate a higher or lower quality study. The maximum score a study could achieve was 33.

Results

There were nine published[9–17] and three unpublished studies[18–20] in which the costs of outreach clinics (either community or general practice based) in the UK were estimated. In two of the papers,[11,12] different variables measured in the same study were reported, so these were considered together for the purposes of this review.

Key study characteristics

The studies differed in the number of outpatient and outreach clinics sampled and also in the sites of outreach clinics within and between studies (general practice, health centre, community hospital or GP cottage hospital). In two studies[12,17] outreach and outpatient clinics were compared in more than three specialities. The period over which data was collected varied: the duration of three studies was 1 year.[9,10,16]

One evaluation[14] was a cost minimisation study, in which it was assumed that the health benefit was unlikely to differ for the two types of clinic. In another study,[16] the same assumption was made but patient views were also measured which, for the purposes of this review, were considered a consequence. This study, along with the remaining nine studies, were classified as cost–consequence studies; that is, they either assessed multiple outcomes (consequences) which were not combined as a summary measure of effectiveness, or they were process measures and patient and professional views, which could not be so combined.[21] In other words, costs and measures of outcomes expressed in terms of monetary valuations of health gain (cost–benefit analysis), measures of utility (cost–utility) or natural units of health gain (cost-effectiveness) were not combined.[2] Only in one study[11] was patient health status measured. As regards study design, in one of the studies[9] outreach clinics were compared with matched control outpatient clinics. The remaining studies were comparative analyses with no before and after comparisons.

Identification of costs

In six of the 11 studies, costs were assessed from the viewpoint of the NHS, with the societal viewpoint being adopted in the remainder.[12,15–18] Subsequently, the range of costs and consequences estimated differed between studies and was often incomplete. For example, in some studies which adopted, either implicitly or explicitly, a NHS viewpoint in the measurement of costs, there was a failure to estimate all healthcare costs of significance to the NHS. The items of resource that were identified but not later valued provide an indication of the adequacy of study design and quality of data collection. In five of the studies reviewed items of cost were identified but subsequently not valued.[10,12,14,18,20] In many cases the authors did not give the reasons for excluding these costs, in other cases they were assumed to be of equal magnitude in each clinic type and therefore insignificant. In one study,[20] the authors acknowledged that the size and scope

TABLE 65 *Assessing the quality of economic evaluations of outreach clinics*

Questions	Gillam, *et al.*, 1995[9]	Wakefield Healthcare, 1994[18]	Hawkes & Drummond, 1993[19]	Walshe & Shapiro, 1997[20]	Helliwell, 1996[10]	Black, *et al.*, 1997[11] Gosden, *et al.*, 1997[12]	Bowling, *et al.*, 1997[13]	Shah, 1995[14]	Kerr, *et al.*, 1976[15]	Cullis, *et al.*, 1981[16]	Gruer, 1971[17]
1. Was a well-defined question posed in answerable form?	Yes	No	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes
1a. Did the study examine both costs and effects[a] of the service(s) or programmes(s)?	No	No	No	No	No	Yes	Yes	No	No	No	No
1b. Did the study involve a comparison of alternatives?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1c. Was a viewpoint for the analysis stated?	Yes	No	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes
1d. Was the study placed in any particular decision-making context?	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes	Yes
2. Was a comprehensive description of the competing alternatives given?	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
2a. Were any important alternatives omitted?	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
2b. Was (should) a do-nothing alternative (be) considered?	No	No	No	No	No	No	No	No	No	No	No
3. Was there evidence that the programmes' effectiveness had been established?	No	No	No	No	No	No	No	No	No	No	No
3a. Was this through an RCT? If not, how strong was the evidence of effectiveness?	No	No	No	No	No	No	No	No	No	No	No
4. Were all important and relevant costs and consequences for each alternative identified?	No	No	No	No	No	No	No	No	No	No	No
4a. Was the range wide enough for the research question at hand?	Yes	No	No	No	No	Yes	Yes	No	Yes	Yes	No
4b. Did it cover all relevant viewpoints? (Including community or social viewpoint, patients, and third-party payers; others may also be relevant depending on the particular analysis)	No	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes
4c. Were capital costs, as well as operating costs, included?	Yes	Yes	No	No	Yes	Yes	Yes[b]	No	No	Yes	No
5. Were costs and consequences measured accurately in appropriate physical units?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5a. Were any identified items omitted from measurement likely to carry weight in subsequent analysis?	N/A	Yes	N/A	Yes	Yes	Yes	N/A	Yes	N/A	N/A	N/A
5b. Were there any special circumstances (e.g. joint use of resources) that made measurement difficult?	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No
5c. Were these circumstances handled appropriately?	Yes	Yes	N/A	No	Yes	Yes	No	N/A	No	Yes	N/A
6. Were costs and consequences valued credibly?	Yes	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes
6a. Were sources of all values clearly identified? (including market values, patient or client preferences and views, policy-makers' views, health professionals' judgements)	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
6b. Were market values employed for changes involving resources gained or depleted?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6c. Where market values were absent (e.g. volunteer labour) or did not reflect actual values (e.g. clinic space donated at reduced rate), were adjustments made to approximate market values?	No	No	No	No	No	Yes	No	No	No	Yes	No

[a] *'Effects' was taken to mean health benefits*
[b] *Costs were based on NHS hospital prices and thus assumed to include capital costs*

continued

TABLE 65 contd *Assessing the quality of economic evaluations of outreach clinics*

Questions	Gillam, *et al.*, 1995[9]	Wakefield Healthcare, 1994[18]	Hawkes & Drummond, 1993[19]	Walshe & Shapiro, 1997[20]	Helliwell, 1996[10]	Black, *et al.*, 1997[11] Gosden, *et al.*, 1997[12]	Bowling, *et al.*, 1997[13]	Shah, 1995[14]	Kerr, *et al.*, 1976[15]	Cullis, *et al.*, 1981[16]	Gruer, 1971[17]
6d. Was the valuation of consequences appropriate for question posed? (i.e. has the appropriate type or types of analysis – cost-effectiveness, cost–benefit, cost–utility – been selected?)	Yes	No[c]	No	No[c]	Yes	Yes	Yes	Yes	Yes	Yes	No[d]
7. Were costs and consequences adjusted for differential timing?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7a. Were costs and consequences which occur in future 'discounted' to their present values?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7b. Was any justification given for discount rate used?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8. Was an incremental analysis of costs and consequences performed?	No	No	No	No	No	No	No	No	No	No	No
8a. Were additional (incremental) costs generated by one alternative over another compared with additional effects, benefits or utilities generated?	No	No	No	No	No	No	No	No	No	No	No
9. Was sensitivity analysis performed?	No	No	No	No	No	Yes	No	No	No	Yes	Yes
9a. Was justification provided for range of values (for key study parameters) employed in sensitivity analysis?	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	Yes	Yes
9b. Were study results sensitive to changes in values (within assumed range)?	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	Yes	Yes
10. Did presentation and discussion of study results include all issues of concern to users?	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
10a. Were conclusions of analysis based on some overall index or ratio of costs to consequences (e.g. cost-effectiveness ratio)? If so, was index interpreted intelligently or in a mechanistic fashion?	No	No	No	No	No	No	No	No	No	No	No
10b. Were results compared with those of others who have investigated the same question?	No[e]	No	No	No	No	Yes	Yes	No	No	Yes	No
10c. Was the generalisability of results to other settings and patient/client groups discussed?	Yes	No	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
10d. Did study allude to, or take account of, other important factors in choice or decision under consideration (e.g. distribution of costs and consequences, or relevant ethical issues)?	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes

[c] *No question posed in these studies*
[d] *Despite the study aim of determining the efficiency of outreach clinics, there were no estimates of appropriate measures of consequence*
[e] *Cost results in this study were not compared with those of other studies*

of the evaluation did not permit them to measure certain costs. In another,[12] the equipment costs could not be broken down as it was not known how many alternative uses it had. This was acknowledged to be a particular difficulty in another study also.[16]

Little consideration was given, except in the discussion sections of papers, to the wider, long-term implications of outreach clinics, such as impact on referral patterns, organisation and number of outpatient clinics, and prevention of future healthcare costs. The cost impact of peripheral outreach clinics on the teaching function of the main base hospital from which staff were taken was estimated in only one study.[16]

Measuring the quantity of resource use and collecting the necessary data

There was significant variation in the methods employed to collect data. In most studies, both prospective and retrospective data collection were used, depending on the type and format of data. However, an indirect method was employed in one study, using national activity statistics and expert opinion.[14] For most studies, the collection of cost data was done retrospectively but, in some studies, cost data were obtained both retrospectively and prospectively. Hospital activity statistics were analysed retrospectively, with information being obtained from NHS managers and practice managers. In the studies in which data were collected prospectively, questionnaires and surveys were used to collect opinions, views and preferences of patients and health professionals, and also the information needed to calculate patient costs.

Valuation of costs

The authors of eight of the studies took a bottom-up approach to costing.[9,12,13,15–17,19,20] Few studies reported that the aim of the costing exercise was to estimate opportunity costs. The reporting of sources of data used for cost estimation was sporadic in most studies. NHS salary data were used in six studies to estimate staff costs,[9,12,15–17,20] although it was not clear whether employer on-costs, which when added provide an approximation of the full opportunity cost, were included. In the remaining studies, hospital accounts staffing data was used. In five of the seven studies in which staff travel costs were estimated,[12,14–17] NHS reimbursement rates were used. In one of the last two studies in this group, a top-down apportionment of annual travel claims was undertaken.[10] In three studies[12,14,17] the value of lost patient consultation time as a result of hospital staff travelling to the outreach clinic was estimated.

The methodology used in the valuation of other costs in two studies was unclear.[9,19] NHS contract prices were used in four studies for all or some items of cost.[12,13,18,19] Many authors did not specify what was included in the prices used in each study, which does not permit an itemisation of costs or a sensitivity analysis to test study assumptions. In the eight studies in which capital and overhead costs were identified or collected separately, only four[9,10,12,16] were apportioned to the outreach or outpatient clinic adequately with all methods and assumptions stated explicitly.

In only seven studies were healthcare costs estimated in such a way as to enable the calculation of marginal costs; most results were reported as total costs per patient or clinic attendance. For the purposes of this review, these were calculated by excluding costs which could not be switched from one clinic to another such as overhead and capital costs. In only one study[12] were confidence intervals for cost estimates reported.

Costs to patients were estimated in five studies.[12,15–18] These studies were inconsistent in their valuation of lost market and non-market production: that is, the value to society of work and leisure time lost as a result of attending a clinic appointment. In one study[15] data on lost earnings only were collected which, while representing a real and tangible cost to patients (which affects their demand for health care), implicitly assumes that lost leisure time or the time of retired and unemployed persons has no worth. In another study, this issue was tackled by using one single estimate of the value of time.[12] In a further study a more detailed approach was taken by using the value of leisure time as a percentage of the wage rate and a shadow price for the value of childrens' time.[16] The source of travel cost for patients travelling by car was only clear in one study,[12] although the values but not the sources used in other studies were explicitly stated. Out-of-pocket expenses of patients in making special arrangements, such as for the care of dependants, were collected in two studies.[12,16]

Sensitivity analysis was only used in three studies,[12,16,17] although it would have been appropriate in most studies in which any assumptions were made. As no future health- or non-healthcare costs were estimated in any of the studies, there was no need for the discounting of costs.

TABLE 66 *Ranking of studies by score: derived from Drummond and colleagues*[2]

Rank	Study	Score
1	Cullis, *et al.*, 1981[16]	21
2	Black, *et al.*, 1997[11] Gosden, *et al.*, 1997[12]	19
3	Gruer, 1971[17]	15
4 =	Gillam, *et al.*, 1995[9]	13
4 =	Bowling, *et al.*, 1997[13]	13
5	Helliwell, 1996[10]	11
6	Kerr, *et al.*, 1976[15]	10
7 =	Wakefield Healthcare, 1994[18]	9
7 =	Walshe & Shapiro, 1997[20]	9
8 =	Hawkes & Drummond, 1993[19]	6
8 =	Shah, 1995[14]	6

The results of the assessment of the 11 studies according to the checklist developed by Drummond and colleagues[2] are shown in *Table 65*. The scores and subsequent ranking of each of the studies are shown in *Table 66*. This approach provides an over-all picture of the quality of these studies and summarises many of the issues that have been touched upon already. As can be seen, the study by Cullis and colleagues[16] ranked highest while those by Hawkes and Drummond[19] and Shah[14] had the lowest score. There were two studies equally ranked at the fourth, seventh and eighth positions.

Discussion

A total of 11 economic evaluations of outreach clinics compared with outpatient clinics have been reviewed; they were found to vary significantly in study design and size, range of costs estimated, methodology for data collection and cost valuation, and presentation and analysis of results. Each study was scored according to whether it possessed certain characteristics using a checklist. This approach suggests that most weight should be given to the methodology and results of the study by Cullis and colleagues,[16] followed closely by those of Black and colleagues[11] and Gosden and colleagues.[12]

There appeared to be a pattern in the ranking of studies, in that those with the widest range of costs and consequences, prospective data collection, bottom-up costing and societal costing viewpoint tended to have a higher ranking. The size and length of study, however, was not a predictor of the score, although the number of studies reviewed limits the strength of this conclusion. A study which modelled the cost of all outreach versus outpatient clinics in England in the psychiatric speciality achieved the lowest ranking, while a comparative analysis of six outreach clinics and one outpatient clinic was rated higher (albeit by one point). Furthermore, the most superior study design found in the evaluations reviewed was a prospective case–control study; however, it was ranked below studies with other designs.

Limitations of this review

The description of study methodologies in this review inevitably requires some interpretation; hence, there is a subjective element, in some cases, to the categorisation. This was often due to lack of information about the exact methods of data collection and cost estimation. However, this has facilitated a critical appraisal of the costing methodology of each study. The scored checklist is also helpful in providing a method for summing up the positive and negative attributes of study quality, but there are significant problems with this approach. First, the checklist is not entirely geared towards a review of the more technical aspects of costing, so some questions may not be detailed enough to really get at the quality of this component. Second, the checklist requires the reviewer to make some subjective assessments. To counter this, a number of reviewers should score each study independently using the same checklist and blinded to the authorship of each study. Unfortunately neither of these practices could be incorporated into this review.

There are three main areas for discussion relating to costing:

- identifying resources
- collecting data on resources
- estimating their value.

In much of the debate surrounding costing methodology in the health economics literature, there appears to be no single correct approach to these processes, although there are a range of acceptable practices. This discussion centres on what consensus exists around costing practice, and the appropriateness of health benefits measurement is disregarded.

Guidelines for cost estimation

A study should state a viewpoint for costing as a first step as it determines the rest of the outcomes to be measured.[22] The choices of viewpoints include: the patient, health service,

society and the decision maker (who may be a clinician, professional organisation, patient group or purchaser).[3] Other factors might impact on the viewpoint, such as the funding of the study or the profession of the researchers.[23] However, the important point is that if the viewpoint is societal then the full range of societal costs must be considered. Many of the studies included in this review did not give a perspective and, also, did not provide a justification for including certain costs and not others. The exclusion of certain types of costs, such as patient costs, can be justified if external factors (such as study project budget) prevented their consideration or the viewpoint is stated explicitly as that of an agency (i.e. the NHS). Health economists are encouraged to estimate societal costs[24–27] when appropriate or at least to adopt multiple perspectives.[3] Otherwise policy determined by economic evaluations which exclude patient costs could result in implementation or continuation of health services with higher cost implications for patients. The choice of perspective may affect the ease of data collection. If, for example, only a patient viewpoint was taken, it might be easier to obtain estimates of drug costs from an NHS provider rather than from the patient.

A study must be of sufficient length as to capture significant long-term economic and medical outcomes. The outreach evaluations that were of greater study length were more likely to assess the impact of both types of clinic on referral patterns and thus be able to estimate resulting costs (savings). However, the sample size required to detect an economically important difference (which would affect the length of the study) was not calculated, as is recommended,[28] in any of the studies.

When considering which costs to identify and estimate, a basic rule of thumb is that resource use by a particular intervention should be measured if it is likely to have an impact on the decision between interventions.[21] It is useful to classify costs in a study and there are many ways of so doing.[2,29] In this paper, the five groupings suggested by Gold and colleagues have been adopted:[21] direct healthcare costs, direct non-healthcare costs, patient time costs, productivity costs and future costs. Few economic evaluations estimate all categories of cost; most focus on 'direct' costs, that is, changes in resources that arise directly because of the treatment given or service provided, side-effects and future consequences linked to it.[21] For outreach clinics this includes staff time, treatment given, capital (equipment and buildings), overheads, and impact on future patterns of treatment (if study length is sufficient). There are also direct non-healthcare costs, such as patient travel and expenses incurred in attending clinic appointments, such as taking time off work. In the studies reviewed in this paper, the full range of direct costs was considered in only five. Other types of costs, such as productivity losses, are associated with death or morbidity arising from a particular disease or condition but would be difficult, and probably inappropriate, to estimate in the case of outreach clinics.[21]

The quality of data is crucially affected by the methods used to collect units of resource use. There are a range of 'tools', such as, questionnaires, monitoring forms, time-use diaries, observation and secondary sources.[30] Questionnaires are useful for retrospective and prospective collection of resource use for bottom-up costing. Secondary data are also a useful data source but the appropriateness of such resource estimates to the circumstances being studied and their correlation with true cost estimates must be ascertained.[31] The design of the questionnaire is crucial; the survey can be carried out either by post or by interview, although the latter method is more expensive. Time-use diaries, monitoring forms and evaluator observation can only be used in prospective data collection approaches.

Prospective collection of data is regarded as better practice by many health economists as it allows specification of data needed for a study to be done in advance, thus ensuring the appropriate range of costs are estimated and increasing the accuracy of cost estimation. However, this method can be time-consuming and expensive. Retrospective data collection involves use of questionnaires to service providers and to patients to recall their time and use of other resources, for example. It may also involve the examination of hospital accounts and cost estimates, although these may not be in the desired format. Such an approach can result in the collection of inaccurate data; for example, asking staff involved with an outreach clinic what time input they have will often result in a 'guesstimate'. A third approach is to use hospital accounts, expert opinion and informed assumptions; this can be done irrespective of when a clinic takes place.[30] This is termed an indirect method requiring the least amount of research resources but with, potentially, the least accurate data precision. Although the only study to adopt this method was ranked lowest in quality, it would be interesting to see how consideration of a wider range of costs would have impacted on its score.

In the valuation of resources used in providing health care, it is the opportunity cost that is being estimated. In many cases, it is extremely difficult to estimate the true value of output that would be achieved if a resource was used in an alternative activity (the opportunity cost) for a number of reasons. First, it is often unclear or difficult to ascertain in what other activities resources might be otherwise employed. Second, it is difficult to measure their value accurately. It is common practice to use market prices of resources as approximations for opportunity cost. However, the adequacy of this proxy depends on whether the market for the resource is (near) perfectly competitive and therefore its price is equal to its value in alternative activities. This may not be the case in healthcare markets, such as the NHS, which are highly regulated; even the markets for labour resources are imperfectly competitive as highly specialised doctors' skills are not easily transferable between activities and markets.

The advantage of using NHS contract prices as approximations of opportunity cost, which is a regular practice, is that they do not have to be adjusted for profit components and are more readily available. However, there are a number of problems with the use of these prices. First, in a perfectly competitive market, prices equate to marginal costs; however, this is not the case for the UK healthcare market and, because the NHS is a non-profit organisation, NHS prices are average costs. Second, it is uncertain what the prices include – they are likely to contain items such as the cost of tests and investigations from other hospital departments, including their overheads, because of the accounting procedures. Third, they vary substantially from hospital to hospital and across time for the same treatments, thus creating difficulties for generalisability. The first two problems can, however, be countered by obtaining a breakdown of the price and adjusting appropriate components to reflect opportunity costs. The last problem can be addressed by using national or regional averages of contract prices for specific treatment; however, this approach is limited by the availability of such figures and may require the researcher to calculate their own national or regional average. If it is a local healthcare treatment being evaluated and there is no concern about influencing or informing policy on a wider scale, however, then this is not a problem.

Where market prices do not exist for resources, values have to be imputed from those of similar resources or from other estimation techniques; these are termed shadow prices. When valuing the time of patients in attending clinic appointments, it is common practice to use wage rates although they may often be imperfect approximations of opportunity cost (as they often are based on employment contracts which offer sick leave, etc.) and they imply that the time of retired and unemployed persons has zero worth. Instead, valuations of leisure as some percentage of wage rates, specific to the population being studied, offer an acceptable basis on which to compare consumption of patient time. There is still much debate as to whether a specific (local) or general (national) wage rate (which does not differentiate between age and gender) should be used to value patient time as ethical issues, such as to whether every person has an equal worth, are raised. The choice will depend on the specific circumstances of the study and its objective; however, some advocate the use of wage rates specific to the local employment market and age and gender of the local working population to value the time of all patients.[21]

Sources used in the valuation of costs include: surveys of panels of clinicians; reviews of literature; routine administrative sources; activity and accounting data; published costings such as those by the Personal Social Services Research Unit;[32] and a detailed data collection exercise.[8] Another problem is that if a number of resources with different year prices are used in an evaluation, they need adjusting to the same price year, which requires the appropriate healthcare-specific index. This is a particular problem when estimates of resource use come from different sources.

A top-down costing approach, in which data can only be collect retrospectively,[30] is for resource use or, more often, costs to be collected at the hospital or department level. This approach is normally chosen if individual service users cannot easily be identified or the timescale for evaluation is tight. However, there may be difficulties in apportioning costs down to patients or clinics. The breakdown of items of resource, such as buildings and overheads, also requires assumptions about occupancy and utilisation rates, that is, how much of the time is it being used for different activities, or proxies such as square feet of clinic space. However, this information can be difficult and expensive to obtain. For example, in the estimation of staff travel costs, data collected for each clinic studied are more likely to be a better estimate of marginal opportunity cost than an apportionment of total annual travel claims made by all staff in a hospital department. There is no consensus on what is the most appropriate way to allocate total costs such as

overheads[33] but health economics textbooks suggest a number of methods.[2] Of the two studies that considered capital costs separately, only one explicitly quantified their assumptions. Overall, the handling of joint costs such as overheads and capital was adequate in five of the eight studies in which the problem arose.

Bottom-up costing, especially if done prospectively, results in more detailed estimates of cost. This is because the exact consumption of resources per patient can be estimated, rather than a breakdown of a budget according to approximate measures of use such as number of patients or clinic floor space. The top-down approach can overestimate costs because budgets for hospital departments will contain, for example, a number of cost items that are not consumed as a result of the outreach. This approach often also requires a number of assumptions to be made about the operation of the different types of clinic.

The advantages of a more aggregative approach to costing is that the results are often more generalisable to other settings, although this will depend on the accuracy of the estimation of opportunity cost, whereas the cost derived from a very detailed costing exercise is likely to be very specific to a certain set of circumstances (unless a large study sample is involved) but precise.[21] It is more important to adopt detailed cost measurement if proxies for cost such as service charges or contract prices correspond poorly with resource use. The extent of disaggregation of costs, that is, whether costs are estimated per clinic or per patient or whether they are broken down into, for example, staff and overheads, depends on whether it is possible to calculate the appropriate summary cost measures to inform the relevant decision. A detailed costing analysis of the widest range of resources likely to be consumed by a healthcare intervention represents the 'safe' option, since it is difficult to know which costs to exclude from which summary measure until all total and individual costs are collected.[34]

The aim in valuing costs is to obtain a summary cost measure that can be used to inform a decision-making process. The physical quantities and prices of resources should be collected and reported so that these different summary measures of cost may be estimated. This approach would also facilitate more comparability between the findings of studies.

Economists largely agree[33,35] that the decision between alternative interventions should focus on the estimation of marginal costs, that is, the additional cost arising from the treatment of an additional patient. The estimation of average costs only ignores the dynamic nature of health care and prevents any analysis of changes in service provision in the short and long term. However, there may be problems in establishing the margin, in the case of outreach clinics, as it is difficult to identify the additional patient; hence, the marginal cost is based on the costs (excluding 'fixed' items such as equipment and capital) incurred by the average patient, which is not ideal but is acceptable practice.[22] One important decision is whether treating a patient in an outreach clinic is at a lower marginal cost (assuming health benefit is equal) than in outpatient clinics and, therefore, whether more patients should be referred to these clinics. However, this assumes that there is excess capacity (i.e. that it is possible to fit more patients into a clinic); if there is not, then the decision is whether another clinic should be set up and this should be informed by total set-up costs. Also, the incremental costs are those in which our principal interest lies, that is, in the difference in marginal costs between the two types of clinic rather than their total costs.[21]

It might often be useful to be able to differentiate between fixed and variable costs, with the former relating to those resources which cannot be switched between activities in the short term. Thus, valuing resources such as buildings may not appear necessary, as they cannot be switched to other activities or sold off easily and, hence, do not figure in a decision. However, including such costs gives flexibility in the analysis of costs so that the long-term cost position can be considered and the cost implications of expanding the number of outreach clinics can be analysed. Thus decisions framed in both the long and short term can be informed by the evaluation.

There is likely to be a great deal of uncertainty surrounding the results of economic evaluations, for example, the use of hospital prices or accounts. This uncertainty may be about the variability of sample data, the generalisability of results, the extrapolation of results and the analytical methods used.[36] The greater the uncertainty about such aspects of an evaluation, the greater the need for analysts to perform a sensitivity analysis. This was undertaken in only three of the studies reviewed.[12,15,16] If researchers do not assure the reader about the external and internal validity of their evaluation, then this lowers the quality of the study. As the number of assumptions made in a study increases, or the greater the contribution a particular cost component makes

TABLE 67 *The consequences of different constraints on study design, methodology and results*

Study constraints	High expense Greater length of study	Tight budget Short timescale
Study attributes		
Perspective	Societal perspective	Narrow perspective such as NHS
Study design	More likely to employ randomisation or to be controlled	More likely to be a comparative analysis
Sample size	Large	Possibly large depending on detail of information collected
Resources identified	Wide range of resources	Only most significant costs to be measured
Method of data collection	Prospective data collection	Retrospective, prospective and indirect method data collection
	All methods available: questionnaire, monitoring forms, time-use diaries, observation	Questionnaire, secondary data sources
Valuation of resources	All sources available: survey of panels of clinicians; review of literature; routine administrative sources; activity and accounting data; published costings; detailed data collection exercise	Routine administrative sources; activity and accounting data; published costings; data collection exercise with few details
	Bottom-up costing	Top-down and bottom-up costing
Analysis and presentation of results	Little need for sensitivity analysis; full range of summary cost measures can be calculated	Greater need for sensitivity analysis, reduced ability to calculate different types of summary cost measures
Overall 'outcome' of study	High precision, high internal but low external validity	Low precision, high external but low internal validity

to the overall result, so the need to perform sensitivity analysis increases. In many of the studies in this review, in which sensitivity analyses were not undertaken, the authors discussed the limitations of their studies and how applicable their findings were to other settings. In particular, generalisability is limited in some studies in which a number of outreach clinics based at different sites were compared with hospital-based outpatient clinics.

Conclusion

With sufficient resources in terms of time and research staff, and assuming that all the data needed for an evaluation can be obtained, then a detailed costing exercise can be carried out. However, even in this ideal world there is a balance between the additional benefit derived from greater precision in estimating costs and the resources this would take. Luce and Elixhauser[37] advised that if the differences in the costs of alternative healthcare interventions is large then the less detailed the costing methods need be. Some health economists believe that the amount of research time spent on costing should be in proportion to that proportion of cost represented by a particular cost item.[38] Indeed, there are studies in which it has been shown that a 'quick and dirty' analysis of costs is as adequate as larger more expensive studies.[34]

In the real world of health services research, where resources are finite and robust study designs are not feasible, the choice between bottom-up and top-down approaches and prospective and retrospective data collection may often be determined by the format and availability of cost data, the time frame within which an evaluation must be finished and the project budget. Many of the studies reviewed in this paper did not estimate costs with precision. If a study is to inform policy then the researchers must ensure that costs are measured appropriately, taking into consideration the trade-offs discussed here (and which are illustrated in *Table 67*).

References

1. Udvarhelyi I, Colditz G, Rai A, Epstein A. Cost effectiveness and cost benefit analysis in the medical literature: are methods being used correctly? *Ann Intern Med* 1992;**116**:238–44.

2. Drummond M, Stoddart G, Torrance G. Methods for economic evaluation of health care programmes. Oxford: Oxford Medical Publications; 1997.

3. Drummond M, Jefferson T. Guidelines for authors and peer reviewers of economic submissions to the BMJ. *BMJ* 1996;**313**:275–83.

4. Mason J, Drummond M. Reporting guidelines for economic studies. *Health Econ* 1995;**4**:85–94.

5. Gerard K. Cost utility in practice: a policy maker's guide to the state of the art. *Health Policy* 1992;**21**:249–79.

6. Lee J, Sanchez L. Interpretation of cost effective and soundness of economic evaluations in the pharmacy literature. *Am J Hosp Pharmacy* 1991;**48**:2622–7.

7. Adams M, McCall N, Gray D, *et al.* Economic analysis in randomised controlled trials. *Med Care* 1992;**30**:231–43.

8. Mugford M. How does the method of cost estimation affect the assessment of cost-effectiveness in health care? [PhD thesis]. Oxford: University of Oxford; 1996.

9. Gillham S, Ball M, Prasad M, Dunne H, Cohen S, Vafidis G. Investigation of benefits and costs of an ophthalmic outreach clinic in general practice. *Br J Gen Pract* 1995;**45**:649–52.

10. Helliwell PS. Comparison of a community clinic with a hospital out-patient clinic in rheumatology. *Br J Rheumatol* 1996;**35**:385–8.

11. Black M, Leese B, Gosden T, Mead N. Specialist outreach clinics in general practice: what do they offer? *Br J Gen Pract* 1997;**47**:558–61.

12. Gosden T, Black M, Mead N, Leese B. The efficiency of outreach clinics in general practice: is further evaluation needed? *J Health Services Res Policy* 1997;**2**(3).

13. Bowling A, Stramer K, Dickinson E, Windsor J, Bond M. Evaluation of specialists' outreach clinics in general practice: process and acceptability to patients, specialists and general practitioners. *J Epidemiol Community Health* 1997;**51**:52–61.

14. Shah A. Cost comparison of psychiatric outpatient clinics based in hospitals and in primary care (general practice health centre). *Acta Psychiatr Scand* 1995;**92**:30–4.

15. Kerr H, Lawson C, Weller S. Paediatric clinics in district and peripheral hospitals. *Public Health* 1976;**90**:53–7.

16. Cullis J, Heasell S, Weller S. The economics of outpatient location. Aldershot: Gower Publishing; 1981.

17. Gruer R. Economics of outpatient care. *Lancet* 1971;**i**:390–4.

18. Evaluation of orthopaedic outreach clinics. Wakefield: Wakefield Healthcare; 1994.

19. Hawkes R, Drummond M. An evaluation of a general practice-based orthopaedic clinic. York: Centre for Health Economics, University of York; 1993 [unpublished].

20. Walshe K, Shapiro J. Outreach clinics in eight specialities in Wolverhampton. In: Shapiro J, Roland M, editors. Specialist outreach clinics in general practice. Abingdon: Radcliffe Medical; 1997.

21. Gold M, Siegel J, Russell L, Weinstein M. Cost effectiveness in health and medicine. Oxford: Oxford University Press; 1996.

22. Davidoff A, Powe N. The role of perspective in defining measures for the economic evaluation of medical technology. *Int J Technol Assess Health Care* 1996;**12**:9–21.

23. Hillman AL, Eisenburg JM, Pauly MV, Bloom BS, Glick H, Kinosian B, *et al.* Avoiding bias in the conduct and reporting of cost-effectiveness research sponsored by pharmaceutical companies. *N Engl J Med* 1991;**324**:1362–5.

24. Warner K, Luce B. Cost-benefit and cost-effectiveness analysis in health care: principles, practice and potential. Ann Arbor, Michigan: Health Administration Press; 1982.

25. Weinstein M. Economic assessments of medical practices and technologies. *Med Decis Making* 1981;**1**:309–30.

26. HM Treasury. Economic appraisal in central government: a technical guide for government departments. London: HMSO; 1991.

27. Johannesson M. The concept of cost in the economic evaluation of health care. *Int J Technol Assess Health Care* 1994;**10**:675–82.

28. Torgerson D, Ryan M, Ratcliffe J. Economics in sample size determination for clinical trials. *QJM* 1995;**88**:517–21.

29. Tolley K. Health promotion: how to measure cost-effectiveness. London: Health Education Authority; 1993.

30. Tolley K, Rowland N. Evaluating the cost effectiveness of counselling in health care. London: Routledge; 1995.

31. Broughton PMG, Hogan TC. A new approach to the costing of clinical laboratory tests. *Ann Clin Biochem* 1981;**18**:330–42.

32. Netten A, Dennett J, editors. PSSRU. Unit costs of health and social care. Canterbury: PSSRU; 1996.

33. Drummond D, Brandt A, Luce B, Rovira J. Standardizing methodologies for economic evaluation in health care. *Int J Technol Assess Health Care* 1993;**9**:26–36.

34. Whynes DK, Walker AR. On approximations in treatment costing. *Health Econ* 1995;**4**:31–9.

35. Torgerson D, Spencer A. Marginal costs and benefits. *BMJ* 1996;**312**:35–6.

36. Briggs A, Sculpher M, Buxton M. Uncertainty in the economic evaluation of health care technologies: the role of sensitivity analysis. *Health Econ* 1994;**3**:95–104.

37. Luce BR, Elixhauser A. Assessing costs. In: Culyer A, editor. Standards for the socio-economic evaluation of health care products and services. Berlin: Springer-Verlag; 1990.

38. Levin HM. Cost-effectiveness analysis in evaluation research. In: Guttentag M, Struening E, editors. Handbook of evaluation research. 2. New York: Sage; 1975. p.89–122

Appendix 6

Covering letter and questionnaires used in the costing exercise

Contents

Community Provision of Hearing Aids and Audiology Services Project.

Hester Adrian Research Centre, University of Manchester, Oxford Road, Manchester M13 9PL

Dear

Re: Costing of community-based hearing aid services

Many thanks for agreeing to take part in our special study of the costs and benefits of providing hearing aid services at community, or 'outreach' sites. This forms part of a larger project we are undertaking for the Department of Health regarding hearing services. We are hoping that the results of this exercise will be of value to audiology departments throughout the UK.

The purpose of the cost study is to evaluate the costs of providing various types of audiology services at different kinds of outreach location, and to compare these with the costs of providing the same type of service at departmental bases. Costs need to be examined in the light of benefits, and our previous survey questionnaire (which you completed and returned) collected some details about benefits, and some additional information is also being collected this time. Twelve centres across the UK, including yours, are taking part in the study. Please note that the 12 centres form a 'whole' in terms of the overall research design, which makes it important that we do our best to make sure the exercise is completed successfully at each and every one of them.

Each centre will be providing information which will allow us to cost the service at **one particular outreach location**, and to also cost the same type of service at their base. In your case, we agreed on the telephone that you would be providing information relating to:

.....

All of the information we require can be obtained from the completion of four questionnaires, and these are enclosed. The information below gives a brief introduction to these; more detail appears on the front sheet of each.

Questionnaire 1: Main base costings questionnaire

This should be completed by you, as Audiology Services Manager. It will provide us with the data we require in order to estimate the 'overhead costs', etc., for the relevant part of your main base services. You may need to approach your finance/estates department for some of the information. Alternatively, answer those questions you are able to, then return the questionnaire along with the name of someone in the finance/estates department that we can contact in order to obtain the rest of the information.

Hester Adrian Research Centre

David Reeves: 0161 275 3536
Alison Alborz: 0161 275 3337
Email: alison.alborz@man.ac.uk
Fax: 0161 275 3333

THE UNIVERSITY of MANCHESTER

The Centre for Audiology, Education of the Deaf & Speech Pathology
John Bamford: 0161 275 3366
Frances Hickson: 0161 275 3372
Email: frances.hickson@man.ac.uk
Fax: 0161 275 3373
Minicom: 0161 275 3364

Questionnaires 2a and 2b: Audiology technician questionnaires

The purpose of these two questionnaires is to allow us to cost staff time, travel, etc., and to gather some information about benefits. They need to be completed by the technician who conducts the sessions at the outreach site. If the sessions involve more than one technician, then it should be whoever is most heavily involved in working with patients at that site.

Questionnaire 2a contains questions about sessions at the outreach site **in general**. Questionnaire 2b asks for details about the work done at **particular sessions**. Specifically, during two sessions at the outreach site and two **comparable** sessions at the main base. Please note the following points.

1. The sessions can be either ones conducted recently or ones to be conducted in the near future. However, try to ensure that they are fairly 'typical' of sessions at each type of location.

2. By 'comparable' base sessions we mean in terms of the **types of patient seen and mix of procedures undertaken**. This is very important, as the costing needs to be based as far as possible on comparing 'like with like' with respect to patient case-mix. However, the community and base sessions do not need to be of the same duration, **neither** does the numbers of patients seen need to be similar.

3. The community and base sessions should all be conducted by the same technician. If this is not possible, then please contact me.

The reason for using two technician questionnaires (rather than combining them into one) is so that 2a can be completed and returned fairly quickly, while 2b may need to be kept longer, if the Centre intends to fill it in with reference to future sessions.

Questionnaire 3: Community site questionnaire

This short questionnaire is concerned with clerical and equipment costs borne by the community site. Some of the information you may be able to provide yourself; for the rest you may need to ask someone at the community site. However, if you would prefer that we make the approach ourselves, please let me know.

In return for your assistance with this project we will be providing you with the results of the costing exercise at your centre, plus a report on the findings across all centres; these may be of assistance to you in tailoring your services.

Please do your best to complete the questionnaires (except perhaps 2b, which may need to wait until enough sessions have been held) by **31 December**. It would help if you could return questionnaires as they are completed.

I would appreciate it if you would complete the enclosed reply card and post it back to us as soon as possible. It will help us to decide what action, if any, we need to take next.

Many thanks for your cooperation.

Yours sincerely

David Reeves, Professor John Bamford
Francis Hickson, Alison Alborz

Community Provision of Hearing Aids Project: Cost—benefit study

Questionnaire 1: Audiology Services Manager Questionnaire

Dear

The aim of this questionnaire is to collect information which, when combined with other sources, will allow us to estimate the cost (per patient) of providing the type of service below at your main base.

Type of service being costed: .....

Throughout this questionnaire you will be asked to provide information on the basis of a 'cost centre' (defined later), per square metre, or for 'sessions' of the above type of service at your base. The important thing about these base sessions is that they should be broadly comparable in terms of **patient case-mix** with the following outreach sessions.

.....

Where a numerical figure is asked for but you do not know it exactly, a reasonable approximation will be quite acceptable. You may find that you need to approach your hospital finance department for some of the information. Alternatively, just answer those questions you are able to, then return the questionnaire to us, together with the name of someone in your finance department that we can contact in order to obtain the rest of the information.

If you have difficulties with some questions please do not hesitate to return the questionnaire in a partially completed state. We will then contact you to discuss and try to fill in the missing parts.

When completed, please return this questionnaire by **31 December** in the attached envelope to:

Community Provison of Hearing Aids Project
Hester Adrian Research Centre
University of Manchester, Manchester M13 9PL

Many thanks for your assistance with this study.

If you have any difficulties with completing this questionnaire, please contact David Reeves:
tel. 0161 275 3536; fax 0161 275 3333; email David.Reeves@man.ac.uk

* Important Note *

The aim of this questionnaire is to collect capital (e.g. building and equipment) and overhead costs, together with some general information, which can be apportioned to the space that the ..... sessions at this site occupy.

Throughout the remainder of this questionnaire, the term '**cost centre**' refers to either the building or some other entity (e.g. audiology department) in which the session takes place, and for which you are able to provide capital and overhead costs.

Specify the '**cost centre**' for which you are providing cost information (e.g. Health Centre):

.....

1. **Annual capital costs**

If you have a 'capital cost' per square metre, then please specify this, listing its components. If this is not possible or equipment costs of your 'cost centre' are not included, then please go on to the next two questions. If you provide information for all questions, then please ensure that no items of expenditure are included twice.

To what year do the data relate? 19.....

Capital cost per square metre £ ..... per square metre

This includes: .....
.....
.....
.....

2. **Annual building costs:** please supply either building value and/or annual capital charges.

To what year do the data relate? 19.....

	'Cost centre'	**Or: Per square metre**
Building value		
Total capital charges		

3. **Equipment costs**

Please estimate from your capital assets register or accounts the total annual cost or total value of audiology equipment used in ..... sessions at the base, or at your 'cost centre'.

To what year do the data relate? 19.....

	'Cost centre'	**Or:**
Total annual cost of equipment		
Total value of equipment		

4. **Clerical costs**: Please estimate the receptionist's and administrator's time per patient in running a typical or specific ..... session at the base.

..... session				
Staff	**Staff member 1**	**Staff member 2**	**Staff member 3**	**Staff member 4**
Job titles of those staff that do reception/clerical/admin				
Grade no. /spine point				
Average time spent per patient Before (e.g. arranging appointments and inserting into diaries, referral letters, notes)				
During (e.g. booking patients in)				
After (e.g. booking review appointments)				
Materials used per patient Quantity of materials used (e.g. letter, hospital maps, registration forms)				
Approximate cost of materials per patient				

5. **Annual overhead costs**

Please specify in the table below the total overhead costs per annum allocated to the 'cost centre' which contains the ..... sessions. There may be a general overhead cost per square metre for your building or 'cost centre' which you could use. If possible please provide a breakdown of these figures.

To what year do the data relate? 19.....

	'Cost centre'	**Or: per sqaure metre**
Total overhead costs, £ per year		
Broken down into (if available): Laundry		
Central administration		
Medical records		
Water rates		
Electricity		
Heating		
Light		
Building insurance		
Building and other maintenance		
Other (please specify):		

6. Please estimate the following variables for the 'cost centre' and for ..... at the base.

(If possible, give **both** answers to this question)

To what year do the data relate? 19.....

	'Cost centre'	**.....**
Patient episodes per year		
Total floor space (square metres) used by audiology staff		
Average non-attendance rate (%)		

7. Please specify the normal daily opening and closing times of the 'cost centre'.

Opens: ..... Closes: .....

How many days per week is it open? .....(days)

8. What kind of contractual arrangement do you have with the outreach site (the site involved in this costing exercise) with respect to funding the outreach service?

☐ The site pays a set charge for each new referral we see.
Specify the charge £.....

☐ The site pays a set charge for each sesson.
Specify the charge £.....

☐ Paid for as part of a block contract

☐ There is no charge to the site

☐ Other (specify).....
.....
.....

THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE

Community Provision of Hearing Aids Project: Cost–benefit study

Questionnaire 2a: Audiology Technician Questionnaire, General Questions

Dear Audiologist,

This questionnaire is part of a research project, funded by the Department of Health, regarding the provision of NHS hearing aids and audiology services at community based 'outreach' locations. This questionnaire forms part of a special exercise being conducted at 12 centres which looks at the costs and benefits of providing services at outreach sites compared with the costs of main base provision. Your Centre has been asked to participate in this exercise because it operates certain types of audiology session which will provide valuable costing information to service providers in general.

This questionnaire is about your personal involvement in the following outreach sessions:

.....

The questionnaire contains a number of general questions about these sessions, such as travel to the site, the facilities and equipment used, your opinions of the sessions, and so on. Please do your best to answer all the questions. Where a numerical figure is asked for but you do not know it exactly, a reasonable approximation will be quite acceptable.

This questionnaire is complemented by a second one (questionnaire 2b), which asks for more detail about work done by you at particular outreach and main base sessions. The two questionnaires should be treated as separate exercises.

When complete, please return this questionnaire **as soon as possible** in the attached envelope to:

Community Provision of Hearing Aids Project
Hester Adrian Research Centre
University of Manchester, Manchester M13 9PL

Many thanks for your assistance in this study.

If you have any difficulties with completing this questionnaire, please contact David Reeves:
tel. 0161 275 3536; fax 0161 275 3333; email David.Reeves@man.ac.uk

1. Your name .....

2. On average, how many sessions do you personally do at this site per month? .....

3. Typically, how long does a session last? .....

4. Do other audiology sessions take place at this site in which you are not involved? ☐ Yes ☐ No

   If 'yes', how many half-day sessions per month? .....

   Note: All subsequent questions only concern those sessions in which you personally take part.

5. **Staff involvement**: In the following table, please list all hospital staff who normally attend a 'typical' session at this site, and their usual involvement.

	Staff grade	**Usual amount of time spent at session**	**Tasks undertaken**
Audiology staff: you			
Audiology staff: 2			
Audiology staff: 3			
Audiology staff: 4			
ENT staff: 1			
ENT staff: 2			
ENT staff: 3			

6. **Travel**: In the following table please list your own usual travel details. With regard to number of miles and time spent travelling, **only include travel between your main base and the outreach site** (i.e. do not include travel between your home and the site).

Number of miles travelled (between base and site)		**Time spent travelling (minutes)**		**Mode of transport (indicate when a car is shared)**	**Cost per journey (if bus or taxi), £**
To site	**From site**	**To site**	**From site**		

7. How many consultation/test rooms are used by audiology staff (i.e. not including ENT staff) during a session at this site?

   For each of these rooms, give the following information:

Approximate size of room length x width (in metres)	**Soundproofing**		
.....	☐ None/some	☐ Fully	☐ Contains soundproof booth
.....	☐ None/some	☐ Fully	☐ Contains soundproof booth
.....	☐ None/some	☐ Fully	☐ Contains soundproof booth
.....	☐ None/some	☐ Fully	☐ Contains soundproof booth

8. Which of the following rooms are also used?

	Used?	Approximate size of room length x width (in metres)	Do Audiology staff have exclusive use of the room during sessions?
Staff room	Yes/No	..... x	Yes/No
Waiting room	Yes/No	..... x	Yes/No
Reception area	Yes/No	..... x	Yes/No

9. Items of equipment used at sessions at this site.

Item	Number used	Used outside of these sessions?
Otoscope		Yes/No
Diagnostic audiometer		Yes/No
Portable audiometer		Yes/No
Screening audiometer		Yes/No
Basic tympanometer		Yes/No
Tympanometer with reflex facility		Yes/No
Basic hearing aid test box		Yes/No
Hearing aid test box with real ear measurement facility		Yes/No
Ear-mould drill		Yes/No
Ear-mould grinder		Yes/No
Domiciliary visit box		Yes/No
Other (specify)		Yes/No

10. For an elderly patient who requires a 'routine' hearing test, indicate what audiology you do as standard.

At main base: ☐ AC: full frequency range ☐ AC: restricted range ☐ BC: always ☐ BC: when required ☐ Tympanometry

Outreach site: ☐ AC: full frequency range ☐ AC: restricted range ☐ BC: always ☐ BC: when required ☐ Tympanometry

11. For each of the procedures in this table, indicate how much time, on average, you personally take.

Times may vary between base and this outreach site for several reasons: e.g. noisy conditions, less comprehensive testing, differences in content.

Procedure	Average time at outreach site	Average time at base	Reason for any time difference
Otoscopy			
Taking patient history			
PTA			
Tympanometry			
Ear impression			
First time hearing aid fitting			
Follow-up			
Patient for aid repair/exchange			

12. How much time is spent, and by whom, collecting together the equipment, materials, notes, etc. required for a session?

Time .....(minutes) Person(s) .....

13. How much time is spent, and by whom, putting things away again after a session?

Time .....(minutes) Person(s) .....

14. For each patient that you see, approximately how much time on average do you spend doing administrative tasks?

	Before the session	**During the session**	**After the session**
For patients seen at outreach site	..... minutes	..... minutes	..... minutes
For patients seen at the main base	..... minutes	..... minutes	..... minutes

15. What would you estimate the non-attendance rate to be (as a percentage of all patient bookings)?

At these outreach sessions ..... % At comparable main base sessions ..... %

16. Additional/repeat appointments. This question is about patients attending this outreach site who need a further appointment at main base. Indicate approximately how many of the patients you personally see at this site have to attend main base for each of the listed reasons. (Express your answer either as a rate, e.g. one in every 12, or as a percentage, e.g. 8%, whichever you find easiest.)

1. For any reason whatsoever — One patient in every ..... or ..... %
2. For a repeat of the PTA (e.g. PTA done on site doubtful due to noise, etc.) — One patient in every ..... or ..... %
3. For something which could have been done immediately at base but for which there are no facilities at the outreach site (e.g. tympanometry, de-wax, specialist opinion) — One patient in every ..... or ..... %

17. What effect would you say services at this site have on the number of domiciliary visits made in this area?

☐ Reduces domiciliary visits ☐ Increases domiciliary visits ☐ No effect

If there is an effect, approximately how many patients would you estimate it affects? One patient in every ..... or .....%

18. What effect would you say services at this site have on the need to bring patients to the main base using hospital transport?

☐ Reduces ☐ Increases ☐ No effect

If there is an effect, approximately how many patients would you estimate it affects? One patient in every ..... or .....%

19. In the following table, indicate how you consider this site compares with your main departmental base by ringing the appropriate response (N/A = not applicable).

	Much better than base	**Better**	**Same**	**Worse**	**Much worse**	
Access for patients in wheelchairs	1	2	3	4	5	N/A
Patient satisfaction with service (in your opinion)	1	2	3	4	5	N/A
Quiet conditions for testing	1	2	3	4	5	N/A
Car parking facilities for patients	1	2	3	4	5	N/A
Having the range and/or standard of equipment you need	1	2	3	4	5	N/A
Space available for sessions	1	2	3	4	5	N/A
Facilities for patients	1	2	3	4	5	N/A
Communication with referring GPs	1	2	3	4	5	N/A
The time it takes you to travel to and from site	1	2	3	4	5	N/A
Obtaining ear-wax removal when required	1	2	3	4	5	N/A
Numbers of patients needing repeat appointments elsewhere for tests/procedures	1	2	3	4	5	N/A
Availability of ENT specialist advice when needed	1	2	3	4	5	N/A
Patient waiting times	1	2	3	4	5	N/A
General standard of premises as a place to work and see patients in	1	2	3	4	5	N/A
Administrative backup	1	2	3	4	5	N/A
Personal satisfaction you get from the work you do	1	2	3	4	5	N/A
The information on display for patients	1	2	3	4	5	N/A
Range of hearing aids available for patients requiring exchanges/replacements	1	2	3	4	5	N/A
Access to patient records when you need them	1	2	3	4	5	N/A
Continuity of the care patients receive	1	2	3	4	5	N/A
The rate of patient non-attendance	1	2	3	4	5	N/A
Amount of counselling time you are able to give to individual patients	1	2	3	4	5	N/A
Appropriateness of referrals from GPs	1	2	3	4	5	N/A

20. On the whole, how would you rate the quality of service you are able to provide at this site (taking into account the facilities, backup, etc.) compared with the quality of service at your main base?

☐ Much poorer ☐ Somewhat poorer ☐ The same ☐ Somewhat better ☐ Much better

Please give reasons for your answer .....
.....

21. Do you feel that the sessions you do at this site are worthwhile?

☐ Definitely yes ☐ Probably yes ☐ Not certain ☐ Probably no ☐ Definitely no

Please give reasons for your answer .....
.....

THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE

Community Provision of Hearing Aids Project: Cost–benefit study

Questionnaire 2b: Audiology Technician Questionnaire, Session Details

Dear Audiologist,

This questionnaire complements questionnaire 2a. However, while 2a concentrates on collecting general information, this one asks for specific details of the work done by you at particular audiology sessions. Specifically, during two sessions at the outreach site, and two **comparable** sessions at your main base.

The outreach sessions you are completing this with respect to are:

.....

Please read the following carefully before filling in the questionnaire:

1. The questionnaire can be completed with respect to sessions done recently (assuming the information is known), or can be kept and filled in after sessions to be done in the near future (a mix of the two is also acceptable). Ideally, each pair of sessions should have run consecutively but this is not essential, as the following points are more important.

2. Try to ensure that the sessions are fairly 'typical' with respect to each type of location, or our costings may not turn out to be representative.

3. By 'comparable' base sessions we mean with regard to the **types of patient seen and mix of procedures undertaken**. This is very important, because **as far as possible we need to compare like with like, in terms of patient case-mix**. Note, however, that the community and base sessions do not need to be of the same duration, **neither** does the numbers of patients seen need to be similar.

When complete, please return this questionnaire in the attached envelope to:

Community Provision of Hearing Aids Project
Hester Adrian Research Centre
University of Manchester, Manchester M13 9PL

Many thanks for your assistance in this study.

If you have any difficulties with completing this questionnaire, please contact David Reeves:
tel. 0161 275 3536; fax 0161 275 3333; email David.Reeves@man.ac.uk

22. For two ..... sessions in which you have been involved at the outreach site, please provide the following information.

	Outreach session 1	**Outreach session 2**
Amount of time spent setting up equipment, etc. prior to start of session		
Time that you called the first patient		
Time you finished with the last patient		
Amount of time spent packing up after end of session		
Audiology staff actively involved in session (give numbers)	Scientists ..... MTOs ..... ATOs ..... Trainees	Scientists ..... MTOs ..... ATOs ..... Trainees .....
Total number of patients seen across all audiology staff		
Number of non-attendees (if applicable)		
Number of patients seen by you personally	Total ..... By age (approx): elderly (60 years plus) ..... adult (18–60 years) ..... children (under 18 years)	Total ..... By age (approx): elderly (60 years plus) ..... adult (18–60 years) ..... children (under 18 years) .....
How many of each of the following procedures did you personally carry out?		
New ENT referrals (1st appointment)		
New direct referrals (1st appointment)		
Number of audiograms, and number found 'normal' (i.e. no aid required)	Done ..... 'Normal'	Done ..... 'Normal' .....
Ear-impressions (number of ears)		
First issues of hearing aids		
Follow-ups		
Re-tubes/simple repairs		
Battery exchange (number of patients)		
Counselling only		
Other (please specify)		

23. Please fill in the following table with regard to two..... sessions that you were involved in at your base.

	Base session 1	**Base session 2**
Amount of time spent setting up equipment, etc. prior to start of session		
Time that you called the first patient		
Time you finished with the last patient		
Amount of time spent packing up after endof session		
Audiology staff actively involved in session (give numbers)	Scientists ..... MTOs ..... ATOs ..... Trainees	Scientists ..... MTOs ..... ATOs ..... Trainees .....
Total number of patients seen across all audiology staff		
Number of non-attendees (if applicable)		
Number of patients seen by you personally	Total ..... By age (approx): elderly (60 years plus) ..... adult (18–60 years) ..... children (under 18 years)	Total ..... By age (approx): elderly (60 years plus) ..... adult (18–60 years) ..... children (under 18 years) .....
How many of each of the following procedures did you personally carry out?		
New ENT referrals (1st appointment)		
New direct referrals (1st appointment)		
Number of audiograms, and number found 'normal' (i.e. no aid required)	Done ..... 'Normal'	Done ..... 'Normal' .....
Ear-impressions (number of ears)		
First issues of hearing aids		
Follow-ups		
Re-tubes/simple repairs		
Battery exchange (number of patients)		
Counselling only		
Other (please specify)		

THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE

Community Provision of Hearing Aids Project: Cost—benefit study

Questionnaire 3: Community Site Questionnaire

Dear Sir or Madam

Please complete this questionnaire with regard to the following sessions at this site:

.....

Please do your best to answer all the questions. Where a numerical figure is requested but you do not know it exactly, a reasonable approximation will be quite acceptable. You might also obtain some (or all) of these figures from other sources (e.g. your finance and/or estates department). Alternatively, just answer those questions you are able to, then return the questionnaire, together with the name of someone we can contact in order to obtain the rest of the information.

If you have difficulties with some questions please do not hesitate to return the questionnaire in a partially completed state. We will then contact you to discuss and try to fill in the missing parts.

When completed, please return this questionnaire by **31 December** in the attached envelope to:

Community Provision of Hearing Aids Project
Hester Adrian Research Centre
University of Manchester, Manchester M13 9PL

Many thanks for your assistance in this study.

If you have any difficulties with completing this questionnaire, please contact David Reeves:
tel. 0161 275 3536; fax 0161 275 3333; email David.Reeves@man.ac.uk

* Important Note *

The aim of this questionnaire is to collect capital (e.g. building and equipment) and overhead costs, and some general information which can be apportioned to the space which the ..... at this site occupies.

Throughout the remainder of this questionnaire the term '**cost centre**' refers to either the building or some other entity (e.g. General Practice) in which the session takes place and for which you are able to provide capital and overhead costs.

Specify below the '**cost centre**' for which you are providing cost information (e.g. general practice, health centre).

.....

Please give your name .....

and a contact telephone number .....

1. **Annual capital costs**

If you have a 'capital cost' per square metre then please specify this, listing its components. If this is not possible or equipment costs of your 'cost centre' are not included then please go on to the next two questions. If you provide information for all questions, could you please ensure that no items of expenditure are included twice.

To what year do the data relate? 19.....

Capital cost per square metre £..... per square metre

This includes: .....
.....
.....

2. **Annual building costs**: Please supply either building value and/or annual capital charges.

To what year do the data relate? 19.....

	'Cost centre'	**Or: Per square metre**
Building value		
Total capital charges		

3. **Equipment costs**

Please estimate from your capital assets register or accounts the total annual cost or total value of practice/health centre equipment used in a ..... or for your 'cost centre'.

To what year do the data relate? 19.....

	'Cost centre'	**Or: .....**
Total annual cost of equipment		
Total value of equipment		

4. **Clerical costs**: Please estimate the site receptionist's and administrator's time per patient in running a typical or specific .....

	.....			
Staff	**Staff member 1**	**Staff member 2**	**Staff member 3**	**Staff member 4**
Job titles of those staff that do reception/clerical/ administration work?				
Grade no./spine point				
Average time spent per patient Before (e.g. arranging appointments and inserting into diaries, referral letters, notes)				
During (e.g. booking patients in)				
After (e.g. booking review appointments)				
Material used per patient Quantity of materials used (e.g. letters, hospital maps, registration forms)				
Approximate cost of materials per patient				

5. **Annual overhead costs**: Please specify in the table below the total overhead costs per annum allocated to the 'cost centre' which contains the .....
There may be a general overhead cost per square metre for your building or 'cost centre' which you could use. If possible please provide a breakdown of these figures.

To what year do the data relate? 19.....

	'Cost centre'	**Or: Per square metre**
Total overhead costs (£ per year)		
Broken down into (if available): Laundry		
Central administration		
Medical records		
Water rates		
Electricity		
Heating		
Light		
Building insurance		
Building and other maintenance		
Other (please specify)		

6. Please estimate the following variables for the 'cost centre' and/or

.....

(If possible, give **both** answers to this question.)

To what year do the data relate? 19.....

	'Cost centre'	**.....**
Patient episodes per year		
Total floor space (square metres)		
Average non-attendance rate (%)		

7. Please specify the normal daily opening and closing times of the 'cost centre'.

Opens ..... Closes .....

How many days per week is it open? ..... (days)

8. **Purchased equipment costs**: If your organisation has bought any equipment, either medical or non-medical, for these sessions please specify what the cost or purchase price was, whether it is in regular use outside of the sessions, and its useful life (i.e. how long it will last before it has to be replaced).

Item	Purchase price	Or: rental price per month/year	Is this is regular use outside of the sessions?	Useful life (years)

Only answer the remaining questions if this site is a GP practice or houses GP practices that are actively involved in running the sessions.

9. What is the size of the practice (number of patients on register)? .....

10. Number of GPs in practice: .....

    Number of practice nurses: .....

11. **Practice staff costs**: Please specify in the table below the amount of time the following staff spend involved in this type of session.

Practice staff	Time (hours) spent in connection with session (on day of session)			Tasks undertaken	Grade	Gross salary/ hourly rate
	Before	During	After			
GPs (total across all GPs)						
Practice nurses						

THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE

Health Technology Assessment panel membership

This report was identified as a priority by the Primary and Community Care Panel.

Acute Sector Panel

Current members

Chair:
Professor Francis H Creed
University of Manchester

Professor Clifford Bailey
University of Leeds

Ms Tracy Bury
Chartered Society of Physiotherapy

Professor Collette Clifford
University of Birmingham

Dr Katherine Darton
M.I.N.D.

Mr John Dunning
Papworth Hospital, Cambridge

Mr Jonathan Earnshaw
Gloucester Royal Hospital

Mr Leonard Fenwick
Freeman Group of Hospitals, Newcastle-upon-Tyne

Professor David Field
Leicester Royal Infirmary

Ms Grace Gibbs
West Middlesex University Hospital NHS Trust

Dr Neville Goodman
Southmead Hospital Services Trust, Bristol

Professor Mark Haggard
MRC Institute of Hearing Research, University of Nottingham

Professor Robert Hawkins
University of Manchester

Dr Duncan Keeley
General Practitioner, Thame

Dr Rajan Madhok
East Riding Health Authority

Dr John Pounsford
Frenchay Hospital, Bristol

Dr Mark Sculpher
University of York

Dr Iqbal Sram
NHS Executive, North West Region

Mrs Joan Webster
Consumer member

Past members

Professor John Farndon*
University of Bristol

Professor Senga Bond
University of Newcastle-upon-Tyne

Professor Ian Cameron
Southeast Thames Regional Health Authority

Ms Lynne Clemence
Mid-Kent Health Care Trust

Professor Cam Donaldson
University of Aberdeen

Professor Richard Ellis
St James's University Hospital, Leeds

Mr Ian Hammond
Bedford & Shires Health & Care NHS Trust

Professor Adrian Harris
Churchill Hospital, Oxford

Dr Gwyneth Lewis
Department of Health

Mrs Wilma MacPherson
St Thomas's & Guy's Hospitals, London

Dr Chris McCall
General Practitioner, Dorset

Professor Alan McGregor
St Thomas's Hospital, London

Professor Jon Nicholl
University of Sheffield

Professor John Norman
University of Southampton

Professor Michael Sheppard
Queen Elizabeth Hospital, Birmingham

Professor Gordon Stirrat
St Michael's Hospital, Bristol

Dr William Tarnow-Mordi
University of Dundee

Professor Kenneth Taylor
Hammersmith Hospital, London

continued

* Previous Chair

continued

Diagnostics and Imaging Panel

Current members

Chair:
Professor Mike Smith
University of Leeds

Dr Philip J Ayres
Leeds Teaching Hospitals NHS Trust

Dr Paul Collinson
St George's Hospital, London

Dr Barry Cookson
Public Health Laboratory Service, Colindale

Professor David C Cumberland
University of Sheffield

Professor Adrian Dixon
University of Cambridge

Mr Steve Ebdon-Jackson
Department of Health

Mrs Maggie Fitchett
Association of Cytogeneticists, Oxford

Dr Peter Howlett
Portsmouth Hospitals NHS Trust

Professor Alistair McGuire
City University, London

Dr Andrew Moore
Editor, *Bandolier*

Dr Peter Moore
Science Writer, Ashtead

Professor Chris Price
London Hospital Medical School

Dr William Rosenberg
University of Southampton

Mr Tony Tester
South Bedfordshire Community Health Council

Dr Gillian Vivian
Royal Cornwall Hospitals Trust

Dr Greg Warner
General Practitioner, Hampshire

Past members

Professor Michael Maisey*
Guy's & St Thomas's Hospitals, London

Professor Andrew Adam
Guy's, King's & St Thomas's School of Medicine & Dentistry, London

Dr Pat Cooke
RDRD, Trent Regional Health Authority

Ms Julia Davison
St Bartholomew's Hospital, London

Professor MA Ferguson-Smith
University of Cambridge

Dr Mansel Haeney
University of Manchester

Professor Sean Hilton
St George's Hospital Medical School, London

Mr John Hutton
MEDTAP International Inc., London

Professor Donald Jeffries
St Bartholomew's Hospital, London

Dr Ian Reynolds
Nottingham Health Authority

Professor Colin Roberts
University of Wales College of Medicine

Miss Annette Sergeant
Chase Farm Hospital, Enfield

Professor John Stuart
University of Birmingham

Dr Ala Szczepura
University of Warwick

Mr Stephen Thornton
Cambridge & Huntingdon Health Commission

Dr Jo Walsworth-Bell
South Staffordshire Health Authority

Methodology Group

Current members

Chair:
Professor Martin Buxton
Health Economics Research Group, Brunel University

Professor Doug Altman
ICRF/NHS Centre for Statistics in Medicine, University of Oxford

Dr David Armstrong
Guy's, King's & St Thomas's School of Medicine & Dentistry, London

Professor Nicholas Black
London School of Hygiene & Tropical Medicine

Professor Ann Bowling
University College London Medical School

Dr Mike Clarke
UK Cochrane Centre, Oxford

Professor Paul Dieppe
MRC Health Services Research Collaboration, University of Bristol

Professor Mike Drummond
Centre for Health Economics, University of York

Dr Vikki Entwistle
University of Aberdeen

Professor Ewan Ferlie
Imperial College, London

Professor Ray Fitzpatrick
University of Oxford

Mrs Jenny Griffin
Department of Health

Professor Jeremy Grimshaw
University of Aberdeen

Dr Stephen Harrison
University of Leeds

Mr John Henderson
Department of Health

Professor Richard Lilford
R&D, West Midlands

Professor Theresa Marteau
Guy's, King's & St Thomas's School of Medicine & Dentistry, London

Dr Henry McQuay
University of Oxford

Dr Nick Payne
University of Sheffield

Professor Maggie Pearson
NHS Executive North West

Dr David Spiegelhalter
Institute of Public Health, Cambridge

Professor Joy Townsend
University of Hertfordshire

Ms Caroline Woodroffe
Standing Group on Consumers in NHS Research

Past members

Professor Anthony Culyer*
University of York

Professor Michael Baum
Royal Marsden Hospital

Dr Rory Collins
University of Oxford

Professor George Davey Smith
University of Bristol

Professor Stephen Frankel
University of Bristol

Mr Philip Hewitson
Leeds FHSA

Mr Nick Mays
King's Fund, London

Professor Ian Russell
University of York

Professor David Sackett
Centre for Evidence Based Medicine, Oxford

Dr Peter Sandercock
University of Edinburgh

Dr Maurice Slevin
St Bartholomew's Hospital, London

Professor Charles Warlow
Western General Hospital, Edinburgh

* Previous Chair

Pharmaceutical Panel

Current members

Chair:
Professor Tom Walley
University of Liverpool

Dr Felicity Gabbay
Transcrip Ltd

Dr Peter Golightly
Drug Information Services,
NHS Executive Trent

Dr Alastair Gray
Health Economics
Research Centre,
University of Oxford

Professor Rod Griffiths
NHS Executive
West Midlands

Mrs Jeanette Howe
Department of Health

Professor Trevor Jones
ABPI, London

Ms Sally Knight
Lister Hospital, Stevenage

Dr Andrew Mortimore
Southampton & SW Hants
Health Authority

Mr Nigel Offen
NHS Executive Eastern

Dr John Reynolds
The Oxford Radcliffe Hospital

Mrs Marianne Rigge
The College of Health,
London

Mr Simon Robbins
Camden & Islington
Health Authority, London

Dr Frances Rotblat
Medicines Control Agency

Dr Eamonn Sheridan
St James's University Hospital,
Leeds

Mrs Katrina Simister
National Prescribing Centre,
Liverpool

Dr Ross Taylor
University of Aberdeen

Past members

Professor Michael Rawlins*
University of Newcastle-
upon-Tyne

Dr Colin Bradley
University of Birmingham

Professor Alasdair
Breckenridge
RDRD, Northwest Regional
Health Authority

Ms Christine Clark
Hope Hospital, Salford

Mrs Julie Dent
Ealing, Hammersmith &
Hounslow Health Authority,
London

Mr Barrie Dowdeswell
Royal Victoria Infirmary,
Newcastle-upon-Tyne

Dr Tim Elliott
Department of Health

Dr Desmond Fitzgerald
Mere, Bucklow Hill, Cheshire

Professor Keith Gull
University of Manchester

Dr Keith Jones
Medicines Control Agency

Dr John Posnett
University of York

Dr Tim van Zwanenberg
Northern Regional
Health Authority

Dr Kent Woods
RDRD, Trent RO,
Sheffield

Population Screening Panel

Current members

Chair:
Professor Sir John
Grimley Evans
Radcliffe Infirmary, Oxford

Mrs Stella Burnside
Altnagelvin Hospitals Trust,
Londonderry

Mr John Cairns
University of Aberdeen

Professor Howard Cuckle
University of Leeds

Dr Carol Dezateux
Institute of Child Health,
London

Mrs Anne Dixon-Brown
NHS Executive Eastern

Professor Dian Donnai
St Mary's Hospital,
Manchester

Dr Tom Fahey
University of Bristol

Mrs Gillian Fletcher
National Childbirth Trust

Dr JA Muir Gray
National Screening
Committee, NHS Executive
Oxford

Professor Alexander Markham
St James's University Hospital,
Leeds

Dr Ann McPherson
General Practitioner,
Oxford

Dr Susan Moss
Institute of Cancer Research

Mr John Nettleton
Consumer member

Mrs Julietta Patnick
NHS Cervical
Screening Programme,
Sheffield

Dr Sarah Stewart-Brown
Health Service Research Unit,
University of Oxford

Past members

Dr Sheila Adam*
Department of Health

Professor George Freeman
Charing Cross & Westminster
Medical School, London

Dr Mike Gill
Brent & Harrow
Health Authority

Dr Anne Ludbrook
University of Aberdeen

Professor Theresa Marteau
Guy's, King's &
St Thomas's School of
Medicine & Dentistry,
London

Professor Catherine Peckham
Institute of Child Health,
London

Dr Connie Smith
Parkside NHS Trust,
London

Ms Polly Toynbee
Journalist

Professor Nick Wald
University of London

Professor Ciaran Woodman
Centre for
Cancer Epidemiology,
Manchester

continued

Primary and Community Care Panel

Current members

Chair:
Dr John Tripp
Royal Devon & Exeter Healthcare NHS Trust

Mr Kevin Barton
East London & City Health Authority

Professor John Bond
University of Newcastle-upon-Tyne

Dr John Brazier
University of Sheffield

Ms Judith Brodie
Cancer BACUP

Mr Shaun Brogan
Ridgeway Primary Care Group, Aylesbury

Mr Joe Corkill
National Association for Patient Participation

Dr Nicky Cullum
University of York

Professor Pam Enderby
University of Sheffield

Dr Andrew Farmer
Institute of Health Sciences, Oxford

Dr Jim Ford
Department of Health

Professor Richard Hobbs
University of Birmingham

Professor Allen Hutchinson
University of Sheffield

Dr Aidan MacFarlane
Independent Consultant

Professor David Mant
Institute of Health Sciences, Oxford

Dr Chris McCall
General Practitioner, Dorset

Dr Robert Peveler
University of Southampton

Professor Jennie Popay
University of Salford

Dr Ken Stein
North & East Devon Health Authority

Past members

Professor Angela Coulter*
King's Fund, London

Professor Martin Roland*
University of Manchester

Dr Simon Allison
University of Nottingham

Professor Shah Ebrahim
Royal Free Hospital, London

Ms Cathy Gritzner
King's Fund, London

Professor Andrew Haines
RDRD, North Thames Regional Health Authority

Dr Nicholas Hicks
Oxfordshire Health Authority

Mr Edward Jones
Rochdale FHSA

Professor Roger Jones
Guy's, King's & St Thomas's School of Medicine & Dentistry, London

Mr Lionel Joyce
Chief Executive, Newcastle City Health NHS Trust

Professor Martin Knapp
London School of Economics & Political Science

Dr Phillip Leech
Department of Health

Professor Karen Luker
University of Liverpool

Dr Fiona Moss
Thames Postgraduate Medical & Dental Education

Professor Dianne Newham
King's College London

Professor Gillian Parker
University of Leicester

Dr Mary Renfrew
University of Oxford

Ms Hilary Scott
Tower Hamlets Healthcare NHS Trust, London

* Previous Chair

HTA Commissioning Board

Current members

Chair:
Professor Shah Ebrahim
Professor of Epidemiology of Ageing, University of Bristol

Professor Doug Altman
Director, ICRF Medical Statistics Group, Centre for Statistics in Medicine, University of Oxford

Professor John Bond
Director, Centre for Health Services Research, University of Newcastle-upon-Tyne

Mr Peter Bower
General Manager and Independent Health Advisor, Thames Valley Primary Care Agency

Ms Christine Clark
Honorary Research Pharmacist, Hope Hospital, Salford

Professor Martin Eccles
Professor of Clinical Effectiveness, University of Newcastle-upon-Tyne

Dr Mike Gill
Regional Director of Public Health, NHS Executive South East

Dr Alastair Gray
Director, Health Economics Research Centre, University of Oxford

Professor Mark Haggard
Director, MRC Institute of Hearing Research, University of Nottingham

Dr Jenny Hewison
Senior Lecturer, Department of Psychology, University of Leeds

Professor Alison Kitson
Director, Royal College of Nursing Institute

Dr Donna Lamping
Senior Lecturer, Department of Public Health, London School of Hygiene & Tropical Medicine

Professor Alan Maynard
Joint Director, York Health Policy Group, University of York

Professor David Neal
Joint Director, York Health Policy Group, University of York

Professor Jon Nicholl
Director, Medical Care Research Unit, University of Sheffield

Professor Gillian Parker
Nuffield Professor of Community Care, University of Leicester

Dr Tim Peters
Reader in Medical Statistics, Department of Social Medicine, University of Bristol

Professor Martin Severs
Professor in Elderly Health Care, University of Portsmouth

Dr Sarah Stewart-Brown
Health Service Research Unit, University of Oxford

Professor Ala Szczepura
Director, Centre for Health Services Studies, University of Warwick

Dr Gillian Vivian
Consultant, Royal Cornwall Hospitals Trust

Professor Graham Watt
Department of General Practice, University of Glasgow

Professor Kent Woods
Professor of Therapeutics, University of Leicester

Dr Jeremy Wyatt
Senior Fellow, Health Knowledge Management Centre, University College London

Past members

Professor Ian Russell*
Department of Health Sciences & Clinical Evaluation, University of York

Professor Charles Florey*
Department of Epidemiology & Public Health, Ninewells Hospital & Medical School, University of Dundee

Professor David Cohen
Professor of Health Economics, University of Glamorgan

Mr Barrie Dowdeswell
Chief Executive, Royal Victoria Infirmary, Newcastle-upon-Tyne

Dr Michael Horlington
Head of Corporate Licensing, Smith & Nephew Group Research Centre

Professor Sir Miles Irving
Professor of Surgery, University of Manchester, Hope Hospital, Salford

Professor Martin Knapp
Director, Personal Social Services Research Unit, London School of Economics & Political Science

Professor Theresa Marteau
Director, Psychology & Genetics Research Group, Guy's, King's & St Thomas's School of Medicine & Dentistry, London

Professor Sally McIntyre
MRC Medical Sociology Unit, Glasgow

Professor David Sackett
Centre for Evidence Based Medicine, Oxford

Dr David Spiegelhalter
MRC Biostatistics Unit, Institute of Public Health, Cambridge

Professor David Williams
Department of Clinical Engineering, University of Liverpool

Dr Mark Williams
Public Health Physician, Bristol

* Previous Chair

Feedback

The HTA programme and the authors would like to know your views about this report.

The Correspondence Page on the HTA website (http://www.ncchta.org) is a convenient way to publish your comments. If you prefer, you can send your comments to the address below, telling us whether you would like us to transfer them to the website.

We look forward to hearing from you.

Copies of this report can be obtained from:

The National Coordinating Centre for Health Technology Assessment,
Mailpoint 728, Boldrewood,
University of Southampton,
Southampton, SO16 7PX, UK.
Fax: +44 (0) 23 8059 5639 Email: hta@soton.ac.uk
http://www.ncchta.org

ISSN 1366-5278