# Intermediate care: a realist review and conceptual framework

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# Contents

Contents	4
List of tables	6
List of figures	6
Glossary of terms/abbreviations	7
Acknowledgements	9
Executive Summary	10
Background	10
Aims	10
Methods	10
Results	11
Conclusions	13
The Report	15
1 Background	15
1.1 Aims	17
2 Methods	18
2.1.1 Realist review and understanding cost-effectiveness	18
2.2 Identification of evidence	20
2.2.1 Inclusion of relevant evidence	22
2.2.2 The screening process	25
2.2.3 Initial immersion in the literature	26
2.2.4 Deciphering programme theories from the full-text of sources	27
2.2.5 Sampling of sources	28
2.2.6 The process of building a conceptual framework	33
2.2.7 Project Reference Group involvement	44
2.3 Identification and selection of cost and cost-effectiveness evidence	e 49

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	2.4	Ар	praisal and synthesis of cost and cost-effectiveness evidence	51
3	Tes	ting	the programme theories	53
	3.1	Со	mparative effectiveness studies	53
		Ov	erview of programmes	55
	3.2	Int	egrating evidence on outcomes with non-comparative study evider	nce 62
	3.2	.1	Collaborative decision-making with service users to facilitate re- enablement	63
	3.2	.2	Integrated working between health and social care professionals and carers	73
	3.3	The	e cost and cost-effectiveness of intermediate care	78
	3.3	.1	Characteristics of the included studies	78
	3.3	.2	Quality of economic studies	87
	3.3	.3	Cost results	94
	3.3	.4	Cost-effectiveness results	100
	3.3	.5	Economic evidence: summary	101
	3.4	Dis	cussion and Conclusions	102
	3.4	.1	Research recommendations	107
	3.4	.2	Review strengths and limitations	108
R	eferer	nces		111
A	ppend	lix 1	. Terms used to describe services analogous to intermediate care	123
A	ppend	lix 2	. Example database search strategy	124
A	ppend	lix 3	. Database search - hits obtained in each database	126
A	ppend	lix 4	. Example of comparative study data extraction tables	128
A	ppend	lix 5	. Example of non-comparative study data extraction table	131
A	ppend	lix 6	. Critical appraisal tool used for non-comparative study evidence	133
A	ppend	lix 7	'. 'Thin' sources used in the review	134

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# List of tables

Table 1.	The nature of complex programmes <sup>26</sup> 18
Table 2.	Resource- and cost-based justifications for intermediate care 19
Table 3.	Databases searched 21
Table 4.	Working definition of intermediate care used for screening sources of evidence <sup>17</sup>
Table 5.	Patient groups mapped during the screening process 24
Table 6.	Iteratively-developed exclusion criteria for 'intermediate care' 26
Table 7.	Criteria used for assessing conceptual-richness of sources
Table 8.	Included sources and their use in the review
Table 9.	Examples of `If Then' propositions used to develop conceptual framework
Table 10.	Emerging conceptual framework
Table 11.	Content and aims of the PRG meetings 44
Table 12.	PRG ranking of programme theories to test
Table 13.	Programme theories tested in the review
Table 14.	Comparative effectiveness studies - patient groups and type of IC. 55
Table 15.	Outcomes direction and strength of effect for intermediate care 57
Table 16.	Included non-comparative studies - patient groups and type of IC. 63
Table 17.	Types of intermediate care and other characteristics of the included economic studies
Table 18.	Study designs of the economic studies
Table 19.	Base case cost and cost-effectiveness results (costs and ratios in £ in original price year)

# List of figures

Figure 1.	Flow diagram showing search process and flow of sources through the review	31
Figure 2.	Conceptual framework for Intermediate Care	48
Figure 3.	Flow diagram of the process of identification of economic studies	50

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# Glossary of terms/abbreviations

AA	Admission Avoidance (service), where treatment and re-enablement are provided so as to avoid the need for care to be delivered in an acute hospital setting. Also known as 'step-up' care.		
ADL	Activities of Daily Living		
Carer	Person who provides unpaid day-to-day care for a service user (usually a close relative or spouse)		
СВА	Controlled before and after study		
CHF	Congestive Heart Failure		
COPD	Chronic Obstructive Pulmonary Disease		
ESD	Early Supported Discharge. Also known as 'step-down' care.		
GP	General Practitioner		
Home ESD	Early Supported Discharge to a service user's own home. Also known as 'step-down' care.		
Integrated working	Distinct from 'multi-disciplinary working' (where different professions co- ordinate their roles to deliver a service) as it involves greater role flexibility (taking on novel roles and/or sharing aspects of a professional role with others), shared decision-making, and a willingness to deliver services centred on service-user needs rather than traditional professional or organisational configurations. Integrated working will also typically require a high degree of trust and level of communication between team members		
IC	Intermediate care		
Objectives of care	The desired health, functional and social outcomes negotiated between service-users and professionals. These objectives may reflect a 'distance travelled' from one health and social state of being to another, rather than a return to an assumed 'normal' functional state		
ОТ	Occupational Therapist		
PRG	Project Reference Group		
PT	Programme theory		
QALY	Quality-adjusted life year		
RCT	Randomised-controlled trial		

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Residential (or Res.) ESD	Early Supported Discharge to a residential setting that is not the service user's own home, e.g. community hospital or re-enablement unit within a residential home. Also known as 'step-down' care.
SLT	Speech & Language Therapist
Support worker	Health or social care worker who is not professionally registered, but who may have experience or training in re-enablement
UK	United Kingdom

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Harriet Hunt	Second reviewer. Involved in all stages of the review, especially in relation to developing the conceptual framework, the review of effectiveness evidence, presenting at and organising PRG meetings, and drafting and editing the report.
Chris Cooper	Information specialist. Developed and conducted the literature searches, and drafted related sections of the report
Sasha Shepherd	Provided expert topic advice and systematic review guidance at various points in the review process, face-to- face, by phone and by e-mail
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Rob Anderson	Directed the project through regular meetings with the review team and the project's advisers. Conducted the review of economic studies. Drafted relevant sections of the report and revised and edited the whole report.

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# Executive Summary

# Background

For decades, there have been evolving service delivery models intended to allow patients to leave hospital earlier or avoid hospital admission in the first place through providing enhanced health and social care service arrangements in the community. These service developments, to avoid 'bed-blocking', to better facilitate rehabilitation or more holistically to move 'care closer to home', have variously been called hospital at home, early discharge, step-down or rapidresponse admission avoidance services. They are all forms of intermediate care. The lack of a conceptual framework and the modest scale of many IC services hinders the design, long term feasibility and implementation of these services.

# Aims

To produce a conceptual framework and summary of the evidence of initiatives that have been designed to provide care closer to home in order to reduce reliance on acute care hospital beds.

- To synthesise relevant documentary evidence, using realist and conventional systematic review methods, in order to develop a conceptual framework for describing and explaining community-based alternatives to acute inpatient care.
- 2. To draw some provisional conclusions about the likely circumstances in which different types of scheme are likely to be effective, cost-effective, and feasible in the NHS.

# Methods

We conducted a realist systematic review in order to develop an up-to-date and practical conceptual framework for understanding intermediate care, and try to identify "what works, for whom, in what circumstances, and why?".

Comprehensive literature searches yielded 10,314 citations of which 1,828 related to our working definition of intermediate care. To develop the conceptual framework and identify potential programme theories these were classified according to their conceptual 'richness' and descriptive 'thickness', leading to 116 sources being read closely. These related to intermediate care in six user/patient groups (older people, stroke, coronary heart disease, COPD, cognitive

© Queen's Printer and Controller of HMSO 2013. This work was produced by Anderson et al. under the terms of a commissioning contract issued by the Secretary of State for Health. 10 Project 10/1012/07 impairment and 'generic'). The conceptual framework emerged from multiple stages of identifying and refining candidate programme theories, through summarising and discussing them amongst the review team and with the Project Reference Group. Twenty-two 'if-then' propositions became nine candidate programme theories from which three were chosen as likely to have the most explanatory power in explaining variations in the effectiveness of different intermediate care service arrangements. These three formed the core of the conceptual framework of intermediate care, and were also tested and refined using comparative effectiveness studies.

Economic studies were also identified from the original searches, and 17 UK studies formed the basis of our provisional conclusions about the cost and costeffectiveness of intermediate care. The review of economic studies ultimately used more conventional methods of systematic review; it was not as theorydriven as we originally hoped it might be.

# Results

# A conceptual framework for Intermediate Care

A modern and evidence-informed definition of intermediate care involves shortterm service arrangements which respond to a person's 'health crisis' or acute hospital admission with:

(1) the objectives of care and place of care being negotiated between the service-user, carer(s) and health and social care professionals;

(2) carers and health and social care professionals fostering the self-care skills of service users and shaping the social and physical environment to 're-enable' service users; and

(3) service-users, carers, health and social care professionals and voluntary services contributing actively to decision-making and the delivery care that is integrated.

Such services should also be based on a broad definition of health that encompasses functioning, health and wellbeing, and defined by the service user in collaboration with their significant others and health and social care professionals. Accordingly, the intended outcomes of intermediate care can also range from the improvement, maintenance to the managed decline of functioning, health and wellbeing. Maintenance of functioning, health and wellbeing might either be at the same level as before the intermediate care episode or at a lower level than before.

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### Circumstances in which Intermediate Care is likely to be feasible and effective

For the main programme theories the evidence synthesis suggested a range of conditions for improved service user outcomes. Intermediate care can improve outcomes through collaborative decision-making with service users about objectives and place of care, when:

Health and social care organisations -

- facilitate professionals to implement collaborative decision-making with service users.
- are able to co-ordinate the delivery of agreed care in a timely fashion.

Health and social care professionals -

- have detailed knowledge of the characteristics of local intermediate care provision and are able to combine this knowledge with the needs and preferences of service users.
- establish the *meaning* which different care environments have for service users and explore the implications these may have for decisions about the place of care that best allows functional, psychological, and social continuity to be attained.
- engage with service users in planning longer-term goals that extend beyond the timeframe of intermediate care.
- acknowledge and engage with service users' primary social and care networks.
- develop a trusting relationship with service users in order to support continuity in their lives.

#### <u>Service users</u> -

- have confidence in the standard of intermediate care services they will receive.
- believe that their input will be listened to and acted upon.
- are recovering from a discrete acute medical event such as stroke, rather than the complex acute-on-chronic co-morbidities of old age. Whilst collaborative decision-making with older people may be important for attaining positive psychological and social outcomes, it does not appear to be so important for attaining positive functional outcomes.

Collaborative decision-making may be made considerably more complex when the vulnerable state of service users means that health and social care professionals

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 are required to balance advocacy and a duty of care with engagement in a collaborative decision-making process with service users.

# **Circumstances in which Intermediate care is likely to be cost-effective**

In terms of service-level factors, there is evidence to suggest that the total health and social care costs of care will be increased when IC services:

- have more referrals from hospital (ESD service users) than from homes or residential homes (AA);
- are residential (i.e. in units with beds) or have a high proportion of users who are not cared for their own homes;
- are operating considerably under full capacity (thus are probably 'overstaffed' and with a higher proportion of fixed/overhead to variable costs).

In terms of the characteristics of individual patients, there is evidence to suggest that the total health and social care costs of intermediate care will be increased when:

- their level of assessed need for treatment or care was high (reflected variously in the included economic studies as initial functional ability (ADL), or whether hospital care would have otherwise been required);
- referred service users ordinarily live alone.

Although higher levels of assessed need were associated with higher overall costs of care with intermediate care, some studies also identified that these users had the greatest capacity to benefit from intermediate care, and therefore often also greater cost-effectiveness.

# Conclusions

While intermediate care includes a diverse range of services, addressing different health and social care needs, it is possible to identify some core features which partly explain how and why it produces better outcomes for service users. These features, rooted in a collaborative decision-making process with service users and their carers, can be enabled or constrained by actions at both organisational and individual practitioner level. Certain patient groups, such as those recovering from stroke, may be better able to benefit from intermediate care services than people recovering from other complex conditions, especially in old age. The degree of trust that patients have in the promised delivery of intermediate care services impacts on their engagement with a collaborative decision-making process. While costs were higher in providing intermediate care for patients with

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greater assessed need, this group may benefit the most from such services. The impact on health service costs of intermediate care's role in maintaining health and therefore avoiding future hospital admissions, particularly in frail older people, is not known. Future research on intermediate care should 1) better conceptualise the meaning that home holds for service users at different stages of their lives; and 2) test the effectiveness of services that incorporate both admission avoidance and supported discharge.

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# The Report

# 1 Background

The integration of health and social care has been an enduring public policy goal over the past 40 years.<sup>1</sup> Since the late 1990s, the perception that comparable care costs more in an acute hospital than in the community has driven the development of services such as intermediate care (IC).<sup>2</sup> In an economic climate where the Quality, Innovation, Prevention and Productivity challenge (QIPP) requires four per cent efficiency gains in the NHS over four years,<sup>3</sup> services such as IC are expected to deliver care of comparable quality and safety to hospital care, but at the same or lower cost. Moreover, such services are delivered in the context of an ageing population, the wider policy goal of moving health and social care from institutional to community settings in the pursuit of 'care closer to home'<sup>4</sup> and a public expectation that service users should have greater choice of services and control over their own lives.<sup>5</sup> Whilst the political complexion of the UK has changed over the past decade, the emphasis on providing efficient and effective service-user centred care (such as the 'seven Ps' of the 'Vision for Adult Social Care') remains.<sup>6</sup>

Intermediate Care was proposed to "ensure active recovery and rehabilitation and prevent unnecessary loss of independence".<sup>7, p.2</sup> It could be either preventative (admission avoidance), rehabilitative (early supported discharge), or both. Health and social care bodies received substantial funding (£900 million) in 2001 for IC services, which formed a substantive part of the National Service Framework for Older People.<sup>8</sup> The potential role for IC in providing integrated health and social care services that enable service users (particularly older people) to avoid or minimise their length of stay in hospital continues to be highlighted; for example, 80% of people staying >14 days in acute hospitals (typically as a result of stroke, hip fracture, pneumonia, dementia or delirium) are aged >65 years. A five per cent reduction in these emergency admissions would decrease the number of annual bed days by approximately 800,000, compared with a five per cent reduction in emergency admissions that result in a length of stay of 0-2 days of approximately 150,000 bed days.<sup>9</sup>

Evidence of effectiveness from systematic reviews of programmes that may be provided as part of an IC service is mixed. Where impairment following a stroke is mild to moderate, functional outcomes are improved for service users in early supported discharge schemes compared with conventional care.<sup>10, 11</sup> However, home rehabilitation programmes for older people (who may have complex medical conditions and/or be frail) may not offer any improvement in overall outcomes compared with geriatric day hospital services, although costs may be

© Queen's Printer and Controller of HMSO 2013. This work was produced by Anderson et al. under the terms of a commissioning contract issued by the Secretary of State for Health. 15 Project 10/1012/07 substantially less.<sup>12</sup> Hospital at home schemes for admission avoidance result in a significantly lower mortality at 6 months when compared with standard inpatient care, but there were no statistically significant differences in functional ability or quality of life outcomes.<sup>13</sup> Hospital at home schemes for early discharge schemes result in no statistically significant differences between groups for mortality, functional ability, or quality of life outcomes, though readmission rates to hospital were significantly increased in older people receiving early discharge hospital at home care.<sup>14</sup> Nurse-led IC units within hospitals show some evidence of improved outcomes for patients discharged after nurse-led IC, but also increase length of stay.<sup>15</sup> In relation to IC as a whole, a systematic review of older people's satisfaction with services reported that it was preferred to hospital care. The convenience, comfort, and ability to remain close to other family members were some of the advantages identified.<sup>16</sup>

Whilst the evidence of effectiveness suggests there are no compelling reasons why IC should not be used for adults with certain identified diagnoses, considerable barriers remain to decision-making about the use of such schemes in the NHS. These barriers include:

- differences between countries in the way that IC is designed and implemented; substantial differences may exist because of the existing structure of health care delivery in a country<sup>13</sup>
- lack of understanding about the ways in which these services change (either through adaptation or evolution) when they are implemented in real-world contexts<sup>14</sup>
- Uncertainty about the number of patients eligible for these services<sup>14</sup>; there is a risk that IC provides an additional rather than substitutive service
- Uncertainty about how the effectiveness of the different models of care is modified by the type of patients targeted (e.g. elderly medical, general surgical) or the case-mix and disease severity of the overall patient population involved.

Despite the apparently centralised drivers for the development of IC in the UK, considerable diversity in the design and configuration of these services and the terms used to describe them have been noted<sup>16-18</sup> and analyses of the topic have struggled to conceptualise an area that is so wide-ranging.<sup>19-21</sup> Provisional findings of the National Audit of Intermediate Care for the years 2011-2012 show that this diversity in service design and configuration persists in relation to the scale of service provision and how different agencies' work is integrated and coordinated.<sup>22</sup> However, there is minimal diversity in the nature of provision by IC services, with the majority offering both step-up and step-down care.<sup>22</sup> Intermediate Care is a service sector rather than a constellation of condition-specific services; over half are jointly commissioned by health and social care organisations, crossing not only these conventional boundaries but also those of primary and secondary care.<sup>22</sup> The National Audit also shows that almost half of

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IC service users are aged over 85 years and more than three-quarters have one or more long-terms conditions.<sup>22</sup>

The lack of a conceptual framework and the modest scale of many IC services hinders the design, long term feasibility and implementation of these services. This adversely impacts on evaluations of IC,<sup>23, 24</sup> the subsequent synthesis of evidence about effectiveness and implementation, and the basis on which decision-makers can act. Integration continues to be identified as pivotal to the design and implementation of health and social care services that are focused on the needs of service users.<sup>25</sup> The conceptualisation of services such as IC is foundational to their continuing development, testing and implementation in pursuit of the goal of integrated care.

# **1.1 Aims**

# Aim:

To produce a conceptual framework and summary of the evidence of initiatives that have been designed to provide care closer to home in order to reduce reliance on acute care hospital beds.

1. To synthesise relevant documentary evidence, using realist and conventional systematic review methods, in order to develop a conceptual framework for describing and explaining community-based alternatives to acute inpatient care.

2. To draw some provisional conclusions about the likely circumstances in which different types of scheme are likely to be effective, cost-effective, and feasible in the NHS.

# Research questions:

1. What are the community-based alternatives to acute inpatient care which are specifically designed to reduce the need for acute inpatient care, and what are their main aims (intended outcomes)?

2. What are the mechanisms by which community-based alternatives to acute inpatient care (e.g. hospital at home, virtual wards, etc.) are believed to result in their intended outcomes?

3. What are the important contexts which determine whether the different mechanisms produce intended outcomes?

4. In what circumstances (i.e. with which combinations of mechanisms and contexts) are such schemes likely to be effective and cost-effective if implemented in the NHS?

5. In what circumstances (i.e. with which combinations of mechanisms and contexts) are such schemes likely to generate unintended effects or costs?

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# 2 Methods

We conducted a realist review in order to develop a comprehensive conceptual framework to describe and explain the different community-based alternatives to acute inpatient care. The primary goal of realist review is explanation-building. It can be summarised as aiming to identify "what works, for whom, in what circumstances, and why?".<sup>26, 27</sup> Importantly, realist evaluation and review methods do not attempt to isolate an intervention's average effects from its context in an effort to estimate "its effectiveness". Instead they aim to produce a contextualised understanding of the functional mechanisms by which interventions produce different patterns of outcomes.

It is this understanding of contexts and mechanisms and their joint relationship with outcomes that we hoped would provide the basis for a coherent and widely applicable conceptual framework of IC, and subsequently an understanding of the suitability of interventions for direct implementation or adaptation within the context of the NHS. In addition, the realist approach to systematic review seeks to produce more transferrable findings by explicitly taking account of the heterogeneous nature of complex programmes (Table 1).

#### Table 1. The nature of complex programmes<sup>26</sup>

Programmes are active, not passive (recipients have to choose to respond/participate)

Programmes have long implementation chains and multiple stakeholders

Programmes are embedded in complex social systems

Programmes are implemented against the background of other interventions/service changes

Programmes borrow and adapt from other programmes; they are rarely implemented exactly as originally envisaged

Programmes have typically evolved from previous interventions

Programmes change the conditions that made them work in the first place

# 2.1.1 Realist review and understanding cost-effectiveness

While the approach of realist review has mostly been advocated for and applied to explaining the *effectiveness* of interventions, the proposed review team

believe the approach can be extended to incorporate the economic aspects of service mechanisms, contexts and outcomes. Writing with colleagues in the Campbell Cochrane Economic Methods Group, has advocated the use of realist review methods for making clearer sense of the economic evidence of complex interventions<sup>28, 29</sup>.

This may be particularly important for the present review for two reasons. Firstly, for many, the underlying rationale driving the emergence of intermediate care and some other types out-of-hospital care may be inherently economic, rather than an expression of how greater effectiveness might be achieved. A key policy and managerial rationale for introducing ESD, admission avoidance schemes and other forms of intermediate care has often been to save resources and especially avoid the presumed higher cost of hospital inpatient care. Such service changes are thus often grounded in the expectation that the community-based alternatives should be *no less effective* (for example, in terms of clinical or functional outcomes and risk of adverse clinical events) than acute hospital care, but at the same time should be *less costly* and/or more acceptable to patients.

In fact, a resource-based justification of models of intermediate care surfaces in both established definitions of intermediate care and in research about intermediate care (see Table 2).

#### Table 2. Resource- and cost-based justifications for intermediate care

"intermediate care is delivered by those health services that do not require the resources of a general hospital but are beyond the scope of the traditional primary care team" [emphasis added] Melis at al. 2004, citing the definition in the year 2000 statement of the Royal College of Physicians<sup>23</sup>

"hospital-at-home has been promoted as a potentially effective means of replacing costly inpatient care with cheaper domiciliary care".<sup>30</sup>

And, in relation to an early discharge scheme after hip fracture surgery: "It is widely assumed that health care costs can be reduced considerably by providing care in appropriate health care institutions *without unnecessary technological overhead*" [emphasis added]<sup>31</sup>

Moreover, with such shifts from secondary to primary/community care, differences in resource use and opportunity costs will be sensitive to both the local service organisational context and the decision context<sup>28, 32</sup>. The local service organisational context will determine what the current usual care arrangements are, including factors such as the typical lengths and cost of acute hospital stays, and the extent of rehabilitative care or tailoring of social care packages. However, the decision context is also important for economic evaluations. For example, even with the same service design the opportunity

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costs of hospital at home may be quite different depending on whether the outof-hospital care is intended as a *substitute* for acute inpatient care (i.e. shifting the location of care, to reduce use of hospital resources) or is a *supplement or expansion* of services (to accommodate growing demand).

Secondly, both the recent Cochrane reviews<sup>13, 14</sup> and another review paper<sup>33</sup> found great variation in the cost data related to the reviewed effectiveness studies. We further anticipate that effectiveness and cost-effectiveness may be associated with the scale and scope of the intermediate care programmes<sup>32</sup>, which may require the inclusion of explicitly "economic mechanisms" or "economic contextual factors" within the overall conceptual framework. A realist review should identify the range of such economic factors and suggest how they influence the effectiveness, cost-effectiveness and financial sustainability of different programmes.

# 2.2 Identification of evidence

# **Database Searches**

Based on scoping searches of databases (informed by the 'hospital at home' search strategy used in two Cochrane reviews,<sup>13, 14</sup> related article searching and key citation chasing, we developed a long list of terms that have been used to describe services analogous to 'intermediate care'. To obtain a balance between specificity and sensitivity, our database search used these phrases (see full list in Appendix 1) rather than single words, for example:

Intermediate Care.tw. as opposed to (intermediate adj3 (care)).ti,ab.

We did not use any filters (for example, study design) in the search as we wanted to identify a wide variety of sources, both in terms of methods and type (e.g. reviews, commentaries, editorials, grey literature, evaluations). For this reason, we also ensured that databases containing grey literature (e.g. Social Policy and Practice and HMIC) were included in our database search. An example search strategy (used in Medline) is shown in Appendix 2; the search strategies used in other databases are shown in supplementary file 1. The full list of databases (all of which were searched 1990-June 2011) is shown in Table 3. A breakdown of hits obtained in each database is shown in Appendix 3.

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#### Table 3. Databases searched

Medline via OVID
Medline in Process via OVID
Embase via OVID
Social Policy and Practice via OVID\*
HMIC via OVID
British Nursing Index via OVID
The Cochrane Library via http://www.thecochranelibrary.com
Cinahl via Ebsco Host
Assia via CSA

\* SPP includes Social Care Online, AgeInfo, ChildData and sections of Planex and Acompline.

Database searching retrieved 16499 hits, which were uploaded to EndNote X4 (Thomson Reuters). De-duplication resulted in 10100 unique sources which were taken forward for title and abstract screening (see Figure 1).

Our use of database searching differed slightly to that conventionally used in a realist review, where multiple database searches (and other strategies) are used to identify evidence that enables aspects of the review to be extended and refined<sup>26</sup>. The extent and breadth of the evidence identified by our search strategy (using what we believed to be a comprehensive list of phrases relating to IC) meant that additional searches (both in databases and using other strategies) were limited, as we had an extensive 'population' of sources stored in the EndNote database from which we could sample. In view of the extent and breadth of the evidence located through the database search, we did not pursue forward ("cited by") citation chasing as originally proposed in the review protocol.

#### **Supplementary Searches**

Web-searching using the phrases 'intermediate care' and 'hospital at home' was conducted in June 2011 (supplementary file 2). The first 20 hits obtained on identified websites using these search terms were checked for potential inclusion. We conducted one additional search (in the same databases as the main search) using a phrase identified by the Project Reference Group ('virtual ward') that we had not included in our original search. Whilst we had originally envisaged in our

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Project 10/1012/07

review protocol that we would actively pursue 'experts in the field' for suggested sources, in practice we found the 'field' of IC to be so diffuse that the identification of experts risked becoming highly-partial, meaning that we preferred not to pursue this option. Citations from included sources were obtained where we judged them to offer potential to contribute to the synthesis, but we did not comprehensively scan the reference lists of included sources. Zetoc alerts were set up (June-December 2011), using the same phrases as used in the main database search, to identify sources published during the course of the review.

# 2.2.1 Inclusion of relevant evidence

Our concern at the outset of screening the titles and abstracts of these sources of evidence was to strike a balance between inclusivity (not foreclosing potential sources of programme theories at too early a stage) and manageability of the project within the time and other resources available. As our main remit from the SDO was to develop a conceptual framework for IC, straightforward decisions on relevance would be unlikely.

Our exploratory searches and reading had identified three key sources that represented a spread of definitions of IC. Our exploration of the literature endeavoured to balance the policy focus of the review with a desire to maintain an open-mind as to how IC might be conceptualised. The reviewers (MP and HH) were based in the same office and therefore able to discuss emerging themes and ideas on an almost daily basis. The definitions identified ranged from the purely conceptual,<sup>34</sup> through to policy area-specific (i.e. older people)<sup>17</sup> and on to a pragmatic national policy-focused definition.<sup>35</sup> Following discussion within the investigator team, it was decided that the policy-area specific definition<sup>17</sup> encompassed all of the aspects covered by the earlier conceptual<sup>34</sup> and national policy<sup>35</sup> definitions as well as avoiding what we viewed as an outdated leaning towards a 'nursing autonomy' agenda and restrictive phrases such as 'avoidable admissions'. We therefore used Godfrey et al.'s broad definition of  $IC^{17}$  (Table 4) as our 'net' for identifying *all* potentially relevant sources of evidence, with the aim of classifying these sources by patient group (Table 5) to produce a map of the quantity of evidence about IC in each of these conditions. Given the likelihood that this map would show that there were many more sources of evidence than it would be realistic to 'include' (in the formal sense of inclusion used in conventional systematic reviews), the intention was that the map would form the basis for obtaining a 'maximum variation' sample of sources of evidence.

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# Table 4. Working definition of intermediate care used for screening sourcesof evidence17

Purpose	Supports <i>transition</i> ; occurs at a critical point (i.e. on the cusp of the shift from independence to dependence, at the point of acquisition of a chronic illness or disability, or at the intersection of illness and frailty related to ageing)		
FunctionsA bridge between a) locations; b) health or social can sectors (or within these sectors); c) health states			
	Views people holistically, as individuals in a social setting		
	Time-limited (for example, 72 hrs; 2 weeks; 6 weeks)		
Structure	Designs and embeds new routes through services (which enhance sensitivity to needs and wishes of service users)		
Content	Treatment or therapy (to increase strength, confidence, and/or functional abilities)		
	Psychological, practical and social support		
	Support/training to develop skills and strategies		
Delivery*	Care delivered by an interdisciplinary team		

\* Addition made by review team to original Godfrey et al. definition<sup>17</sup> based on initial immersion in the literature; discussion at the first Project Reference Group meeting confirmed the perceived importance of this factor.

Assessing whether or not sources of evidence met our working definition of IC on the basis of the abstracts was not at all straightforward given the restrictions on detail that can be fitted into the standard word count for an abstract. However, Godfrey et al.'s framework (purpose, functions, structure and content) provided a pragmatic structure for guiding our assessment. In doing so, we formed a judgement *as a whole* on whether or not a source met this working definition of IC, rather than because it exhibited all or a minimum number of these characteristics.

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Patient group	Description/other terms used in the literature	
CHF	`Heart failure', `congestive cardiac/heart failure' (HF/CCF/CHF)	
Children	All paediatric care (up to age 16), including mental health	
Cognitive impairment	Alzheimer's disease, multi-infarct dementia, dementia	
COPD	`Chronic obstructive pulmonary/airways/lung disease' (COPD/COAD/COLD), `chronic airways limitation' (CAL)	
Generic	Where diagnostic categories aren't stated, a wide range of IC services and target populations are covered, or it is unclear whether there is a medical/surgical distinction	
Mental health	Non-degenerative psychiatric conditions in adults	
Older people	Where people aged over 65 years receive care for multiple (often complex) medical conditions, potentially also related to 'frailty'	
Orthopaedic	Following surgery for fractures or degenerative conditions (e.g. hip replacement)	
Other	Services delivering specific medical interventions that meet none of the other 'patient group' criteria (e.g. dialysis, transfusion, infusion, parenteral nutrition)	
Palliative care	Care for people with a terminal condition that is aimed at maximizing their quality of life rather than curing a disease	
Stroke	Also `cerebro-vascular accident' (CVA) and `transient ischaemic attack' (TIA)	

 Table 5. Patient groups mapped during the screening process

In producing our 'map' as classified by patient group, we were aware that the usefulness of diagnostic categories as a basis for understanding the provision of health and social care has been questioned. For example, Enderby & Stevenson<sup>36</sup> propose that the 'level of care' that an individual requires is more appropriate. We considered using this framework, but the difficulty of identifying 'levels of care' within abstracts during the screening process meant that it was not

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possible to use the framework at this stage of the review. We were also aware that this information is frequently not reported even in the full-text of articles. At this stage and throughout the review we will have made implicit judgements; we made every effort to record all conscious decisions throughout the process, but we acknowledge that this will inevitably miss some judgements that were not acknowledged explicitly.

# 2.2.2 The screening process

In contrast to a traditional systematic review, where study inclusion/ exclusion criteria are definitively established at the outset, we used the Godfrey et al.<sup>17</sup> definition of IC as a *guide* to retrieving potentially includable sources. This was an iterative process that involved frequent discussion between the reviewers (MP and HH) in order to develop a consistent treatment of sources. The first 500 hits in the database were independently screened by both reviewers in order to 'flush out' inconsistencies at an early stage, but perhaps more importantly to provide discussion points so that we could refine our use of the definition where (as was often the case) the descriptions in abstracts of the provision of health and social care were often far from clear. It became clear to us that there were substantial 'grey areas' in what might be considered to be IC. Acknowledging these grey areas enabled us to be confident in applying a richer definition that was more inclusive rather than a simpler one that may have excluded potentially relevant sources at an early stage.

As screening progressed and we discerned patterns in the way that particular types of health and social care provision were typically described in different health systems, we developed a number of exclusion criteria that provided greater clarity about which sources were potentially relevant and therefore should be retrieved (Table 6). Applying these 'exclusion criteria' was rarely straightforward - it was frequently necessary for us to infer, using our understanding of how health and social care services are organised in different countries, whether or not the criteria applied. As screening progressed, a random sample of 20% of the second reviewer's (HH) screening decisions were checked by the lead reviewer (MP). A mean average of 94% agreement on screening decisions was attained, with disagreements used as discussion points to help refine the consistency of the screening process.

As our aim at this stage was primarily to 'map' sources (through categorising by patient group) of evidence about IC, we leant towards inclusiveness by marking the source as 'retrievable' if it might fall within the definition of IC. This 'map' provided the 'population' from which a purposive, maximum variation sample of sources would be taken.

In view of the time-intensive nature of the screening process (in particular the extent to which it was necessary for grey areas in the abstracts to be discussed between the reviewers), if no abstract had been downloaded into the database

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we applied a discretionary judgement within a timeframe of approximately three minutes.

Exclusion criteria	Why does this not fall within the definition of `intermediate care'?
Discharge planning or `transitional care'	Focus is mainly on comprehensively communicating information about a patient between different health care professionals
Long-term care	No time-limited health end-point
Case management	No time-limited health end-point
Primarily medical focus	Insufficient focus on rehabilitation or re- enablement
'Intermediate care' in mental health services	Unless explicitly stated otherwise, these referred to long-term, residential care (with time-limited health end-point)
'Intermediate care' in hospital critical care settings	Refers to 'step-down' from intensive care units within acute hospitals
Transfer between primary care and secondary care	Refers to conventional 'handover' of patient care between providers rather than an intervention to support a service-user's transition

Table 6. Iteratively-developed exclusion criteria for 'intermediate care'

# 2.2.3 Initial immersion in the literature

Before proceeding to the maximum variation sample 'proper', we considered it important to broaden and deepen our understanding of IC. We conducted a purposive sample of sources in each of the five patient groups we had identified as being of particular importance in IC (CHF, COPD, Generic, Older people, and Stroke<sup>1</sup>). Five to ten sources in each of these categories were identified for fulltext retrieval on the basis that the abstract suggested that they would be good source of programme theories and/or because they explicitly mentioned the concept of IC. In this sample, we aimed to obtain a spread of evaluation studies,

<sup>&</sup>lt;sup>1</sup> Discussion with the Project Reference Group (PRG) identified a further patient group (cognitive impairment) that we included in the synthesis, but sources were not sampled from this category at the 'immersion' stage.

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qualitative research, editorials, letters (e.g. responses to opinion pieces or evaluation studies), and reviews (whether 'systematic' or 'non-systematic'). The sample provided material for the reviewers (MP and HH) to discuss and critique with a view to how it might inform the development of a conceptual framework.

# 2.2.4 Deciphering programme theories from the full-text of sources

Definitions of 'programme theory' originate from the American 'theory-driven evaluation' community. Whilst not uniform, these definitions share an understanding of a programme theory as a proposition for *how* a programme is supposed to produce intended outcomes;<sup>37-39</sup> broken down, such a theory can be re-stated as a model that links outcomes to programme activities and the underlying theoretical assumptions.<sup>40</sup> Identifying these theories, which we would use to inform the development of the conceptual framework and to direct our use of the sources in empirically testing the theories, was not necessarily straightforward. Within sources, programme theories rarely came with a clear label, or a clear statement of the characteristics identified above. We therefore used a more applied definition of programme theory<sup>41</sup> in our efforts to 'surface' them from sources that ranged from the predominantly conceptual, through qualitative research and editorials, 'think-pieces' or commissioned reports, to pragmatic evaluations. This defines a programme theory as:

- [1] ideas about what is going wrong
- [2] ideas about how to remedy the deficiency
- [3] ideas about how the remedy itself may be undermined, and
- [4] ideas about how to counter these counter-threats

We found there to be no 'hard and fast' rules as to where in the sources we would be most likely to locate the material from which we could discern programme theories. Whilst evaluations tended to reflect on reasons why an intervention did or did not work in a discussion section, and qualitative research tended to elicit programme theories within a findings section, this could not be assumed as some evaluations had a strongly-articulated theoretical basis and some qualitative research synthesised findings with other work in their conclusions. In short, discerning programme theories necessitated a thorough reading of each source, especially to elicit a tacit theory.

To keep track of these emerging programme theories, we constructed a table (see supplementary file 3) in which the theories could be recorded, crossreferenced and commented upon by the core research team (MP, HH and RA). In addition to recording the citation, we also documented the source of the theory (acute or rehabilitation health professional, service-user, social care professional or trained worker, policy document, or researcher). Feedback from our first

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Project Reference Group meeting was also integrated into this table. In view of the variations in how well articulated (or not) programme theories were, but also because we did not want to foreclose on potentially useful theories at too early a stage, we recorded even quite simple programme theories in this table.

# 2.2.5 Sampling of sources

We initially intended to perform a 'maximum variation' sample of potentiallyincludable sources from each of the patient groups based on a number of key criteria, so as to attain 'adequate representation'. These proposed criteria included; the role of the person from whom the programme theory originated (service-user, or health or social care professional), location (in view of differences between health systems), and publication type (evaluation, editorial, grey literature, and so on). However, we found operationalising a maximum variation sample based on all these criteria to be too complicated. Our priority was to identify sources with the greatest potential to interrogate the developing explanation of the effectiveness of IC.

Abstracts of all potentially-includable sources in each of the patient groups were assessed for conceptual-richness based on criteria proposed by Ritzer<sup>42</sup> and Roen et al.<sup>43</sup> (See Table 7).

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Project 10/1012/07

'Conceptually-rich' <sup>42</sup>	`Thicker description' <sup>43</sup> but not `conceptually- rich'	'Thinner description' <sup>43</sup>
Theoretical concepts are unambiguous and described in sufficient depth to be useful	Description of the programme theory or sufficient information to enable it to be 'surfaced'	Insufficient information to enable the programme theory to be 'surfaced'
Relationships between and among concepts are clearly articulated	Consideration of the context in which the programme took place	Limited or no consideration of the context in which the programme took place
Concepts sufficiently developed and defined to enable understanding <i>without</i> the reader needing to have first-hand experience of an area of practice	Discussion of the differences between programme theory (the design and orientation of a programme - what was intended) and implementation (what `happened in real life')	Limited or no discussion of the differences between programme theory (the design and orientation of a programme - what was intended) and implementation (what 'happened in real life')
Concepts grounded strongly in a cited body of literature	Recognition and discussion of the strengths and weaknesses of the programme as implemented	Limited or no discussion of the strengths and weaknesses of the programme as implemented
Concepts are parsimonious (i.e. provide the simplest, but not over-simplified, explanation)	Some attempt to explain anomalous results and findings with reference to context and data	No attempt to explain anomalous results and findings with reference to context and data
-	Description of the factors affecting implementation	Limited or no description of the factors affecting implementation
-	Typified by: <u>Terms</u> - 'model', 'process' or 'function' <u>Verbs</u> - 'investigate', 'describes', or 'explains' Topics - 'experiences'	Typified by: Mentioning only an 'association' between variables

Table 7.	Criteria used	for assessing	conceptual-richness	of sources

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Project 10/1012/07

The criteria in Table 7 were used 'as a whole' to form a judgement as to whether a source was likely to be 'conceptually-rich' (with well-grounded and clearly elucidated theories and concepts), 'thick' (a rich description of a programme, but without explicit reference to theory underpinning it), or 'thin' (weaker description of a programme, where discerning a programme theory would be problematic). In common with our earlier screening process, abstracts frequently contained many 'grey areas', so we again leant towards inclusivity by giving sources 'the benefit of the doubt' in our assessment, pending full investigation on retrieval of the full-text. We found again that an ongoing discussion between the reviewers (MP and HH), often many times a day, was essential for reaching a shared understanding of how to apply the criteria to such a wide range of sources.

In the course of applying the above criteria, we became aware that many editorials, commentaries, and grey literature reports were being categorised as `thin', yet still potentially offered programme theories that it would be prudent to `surface'. `Thin' sources were therefore categorised by type to enable sampling of these sources. Our sampling strategy was therefore purposive - aiming to include those sources with the richest descriptions of programmes and experiences, whilst also including sources with `thinner' descriptions where no `thicker' sources were identified. The use of sources for `surfacing' programme theories, developing the conceptual framework, and testing the three programme theories with the greatest explanatory potential, are shown in Table 8 and Figure 1.

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#### Figure 1. Flow diagram showing search process and flow of sources through the review

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Project 10/1012/07

#### Table 8. Included sources and their use in the review

Authors [country]	Patient group	Type of IC	Data collection	Participants	Surfacing	ConcF'work	Test PT#1/2	Test PT#3
CONCEPTUALLY-RICH	1							
Hart et al. <sup>44</sup> [UK]	Older people	Res. ESD	Interviews, ethnography	55	~	~	~	
Martin et al.45 [UK]	Older people	AA/ESD	Interviews	92	✓	✓	✓	$\checkmark$
Swinkels & Mitchell <sup>46</sup> [UK]	Older people	Home ESD	Interviews	23	~	~	~	
Wohlin Wottrich et al. <sup>47</sup> [Sweden]	Stroke	Home ESD	Interviews	13	~	~	~	
ТНІСК								
Asthana & Halliday <sup>48</sup> [UK]	Generic	AA/ESD	Commentary	226	~	~		
Baker et al. <sup>49</sup> [USA]	Older people	Home ESD	Observation	13 <sup>+</sup>	✓	✓		$\checkmark$
Barton et al. <sup>50</sup> [UK]	Older people	AA/ESD	Mixed-methods evaluation	2253	~			~
Benten & Spalding <sup>51</sup>	Generic	Res. ESD	Interviews	8	~	~	~	
Clarke et al. <sup>52</sup> [UK]	COPD	Home ESD	Interviews	23	✓	✓	✓	
Cornes & Clough <sup>53</sup>	Older people	AA	Interviews, Observation	8 <sup>+</sup>	~			~
Cox & Cox <sup>54</sup>	Generic	Home ESD	Personal testimony	2	~			
Donnelly & Demoster <sup>55</sup> [IIK]	Older People	Home ESD	Survey,	40	~			
Dow & McDonald <sup>56</sup>	Generic	Home ESD	Interviews,	148 <sup>+</sup>	~		~	~
Evans <sup>57</sup> [UK]	Cognitive	Home ESD	Survey	NR	~			
Gilbertson et al. <sup>58</sup>	Stroke	Home ESD	Focus groups	20†	~			
Glasby et al. <sup>59</sup> [UK]	Older People	AA/ESD	Case studies, focus groups and interviews	82 <sup>†</sup>	~	~	~	~
Glendinning et al. <sup>60</sup> [UK]	Older people	AA/ESD	Survey, case study	207 <sup>+</sup>	~	~		~
Glendinning et al. <sup>61</sup> [UK]	Generic	AA/ESD	Interviews, observations & focus groups	1015	~			
Godfrey & Townsend <sup>62</sup>	Older people	AA/ESD	Interviews	85 <sup>†</sup>	~	~	~	
Godfrey et al. <sup>17</sup> [UK]	Older people	AA/ESD	Mixed-methods evaluation	5 sites	~	~		~
Grant & Dowell <sup>63</sup> [UK]	Generic	AA/ESD	Interviews	27	~		$\checkmark$	
Greene et al. <sup>64</sup> [UK]	Older people	AA/ESD	Commentary, Survey	NR	~			~
Griffiths et al.65 [UK]	Older people	Home ESD	Interviews	12	$\checkmark$	$\checkmark$		$\checkmark$
Hubbard & Themessl- Huber <sup>66</sup> [UK]	Older people	AA/ESD	Interviews	34	~	~	<b>√</b>	~
Joseph Rowntree Foundation <sup>67</sup> [UK]	Older People	Unclear	Focus groups	NR	✓		~	
MacMahon <sup>68</sup> [UK]	Older People	Home ESD	Commentary	N/a	$\checkmark$			
Mader et al. <sup>69</sup> [USA]	Older people	Home ESD	Interviews, trial	290	<b>√</b>	,	,	
Manthorpe & Cornes <sup>70</sup> [UK]	Older People	Home ESD	Interviews	35'	~	×	~	
Manthorpe et al. <sup>71</sup> [UK]	Older People	Home ESD	Observation, interviews, documentary analysis	64 <sup>+</sup>	V	~	~	✓
Martin et al. <sup>18</sup> [UK]	Generic	AA/ESD	Survey	NR produce	V	<b>√</b>	<i>√</i>	

al. under the terms of a commissioning contract issued by the Secretary of State for Health. 32

Mitchell et al. <sup>72</sup> [UK]	Generic	Unclear	Interviews,	NR	~	~	~	
Nancarrow <sup>73</sup> [UK]	Generic	AA/ESD	Interviews, case studies	26	~	~		~
Nancarrow <sup>74</sup> [UK]	Generic	AA/ESD	Workshops	126	✓		$\checkmark$	✓
Nancarrow <sup>75</sup> [UK]	Generic	AA/ESD	Interviews, case studies	26	~		~	<b>√</b>
Petch <sup>76</sup>	Older People	AA/ESD	Commentary, interviews	N/a	~	~	~	
Purdy <sup>77</sup> [UK]	Generic	AA/ESD	Overview of research evidence	N/a	V			
Rabiee & Glendinning <sup>78</sup> [UK]	Generic	Home ESD	Case studies	NR	~			
Rabiee et al. <sup>79</sup> [UK]	Generic	Home ESD	Interviews, observations & focus groups	654	~			
Regen et al. <sup>80</sup> [UK]	Older people	AA/ESD	Interviews	82 <sup>†</sup>	✓	✓	$\checkmark$	
Robinson & Street <sup>81</sup> [Australia]	Older people	Home ESD	Interviews, observation	NR	~	~		~
Ryan-Woolley et al. <sup>82</sup> [UK]	Generic	Home ESD	Interviews, focus groups, field notes	40 <sup>+</sup>	~		~	~
Sherratt & Younger- Ross <sup>83</sup> [UK]	Cognitive impairment	Res. ESD	Commentary	NR	~			
Small et al. <sup>84</sup> [UK]	Older people	Res. ESD	Interviews	19 <sup>†</sup>	✓		$\checkmark$	
Thomas & Lambert <sup>85</sup> [UK]	Older people	Home ESD	Focus groups, observations, interviews	10 <sup>+</sup>	~	~	~	
Towers et al. <sup>86</sup> [UK]	Older People	Unclear	Interviews, focus groups	NR	~			~
Trappes-Lomax et al. <sup>87</sup> [UK]	Older people	Res. ESD	Interviews	42 <sup>†</sup>	~		~	~
von Koch et al. <sup>88</sup> [Sweden]	Stroke	Home ESD	Interviews	47 <sup>†</sup>	~		~	~
Walsh et al. <sup>89</sup> [UK]	Older people	Res. ESD	Observation	NR	~		✓	✓
Wiles et al. <sup>90</sup> [UK]	Older People	Res. ESD	Interviews	38 <sup>+</sup>	$\checkmark$			
Wiles et al. <sup>91</sup> [UK]	Older People	Res. ESD	Interviews	25 <sup>+</sup>	✓		$\checkmark$	✓
Wilkie et al. <sup>92</sup> [UK]	Cognitive impairment	AA/ESD	Observation	45	✓		✓	✓
THIN - sources (n=1	42) are listed i	n Annendix 7						

Key:

amalgamated participant numbers (from e.g. focus groups, interviews, observation)

ESD Early supported discharge

AA Admission avoidance

NR Not reported

N/a Not applicable

PT#1/2 Programme theory #1/2 (Collaborative decision-making with service users to facilitate re-enablement)

Programme theory #3 (Integrated working between health and social care professionals and carers) PT#3

# 2.2.6 The process of building a conceptual framework

The aim in a realist synthesis of explaining the intricate relationships between processes and outcomes in complex interventions means that the review process is iterative rather than linear. As researchers engaging (reading, questioning, interpreting, seeking commonalities, differences and unanswered questions) with the identified sources, there was an ongoing process of synthesis (reflected in our day-to-day discussions and comments on the emerging programme theories) as we explored the implications of particular approaches for the nascent conceptual framework. Methodologically, we were engaged in a dialogue that

involved juxtaposing sources, adjudicating between and/or reconciling them, consolidating findings into provisional explanations, and situating rival explanations<sup>26</sup> in an effort to provisionally test and refine theory. Colloquially, the process was one where we took 'three steps forward and two steps back' (and not infrequently, two steps forward and *three* steps back). Others have referred to this stage of reviewing, where myriad possibilities and contestations in the literature confound reviewers' efforts to get a clear sense of direction, as 'the swamp'.<sup>93</sup> Awareness of report deadlines and dense stacks of papers containing yet more possibilities and contestations notwithstanding, our task as reviewers was to maintain a steady course through 'the swamp' *en route* to a provisional conceptual framework.

In an effort to better understand programme theories about IC, we found it useful to summarise them in 'mind maps'. Initially, we wanted to illustrate the linkages and relationships between different theories so that a type of logic model could be produced, but we found that these links were either unclear or so numerous as to be unhelpful. However, expressing the programme theories of different stakeholders (organisational, practitioner, and service-user) gave us insight into how IC is believed to work from these different perspectives. The absence of service-user perspectives from many policy, organisational and professional perspectives was striking.

To better understand how our emerging conceptual framework built on previous research, we found it very useful to tabulate the development of thought about IC chronologically. This approach has been used previously to hone understanding of how complex areas of practice such as continuity of care are conceptualised.<sup>94</sup> Presenting the emerging conceptualisations in this way provided us with a common resource on which the core review team (MP, HH and RA) could reflect, comment upon, and develop. The extent to which this 'emerging synthesis' was supported by sources identified by our search was provisionally tested and documented - we found that expressing the more abstract conceptualisations as concrete 'if... then' propositions facilitated this process considerably (see Table 9 for examples from the original 22 propositions). For example, it obliged us to express *how* an 'enabling' ethos was understood to function and the way in which this would impact on outcomes.

The final column of Table 10 shows our provisional framework in the context of the development of conceptualisations of IC since the term came into use. This conceptual framework was taken forward for discussion with the Project Reference Group to test its plausibility, coherence, and comprehensibility.

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No.	If	Then	PT #
1a	IC is responsive to the needs of 'other' sectors	demand (more people with more complex conditions) will rapidly outstrip capacity	23
1b	IC is not designed/planned on a system-wide scale	it will simply be 'assembled' based on the historic	29
		provision of services in an area	PRG#1
2a	older people are admitted to hospital	they risk loss of contact with family, irretrievable breakdown of support mechanisms at home, and functional decline with associated loss of independence	46; 73
	vs. people are treated at home	this can be disabling (a safe environment leading to inertia and lack of confidence) and isolating (little social contact),	98; 99
2d	an enabling ethos is built around activities and goals of value to individual users	this will boost confidence and encourage service users to take an active lead in their own recovery	93
3a	partnerships are unequal (e.g. acute sector pressuring IC to accept people at times of bed shortages)	the aims of IC (holistic rehabilitation) are unlikely to be met	77
3b	social sector staff feel inadequate or unqualified to assess patients' needs	they will be obliged to accept inadequately completed referrals conducted by hospital staff	77

	Table 9.	Examples of `If.	. Then' pro	positions used	to develop	conceptual framework
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No.	If	Then	PT #
4a	clinicians do not have an understanding of who it is appropriate to refer to IC	IC services are unlikely to fulfil their potential	74 PRG#1
4b	clinicians do not have confidence in IC services' ability to provide safe and effective care for patients	acute/community sector working relationships will be problematic	76
5a	organisational structures are 'merged' (e.g. pooled funding)	professionals will have the freedom to design and implement new service models	54

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Table 10. Emerging conceptual framework

Aspect	Steiner <sup>34</sup> (1997)	Department of Health <sup>7, 8</sup> (2001; 2009)	Godfrey et al. <sup>17</sup> (2005)	Emerging framework
Primary IC group	Wide-ranging (age, medical condition), but acknowledges that many IC services will be for older people	Primarily older people	Older people	Generic
'Health' understood as	Individually- conceived (i.e. not necessarily analogous with functional independence)	Independent living at home, "if that is people's wish"	Individually- conceived within a person's 'whole-life' experience 'Distance travelled' (from illness) may be much more important than functional measures	Holistic (biopsychosocial), as defined by the service user in collaboration with their significant others and health & social care professionals

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Aspect	Steiner <sup>34</sup> (1997)	Department of Health <sup>7, 8</sup> (2001; 2009)	Godfrey et al. <sup>17</sup> (2005)	Emerging framework
Role of service- user	To work in collaboration with professional carers to restore health	To be 'closely involved' with their assessment and care planning	Central to the entire IC system	If able - to <i>negotiate</i> their care planning needs with health & social care professionals within the strictures of funding provision Otherwise - to contribute <i>as far as</i> <i>able</i> , with carers and/or health & social care professionals acting on their behalf
Place of care/rehabilitation	Assumption that service-users prefer home over institutional care	Implicit preference for home rather than institutional care, but person-centred approach allows for/endorses patient choice	'Objectives of care' should be the primary consideration in deciding on place of care	Focus should be on the objectives of care - and the place(s) that will best enable SUs to achieve their negotiated goals

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Aspect	Steiner <sup>34</sup> (1997)	Department of Health <sup>7, 8</sup> (2001; 2009)	Godfrey et al. <sup>17</sup> (2005)	Emerging framework
Goal of IC	To enable people to regain 'health' through acting as a bridge/facilitating transitions (where the objectives of care are not primarily medical) between health states , care locations (hospital to home), and levels of dependency (medical dependence to functional independence)	To prevent the unnecessary loss of independence To act as the link between services which enable a wide range of goals to promote 'health' to be attained (i.e. prevention, health promotion, primary care, community services (including support for carers), social care and acute hospital care)	To support the transition between illness and recovery, <i>at a critical point</i> : a) "on the cusp of the shift from independence to dependence" b) "at the point of acquisition of a chronic illness or disability" c) "at the intersection of illness and frailty related to ageing"	As Godfrey, with the proviso that 'managed decline in health' (rather than 'restoration of health') may be an appropriate goal
	Ambivalence over whether or not preventative care ('maintenance') for people with chronic conditions counts as IC, as there is no 'therapeutic gain'		To act as a bridge between care locations, sectors, and individual health states (illness/recovery; management of chronic condition)	

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Aspect	Steiner <sup>34</sup> (1997)	Department of Health <sup>7, 8</sup> (2001; 2009)	Godfrey et al. <sup>17</sup> (2005)	Emerging framework
Service-users conceived as	Individuals (an holistic approach) who can be supported in self- care and adaptation to disease progression	Individuals who, through a comprehensive assessment, will benefit from an individualised care plan of therapy, treatment, or opportunity for recovery Individuals' needs will 'often' include physical, mental and social dimensions	"People are seen as a whole; not just in terms of cognitive and physical abilities but as individuals in a social setting"	Unchanged
Timing of IC	IC services are time- limited (not specified) and specify a health endpoint	"Normally no longer than 6 weeks and frequently as little as 1-2 weeks or less"	<=72 hours (Emergency Response Teams) Up to 2 weeks (Rapid response) Up to 6 weeks (enabling, therapy and rehabilitation services)	6-week time limit problematic for frail older people; negotiation of 'unofficial' extensions to IC often take place

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Aspect	Steiner <sup>34</sup> (1997)	Department of Health <sup>7, 8</sup> (2001; 2009)	Godfrey et al. <sup>17</sup> (2005)	Emerging framework
Service-user involvement in planning IC services		"[Views] on current patterns of service delivery and the potential impact of developing new IC services" should be taken into account	The design and 'embedding' of new routes through services should "enhance sensitivity to the needs and wishes of service- users" This involvement is "the other side of the coin of a comprehensive, continuous, and coherent service system"	Service-users are the experts at the sharp-end of services and are able to provide crucial (and unique) insights into service design
Focus of the people delivering care/providing rehabilitation	To provide specific services, education, or confidence building to restore health (focus is not primarily medical)	To provide person- centred care, with organisational and professional issues a secondary concern	_	To shape the environment (social and physical) and foster the self-care skills that 're-enable' service-users

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Aspect	Steiner <sup>34</sup> (1997)	Department of Health <sup>7, 8</sup> (2001; 2009)	Godfrey et al. <sup>17</sup> (2005)	Emerging framework
Service configuration		"cross-professional working, with a single assessment framework, single professional records and shared protocols" Advises appointment of an IC co-ordinator for each Health Authority	Services are <i>not</i> determined by 'point of entry' (e.g. discharge support or 'step-up' care) but by an individual's needs and the existing local service configuration – IC therefore functions by "designing and embedding new routes through services"	As Godfrey et al.
Working relationships between team members (power differentials)	Medicine flagged as being dominant, but all other professionals and volunteers assumed to work on an 'equal footing'	_	_	Health and social care professionals to work in an <i>integrated</i> fashion with fellow professionals and carers

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Aspect	Steiner <sup>34</sup> (1997)	Department of Health <sup>7, 8</sup> (2001; 2009)	Godfrey et al. <sup>17</sup> (2005)	Emerging framework
Actors involved	Almost wholly health; service- users' contribution not expanded upon, social care sector barely mentioned	(Approximate) parity between health and social care sectors (as reflected in funding allocation and proposed local partnership arrangements); 'independent sectors' role acknowledged		Parity in contribution to decision-making between health and social care professionals, service-users, carers, and voluntary sector

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# 2.2.7 Project Reference Group involvement

The Project Reference Group (PRG) was formed to provide a forum for the formal consultation of NHS managers and other professional stakeholders from local government (including social services) and primary care in Devon and Cornwall (see Appendix 8 for details of participants). The PRG was recruited and convened using the South West NIHR CLARHC (Collaboration for Leadership in Applied Health Research & Care) which has the specific remit to link the applied health research and NHS communities in Devon and Cornwall. This involved identifying and contacting eligible individuals to invite them to join the PRG, whilst providing some background to the review and the approach to be taken. The overarching aims of the PRG were to help:

- sharpen the **focus of the review** so that it is of relevance to those directly involved in managing or commissioning such services;
- **understand how things actually work**, in a service setting, so the review team could explore this further in the literature;
- **shape the presentation** of the review's findings to ensure they are of use to people commissioning and providing services of this type.

Once members were recruited, the first meeting was held in August 2011with the aims of introduce the project, discussing how IC might work using members' own experiences, and bringing together members' knowledge with findings of the review team. See Table 11 for the detailed content and evolving different aims of each of the three meetings.

PRG meeting	Contents and aims of each meeting
#1	Introductions (research team, PRG members)
16/08/2011	Aims and approach of the review
	Aims of the Project Reference Group (and discussion)
	How Intermediate Care (might) work - initial ideas from the review team
	How Intermediate Care (might) work - ideas from PRG members' experience
	Comparing and contrasting 'review knowledge' and PRG members' knowledge
	Bringing together 'review knowledge' and PRG members' knowledge (to guide the review)

Table II. Concent and anns of the FRO meetings
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PRG meeting	Contents and aims of each meeting
#2	(Re)introductions (research team, PRG members)
01/11/2011	Review progress (Aug-Oct) and integration of PRG members' input
	The review process and 'programme theories'
	The emerging conceptual framework
	Which programme theory/ies to pursue?
	Unresolved issues in the literature on intermediate care
	Refining the conceptual framework/Decisions on review direction
#3	Review progress (Oct-Jan)
30/01/2012	The conceptual framework – coherent and comprehensible?
	Testing programme theories about how Intermediate Care 'works'
	Final questions/discussion

Discussions within the PRG were broad and wide-ranging; as an example of items discussed, some members of the PRG felt that cognitive impairment should be added to the list of conditions (originally titled 'tracer conditions') which the review team should use to focus the review. This was done, and the review from this point included 'cognitive impairment' as one of the identified conditions. One of the points made by PRG members during this discussion was that focussing on condition may be too specific, and - as a large number of service users had complex medical problems, rather than single uncomplicated conditions functionality and service user experience may be a more useful focal point. Another conversation point involved timescales of intermediate care; the 6-week intermediate care cut-off period laid down in regulatory guidelines was considered by some of the PRG to be an unhelpful barrier which necessitates 'gaming' – that is doubling or tripling the 6-week limit – in an effort to deliver the care that service users need. All of these comments and discussions were incorporated into the central and developing 'potential programme theory' table where the reviewers were able to use the PRG insights to highlight new ideas and expound upon pre-existing 'theories'.

The second PRG meeting was held in November 2011 with the two aims of testing the provisional 'conceptual framework' developed by the research team against the PRG members' understanding; and identifying the most important theories about how intermediate care works that should be tested in the review.

This PRG meeting took place at a stage where the review team had – with PRG input – built a picture of the identified schemes designed to provide care closer to home in order to reduce reliance on acute care services. The next aim was to create a conceptual framework which allowed description and explanation of IC,

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and with this in mind the review team developed an emerging conceptual framework table (Table 10) to form a focal point for PRG discussions.

Therefore, the nine candidate programme theories were developed by the review team (MP, HH and RA) through a process of both reviewers (MP & HH) considering the numerous 'sub-theories' (supplementary file 3), looking for commonalities and differences and linking related or similar 'sub-theories' into a single richer theory, removing duplicate items (where the same point had been made in different ways) and reviewing the evidence base to check we had captured the data correctly. This list was sent to the PRG members following the meeting and members were asked individually to rank those programme theories which in their view offered the greatest explanatory potential (Table 12).

Intermediate care should produce the best health and social	PRG Rank
outcomes for service-users because:	
the place of care (e.g. home, day hospital, community hospital), and timing of transition to it, is decided in consultation with the service-user based on the <i>objectives of care</i> and the location that is most likely to enable service-users to reach these objectives	=1
professionals (health and social care) and carers foster the self-care skills of service-users and shape the social and physical environment to 're-enable' service-users	=1
professionals (health and social care) work in an <i>integrated</i> fashion with each other and carers	=1
there is sufficient flexibility in the service to respond to health and social care needs at short notice	4
there is sufficient capacity and range in mainstream services for appropriate referral to and from 'intermediate care', and the interface between these services is well-developed	5
service-users <i>negotiate</i> their care planning needs with health and social care professionals OR, if not able (e.g. because of cognitive impairment), to contribute to their care planning <i>as far as able</i> , with carers and/or health and social care professionals acting on their behalf	6
working relationships between team members are collaborative and they have mutual respect for one another	7
a holistic (bio-psycho-social) approach to health, as defined by the service-user in collaboration with their significant others and health and social care professionals, is adopted	8
service-users are actively involved in the <i>design</i> of `intermediate care'- type services	9

In the event, there was unanimity between the PRG's expression of priority programme theories to test and our perspective, as reviewers, that (in order of importance) these programme theories should:

- Offer the greatest potential explanatory power (i.e. ability to explain differences in effectiveness within and between programmes).
- Be 'testable' (i.e. the likelihood that evaluations will provide enough details to support the presence (and/or its strength) of a programme theory or mechanism.

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- Strike a balance between service-users' focus and key organisational issues.
- Not be too generic, e.g. service flexibility and team-working are factors that will be important for the effectiveness of most complex health service programmes.

Following this exercise, three underlying programme theories were chosen to be tested (i.e. assessed alongside comparative effectiveness evidence) (Table 13). However, we remained conscious that these programme theories should not be tested in isolation, i.e. without any recognition of the wider conceptual framework that we had developed (Figure 2).



#### Figure 2. Conceptual framework for Intermediate Care

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# **2.3** Identification and selection of cost and cost-effectiveness evidence

## Title and abstract screening

Title and abstract screening was conducted in two stages. Initial screening for economic studies at the title and abstract stage was conducted by the two main reviewers (MP and HH) and was highly inclusive in approach. That is, any sources which clearly referred to the collection and/or analysis of data or other studies relating to the costs, cost-effectiveness or resource use were flagged as potential "economic studies". This produced a list of 117 potential economic papers/sources of intermediate care from the 10,314 sources found by the initial searches.

The titles and abstracts of the 117 potential economic study sources were then screened by an experienced health economist and economic evaluator (RA) to exclude those which:

- clearly fell outside our working definition of intermediate care (i.e. based on Godfrey et al 2005<sup>17</sup>; see Table 4, p.23),
- were clearly not economic evaluations, or not comparative cost studies (i.e. studies which reported and/or analysed the cost of either two or more alternative models of IC, or compared the cost of IC with non-IC models of care for the same types of service user), or
- did not involve service users who belonged to one of our five service user groups of interest (i.e. older people, stroke, CHF, COPD, cognitive impairment)

In practice, applying the multi-dimensional and holistic Godfrey *et al* definition of intermediate care to the titles and abstracts of potential economic studies was not straightforward, so any studies which were evidently economic studies, and which were also of service models called early or supported discharge (or, for example, 'home-based rehabilitation', 'hospital-at-home' etc.) or admission avoidance (or 'rapid response' etc.) were requested as full-text.

This led to 76 of the 117 sources being obtained as full-text, plus two further other potential economic studies which were identified from the included effectiveness studies (Thorsen et al. 2006<sup>95</sup>; von Koch et al. 2001<sup>96</sup>). See Figure 3 for a flow diagram summarising the screening process for economic studies.

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# Full text screening

Screening of the 76 full text papers and study reports was conducted by the team's health economist (RA) using the same inclusion and exclusion criteria as described for title and abstract screening. This led to the exclusion of a further 29 papers and study reports, usually because they were found on closer reading to not be a comparative cost or cost-effectiveness study, or did not evaluate a service or initiative which met our working definition of intermediate care.

This produced a 'shortlist' of 48 papers/reports which were of economic evaluations or comparative cost studies of models of IC in 14 different countries. Nineteen of these were from the UK, 7 from Australia, 4 from Spain, 3 from each of Sweden, South Korea and Canada. The remainder were from Norway (2), Denmark, Finland, Austria, USA, Israel, Brazil, Singapore. There are well

documented limitations to the generalisability of cost and cost-effectiveness study findings between countries.<sup>28, 97</sup> Furthermore, for complex service delivery interventions like IC, such limitations are likely to be even greater because of between-country differences in such things as the funding and organisation (and therefore cost) of hospital care, the available types of rehabilitation and other care professionals, levels of pay for different care professionals, and also the types, cost, availability and level of integration of social care services.<sup>28</sup> For these reasons, and also because there were 17 includable economic studies of UK-based examples of IC (including 11 published after 2000), we decided to focus our synthesis of economic evidence on these UK-based studies. Two of the studies were reported in more than one paper or report: the evaluation of a residential rehabilitation unit for older people in Devon was published in both a study report and a journal article;<sup>98, 99</sup> and also the final report and related paper of the national evaluation of IC for older people.<sup>50, 100</sup>

(N.B. Three other economic studies of intermediate care in the UK were read in detail but ultimately excluded as not being either full economic evaluations or true comparative cost studies. These were: a 'PBMA' study (programme budgeting and marginal analysis) from 2001 of community hospital integrated stroke care in Scotland;<sup>101</sup> a 2006 study which estimated the cost of 12 different *hypothetical* intermediate care packages for five types of older service user, based mainly on professional opinion;<sup>102</sup> and a 2008 study of home care reablement by Glendinning and Newbronner, in which the only quantitative resource outcome reported was the time to next use of residential home care (i.e. it was not a comparative cost study).<sup>103</sup>

A table listing all 76 papers/sources obtained as full-text, together with the reasons for exclusion or inclusion decisions for each, is available as a supplementary file.

# 2.4 Appraisal and synthesis of cost and cost-effectiveness evidence

Data extraction was conducted for each study, informed by other related publications about the same study or intervention where necessary. Data extraction for each included economic study comprised a close reading of each study leading to the tabulation (in Excel) of the following information:

**Study characteristics**: Lead author; publication year; region/city; patient group; No. and source of referrals; broad type of IC; type of IC (detailed description); IC setting (e.g. home, residential unit); comparator(s); analysis (price) year.

**Study methods**: type of economic analysis (e.g. cost-minimisation analysis, cost analysis, and whether model-based); design of related effectiveness study; effectiveness study reference(s); whether effectiveness study was included (in our review of effectiveness studies); perspective of analysis; time horizon and discounting; types of costs and savings measured/estimated; reporting of

patient/family costs; main statistics (e.g. ratios, differences) reported; sensitivity analyses (whether and what type).

**Study results**: mean cost (and standard deviation) with IC; mean cost (and SD) with comparator(s); incremental cost (IC less comparators); incremental effectiveness (IC less comparators, if estimated); incremental cost-effectiveness ratio (if estimated)

**Other information/comments**: other comments; whether the equivalence or difference in effectiveness was established/justified with empirical evidence (especially for cost-minimisation analysis); other notable weaknesses.

We had originally intended to attempt a realist review of the economic as well as the effectiveness evidence. Ultimately, however, neither the published economic studies, nor their related RCTs or other sources of effectiveness evidence, gave sufficient detail about the nature and content of the service arrangements for us to identify the operation (implicit or explicit) of any of our selected programme theories. Nevertheless, in the Discussion section we will consider the resource implications of the different programme theories of intermediate care for which we found published evidence.

The synthesis of cost and cost-effectiveness evidence was therefore instead by a process of exploring the similarities and differences between the characteristics and results of the included studies, especially by sorting the Excel spreadsheet in different ways and using coloured shading to denote different types of result, study design or service characteristic. In addition, a few studies which met our inclusion criteria were ultimately judged as 'fatally uninformative' for addressing our review questions in the current UK health and social care context, for a combination of reasons. Any quantitative cost results were also all inflated to 2010 £s to partly adjust for differences in unit costs over time. The outcome of this process of synthesis is the tabulation of selected relevant data plus narrative sections to draw out apparent similarities and differences, and attempt to explain between-study differences in costs and outcomes.

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Project 10/1012/07

# **3** Testing the programme theories

# **3.1** Comparative effectiveness studies

Our initial step in testing the programme theories was to identify comparative studies evaluating programmes containing the elements of service provision identified in the programme theories (see Table 13). Using our coding of sources during the screening process, 114 comparative effectiveness studies of intermediate care programmes relating to the five patient groups (CHF, COPD, older people, stroke and cognitive impairment) were identified.

No.	Programme theory
1a	the place of care (e.g. home, day hospital, community hospital), and timing of transition to it, is decided in consultation with the service-user based on the pre-agreed objectives of care
1b	the place of care (e.g. home, day hospital, community hospital), and timing of transition to it, is decided in consultation with the service-user based on the location that is most likely to enable the service-user to reach these objectives
2a	professionals (health and social care) and carers foster the self- care skills of service-users
2b	professionals (health and social care) and carers shape the social and physical environment to 're-enable' service-users
3	professionals (health and social care) work in an integrated fashion with each other and carers

### Table 13. Programme theories tested in the review

Our initial exploration of these studies suggested that identifying eligible outcome studies from abstracts alone was highly problematic. In short, outcome studies predominantly report outcomes in their abstracts with little (if any) indication of programme approach beyond high-level descriptors. We therefore obtained the full-text of all 114 comparative effectiveness studies to assess their suitability for inclusion. Using the full-text of these studies, a judgement was made as to whether studies were eligible based on the *reporting* of programme characteristics that tallied with the elements identified in the programme theories to be tested. If programme characteristics were not reported they were treated as absent, on the basis that if these elements were considered to be important in

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the design of the programme then they would have been reported. The inclusion criteria were therefore:

- Reporting of programme characteristics (such as: negotiation about the • place of care; care that adopts a 're-enabling approach'; integrated working) that would enable one or more of the programme theories to be tested.
- Some explanation of *how* the programme was delivered, e.g. how the place of care was decided upon or how self-care skills were fostered, or by reference to a 'philosophy of care' or organisational/team features that provided evidence that more than 'lip service' was being paid to ideas such as 'patient-centredness'.

Exclusion criteria were iteratively developed, as below:

- Programme descriptions that used terms which suggested a linear process 'received' by the service-user rather than a collaborative approach – terms such as 'compliance', 'adherence', '[patient was] allowed to do [x]', in the absence of any descriptions to the contrary, were interpreted as indicating a linear rather than collaborative process.
- Programmes that primarily consisted of medical (or medical support) components, e.q.:
  - administration of intravenous (or other short-term) medication
  - monitoring of vital signs
  - awareness of acute symptoms and actions to take

An overall judgement was made about potentially eligible studies rather than on the basis of a minimum number of characteristics being present. In our view, this judgement better reflected the overall presence or absence of elements (that would enable the programme theories to be tested) than attempting to quantify the intensity of extent of each these elements. Using these criteria meant that a different group of outcome studies were included to the Cochrane 'Hospital at Home' reviews;<sup>13, 14</sup> we included none of the 10 'admission avoidance' studies included in Shepperd et al.<sup>13</sup> and five of the 26 'early discharge' studies included in Shepperd et al.<sup>14</sup>

Contrary to the oft-noted reviewer's complaint that journal word counts and/or authors' neglect lead to inadequate reporting of complex interventions, we identified a substantial number of studies that provided sufficiently detailed programme descriptions. These descriptions were mostly contained in the main body of the paper or report, although a few made use of supplementary online files or published further details in a separate paper.

The patient groups and types of IC to which the included comparative effectiveness studies relate are shown in Table 14. Notably, none of the included

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effectiveness studies evaluated an AA service<sup>2</sup> or an IC service that combined both AA and ESD. Data from comparative studies, including detailed descriptions of the IC programmes delivered and the outcome measures used, was extracted to pre-specified data extraction tables (see example in Appendix 4). Study authors' reporting of statistical significance, rather than raw numbers, were extracted from the included studies. Study design was used as a proxy for formal critical appraisal of study quality, although comments on the rigour of studies (including those of the original authors) were included in a summary outcome data extraction table. The included studies and the direction and strength (statistical significance) of effect between intervention and comparator for each of six outcomes (survival, re-admission to hospital, functional abilities, psychosocial wellbeing, overall health, and carer's health) are shown in Table 15.

	No. of sources	No. of studies	AA	Home ESD	Res. ESD	AA/ESD	Unclear
Older people	11	7	-	2	5	-	-
Stroke	10	5	-	3	2	-	-
COPD	1	1	-	1	-	-	-
CHF	1	1	-	1	-	-	-
Cognitive impairment	1	1	-	1	-	-	-
Generic	-	-	-	-	-	-	-
Total	24	15	0	8	7	0	0

Table 14. Comparative effectiveness studies - patient groups and type of IC

# **Overview of programmes**

The 15 included comparative effectiveness studies (of the 114 retrieved for screening) included seven from the  $UK^{61, 104-110}$  one from Italy,<sup>111</sup> one from Australia,<sup>112</sup> one from Spain,<sup>113</sup> one from Canada,<sup>114</sup> three from Norway,<sup>115-118</sup> and one from Sweden<sup>95, 96, 119-123</sup> (Table 15).

The majority of these focus on topics that we have categorised as 'older people' (7 studies – 4  $RCTs^{104, 105, 109, 119, 124, 125}$  and 2  $CBAs^{61, 126, 127}$  from the UK, one  $RCT^{116, 117}$  from Norway) or 'stroke' (6 studies – 2  $RCTs^{115, 118}$  from Norway, 2

<sup>&</sup>lt;sup>2</sup> Although we included one comparative effectiveness study classified as 'admission avoidance' in Shepperd et al.13. Shepperd S, Doll H, Angus RM, Clarke MJ, Iliffe S, Kalra L, et al. Admission avoidance hospital at home. Cochrane Database of Systematic Reviews. Issue 4. Art. no.: CD007491. DOI: 10.1002/14651858.CD007491. Chichester: John Wiley & Sons Ltd., 2008., we categorised this study as 'Home ESD' as in our judgement there was insufficient description of AA elements to warrant assigning it to this category.

RCTs<sup>95, 96, 120-123</sup> from Sweden, one RCT<sup>128</sup> from Australia and one RCT<sup>108</sup> from the UK) with CHF (one RCT<sup>114</sup> from Canada), COPD (one RCT<sup>113</sup> from Spain) and cognitive impairment (one CBA<sup>111</sup> from Italy) also featuring in one study each. From this it is clear that most (six) of the 'older people' studies were from the UK, whereas the majority (four) of 'stroke' studies were based in Norway or Sweden.

None of the comparative effectiveness studies dealt explicitly with admission avoidance. Instead, eight studies<sup>105, 109, 111, 115-119, 124, 125</sup> were concerned with early supported discharge (ESD) in a residential (non-home) setting and seven studies<sup>61, 95, 96, 104, 107, 108, 113, 114, 120-123, 128</sup> dealt with ESD in the service user's home.

There was some variation in the comparators used within these effectiveness studies. In the studies looking at residential ESD, comparators ranged from 'usual/conventional [residential] care'<sup>105, 109, 111, 116, 117, 119, 124, 125, 127</sup> to usual care within a hospital stroke unit ('ordinary stroke unit service'<sup>115, 118</sup>). In studies focused on home ESD, comparators were 'hospital rehabilitation', <sup>128</sup> 'usual/conventional [home] care', <sup>61, 104, 108, 113, 114, 126</sup>, 'routine rehabilitation service' <sup>121, 122</sup> and 'control'.<sup>95, 96, 120, 123</sup> Typically, the comparator group was not described in detail beyond phrases such as "normal routines were followed".<sup>117</sup>

Study: Category,	Type of	Comparison	Survival	Re- admission	Function	Psycho- social	Overall health	Carer's health
country, type	IC							
Anderson et al. <sup>112</sup>	Home ESD	Home (I) (n=42) vs. Hospital (C) (n=44) rehabilitation		→ 6m	→ 6m		→ 6m	→ 6m
Stroke Australia RCT								
Askim et al. <sup>115</sup>	Res. ESD	ESUS (n=31) vs. OSUS (n=31)	→ 12m		→ 1.5m		→ 1.5m	→ 1.5m
Stroke Norway RCT					→ 6m		→ 6m	→ 6m
					→ 12m		→ 12m	→ 12m
Cunliffe et al. <sup>104</sup>	Home ESD	Early discharge and rehabilitation service (I) (n=185) vs. usual care (C) (n=185)	→ 3m	→ 3m	↑/ → 3m		↑ 3m	↑ 3m
Older people UK RCT			→ 12m	→ 12m	↑/ → 12m		↑ 12m	→ 12m
Fleming et al. <sup>119</sup>	Res. ESD	Care Home Rehabilitation Service (CHRS) (I) (n=81) vs. Usual residential care (C) (n=84)	→ 3m	→ 3m	→ 3m	→ 3m	→ 3m	
Older people UK RCT			→ 12m	→ 12m	→ 12m	→ 12m	→ 12m	

#### Table 15. Outcomes direction and strength of effect for intermediate care

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Project 10/1012/07

Study: Category,	Type of	Comparison	Survival	Re- admission	Function	Psycho- social	Overall health	Carer's health
country,	IC							
type								
Garasen et al. <sup>116</sup>	Res. ESD	Community hospital care (I) (n=70) vs. usual care (C) (n=72)	→ 6m	↑ 6m	↑/ → 6m			
Garasen et al. <sup>117</sup>			↑ 1.2m	$\rightarrow$ 1.2m	→ 1.2m			
Older people Norway RCT			12111	12111	12111			
Glendinning et al. <sup>61</sup> Jones et al. <sup>126</sup>	Home ESD	Home care re-ablement (n=654) vs. conventional home care (n=361)			\$	\$	↑ 12m	
Older people UK CBA								
Green et al. <sup>105</sup> Young et al. <sup>124</sup> Young & Green <sup>125</sup>	Res. ESD	Community hospital care (I) (n=280) vs. usual care (C) (n=210)	→ 6m		↑ <sup>™</sup> 6m	→ 6m		→ <sup>iv</sup> 6m
Older people UK RCT								

<sup>&</sup>lt;sup>iii</sup> Further analysis in Young & Green (2010) showed that these outcomes were also statistically significant different between patients who had 'early transfer' to community hospital (<=2 days following decision to transfer) and the control group. There was no statistically significant difference for these outcomes between patients who had 'late transfer' (>2 days following decision to transfer) and the control group.

<sup>&</sup>lt;sup>iv</sup> Result from Green et al. (2005); community hospital group (n=141) vs. usual care (n=79)

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Project 10/1012/07

Study: Category, country,	Type of IC	Comparison	Survival	Re- admission	Function	Psycho- social	Overall health	Carer's health
Harrison et	Home	Transitional care (I) (n=92) vs. usual care		$\rightarrow$	$\uparrow/\rightarrow$	$\uparrow/\rightarrow$	^/→	
al. <sup>114</sup>	ESD	(C) (n=100)		3m	1.5m	1.5m	1.5m	
CHF					$\uparrow/\rightarrow$	$\rightarrow/\rightarrow$	↑/ <i>→</i>	
Canada					3m	3m	3m	
Hernandez et	Home	HH (I) (n=121) vs. conventional care (C)	\$	\$		$\rightarrow$	$\rightarrow$	
al. <sup>113</sup>	ESD	(n=101).	2m	2m		2m	2m	
COPD								
RCT								
Indredavik et	Res.	ESUS (160) vs. OSUS (n=160)	$\rightarrow$		$\rightarrow$			
al.110	ESD		1.5m		1.5m			
Stroke			$\rightarrow$		$\uparrow/\rightarrow$			
Norway RCT			6m		6m			
Rodgers et	Home	Early supported discharge (I) (n=46) vs.	\$		$\rightarrow/$		$\rightarrow$	$\rightarrow$
al. <sup>108</sup>	ESD	usual care (C) [n=46]	3m		ologica Am		3m	3m
Stroke								
Steiner et	Res.	Nurse-led intermediate care unit (I) (n=119)	$\rightarrow$	$\rightarrow$	$\rightarrow$		$\rightarrow$	
al. <sup>109</sup>	ESD	vs. conventional care (C) (n=121)	6m	6m	6m		6m	
Older people								

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Project 10/1012/07

Study: Category, country, type	Type of IC	Comparison	Survival	Re- admission	Function	Psycho- social	Overall health	Carer's health
Tibaldi et al. <sup>111</sup> Cognitive impairment Italy CBA <sup>v</sup>	Home ESD	Geriatric home hospitalisation service (I) (n=56) vs. usual care on medical ward (C) (n=53)			o/c NR	↑/ o/c NR		o/c NR <sup>vi</sup>
Trappes- Lomax et al. <sup>127</sup> Older people UK CBA	Res. ESD	Residential rehabilitation unit (I) (n=94) vs. usual care at home (C) (n=112)	→ 12m	→ 12m	→ 6m → 12m	→ 6m → 12m	→ 6m → 12m	

<sup>&</sup>lt;sup>v</sup> Authors classify the study as an 'RCT', but provide no details of sequence generation, blinding, drop-outs or data analysis (apart from rudimentary details of statistical tests used). We have therefore classified it as a CBA study.

vi Comparison of intervention with control group is not reported, only a statistically significant difference for a within-group before and after comparison in the intervention group

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Study: Category, country, type	Type of IC	Comparison	Survival	Re- admission	Function	Psycho- social	Overall health	Carer's health
Widen Holmqvist et al. <sup>121</sup> Widen Holmqvist et al. <sup>122</sup>	Home ESD	Early supported discharge (n=41) vs. routine rehabilitation service (n=40)			→ 3m	→ 3m		→ 3m
von Koch et al. <sup>96</sup>		Home rehabilitation group (HRG; n=42) vs. control (RRG; n=41)	\$	→ 12m	↑/→ 12 m	→ 12 m		→ 12 m
Thorsen et al. <sup>120</sup> Thorsen et al. <sup>95</sup> Ytterberg et al. <sup>123</sup> Stroke Sweden RCT		HRG (n=28) vs. RRG (n=21)		→ 5 yr	↑/→ 5 yr	→ 5 yr	→ 5 yr	→ 5 yr

#### Key:

↑ - statistically significant outcome (95% CI, unless otherwise stated) that favours the intermediate care intervention

 $\rightarrow$  - no statistically significant difference (95% CI, unless otherwise stated) between the intermediate care intervention and comparator

 $\downarrow$  - statistically significant outcome (95% CI, unless otherwise stated) that favours the comparator

♦ - statistical analysis not conducted

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Project 10/1012/07

# 3.2 Integrating evidence on outcomes with noncomparative study evidence

The patient groups and types of IC to which the included non-comparative studies relate are shown in Table 16. Evidence to test each of the three programme theories was extracted to data extraction tables (see example in Appendix 5). Each source was critically appraised using the Wallace et al.<sup>129</sup> tool (see Appendix 6) and a summary of this appraisal included in the data extraction table. Conducting the synthesis, in an effort to build a 'multi-faceted explanation' of 'what works for whom, in what circumstances, and why', involved juxtaposing, reconciling, consolidating, situating, and adjudicating between sources of evidence. The process of synthesis was:

1) Both reviewers (MP and HH) read 'across' the element of programme theory from the data extraction tables to (re-)familiarise themselves with the source of evidence and develop broad themes that could help express the synthesis. To facilitate engagement with these sources without becoming overwhelmed this was initially limited to those sources that were explicitly linked to a comparative study, but in subsequent iterations we included all conceptually-rich and thick sources.

2) Notes were produced in a way that we considered best for facilitating the process of analysis and synthesis. We considered using tables and/or mind maps to aid this process, but found that referring to the conceptual framework and outcomes table provided sufficient structure for the notes.

3) An initial synthesis (explanation) of the elements explicitly linked to each comparative study was produced. This could be written informally, but had to include explicit reference to sources of evidence. The point of the exercise was to facilitate the reviewer's analytical abilities and to produce material that could be shared, discussed and critiqued with the other reviewer.

4) Following discussion of the initial synthesis between the two reviewers, it was developed through examining the pattern of outcomes (summarised in Table 15) in an effort to identify potential relationships between particular aspects of IC and better or worse outcomes. Further discussion between the two reviewers took place when this was considered to be beneficial for the development of the synthesis. Identified patterns, such as the presence of certain mechanisms (e.g. service users' reasoning) operating in certain contexts (e.g. the constraints of local service provision), were integrated into the developing synthesis.

The synthesis was initially expressed using the headings of the three programme theories (see Table 13). We found that whilst these distinct headings and subsections were useful for providing focus during the process of data extraction, the inter-relatedness of many elements of IC meant that using an identical structure for the synthesis obscured rather than clarified. Programme theories 1 and 2 (Table 13) were therefore integrated in the synthesis.

	No. of sources	PT #1/2	PT #3	AA	Home ESD	Res. ESD	AA/ ESD	Un- clear
Older	26	16	16	1	8	4	10	2
people								
Stroke	2	2	1		2	4		
COPD	1	1			1			
CHF								
Cognitive	1	1	1				1	
impairment								
Generic	9	8	5		2	1	5	1
Total	39	28	23	1	12	5	16	3

#### Table 16. Included non-comparative studies - patient groups and type of IC

# **3.2.1** Collaborative decision-making with service users to facilitate re-enablement

Programme theories 1 and 2:

Improved service user outcomes are achieved when:

a) the place of care (e.g. home, day hospital, community hospital), and timing of transition to it, is decided in consultation with the service user based on the pre-agreed objectives of care and the location that is most likely to enable the service user to reach these objectives.

b) health and social care professionals foster the self-care skills of service users and shape the environment so as to re-enable.

# Agreeing objectives of care

Agreeing the objectives of care with service users is not necessarily straightforward. Goals considered appropriate by professionals, within the structure of the existing local health and social care system, may not align closely with the goals of patients.<sup>45</sup> For example, in an early UK example of residential ESD, a mis-match between service users' and practitioners' goals was engendered by a low level of communication and negotiation with service users.<sup>91</sup> In these instances, the reason for transfer to a residential ESD service was explained poorly (or not at all) to service users, or was explained as the hospital's need to make acute beds available.<sup>91</sup> The trial of this service showed no statistically significant difference between residential ESD and conventional care at six months for survival, re-admission, functional or overall health outcomes,<sup>109</sup> although it was noted that there were wide variations in the care provided and the study was under-powered.<sup>89, 91</sup> There is thus some evidence to suggest that *not* engaging service users in decisions about their care weakens the potential for achieving desirable outcomes.

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Better outcomes were attained in a Swedish home ESD service for stroke. A close-knit team of rehabilitation professionals were facilitated over an extended time period to develop their 're-enabling' skills and a service user-centred approach. This enabled the development of a more collaborative decision-making approach around goals that involved service users, relatives and professionals.<sup>47</sup> A trial of this service showed longer-term functional outcomes (at 12 months and five years) for service users receiving ESD following a stroke were mixed but there was a statistically significant difference favouring the intervention group shown by some assessment tools.<sup>96, 120</sup> In a combined residential AA/ESD service for older people with cognitive impairment, development of untrained care staff's skills was reported to be essential.<sup>92</sup> Developing these skills extended some way beyond educating untrained care staff about a 're-enabling' approach. As untrained care staff felt excluded from decisions about care planning for service users, a 're-enabling' approach required active engagement of care staff in efforts to place service users at the centre of discussions about care.<sup>92</sup> Regarding outcomes, the sole comparative study of IC for people with cognitive impairment reported insufficient detail about whether or not such an 'enabling' approach for untrained care staff was adopted. In summary, a collaborative decision-making process appeared to make a substantial contribution towards positive outcomes in a home ESD service for stroke, but there is insufficient data to enable an assessment of a combined residential AA/ESD for people with cognitive impairment. However, the professional development of untrained and professional carers would appear to be important for the delivery of IC in both patient groups.

Implementing the ideal of negotiated decisions may not be straightforward when service users' and professionals' views differ about their respective roles<sup>51, 84</sup> or the appropriateness of goals of care<sup>44</sup>. For example, staff in a residential ESD service for older people endeavoured to deliver care that was 're-enabling' through integrating functional rehabilitation into day-to-day activities. Patients co-operated but could not be said to be genuinely participating in decisionmaking about their care: 51, 84

"They had me playing dominoes, doing all sorts of things with my fingers, and she got me [so] that I could comb my own hair. But they said to me, 'if you don't help as well, it's no good, we can't help you''' (older person who had been transferred to residential ESD service)<sup>84, p.98</sup>

In the associated trial of this residential ESD service, a statistically significant difference at six months (compared with usual care) favouring the intervention was shown for functional outcomes, but there was no statistically significant difference for survival, psycho-social, or overall health outcomes.<sup>124</sup> Nevertheless, some health and social care professionals held the view that the process of negotiation with service users played an important role in promoting confidence and autonomy.<sup>87</sup> Consulting with service users who are dealing with the multiple health and social issues of old age may be less straightforward than for service users who have suffered a discrete (albeit serious) health event such as a stroke. This evidence suggests that desirable functional outcomes may still

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be attained for older people without an ideal form of collaborative decisionmaking, but that this consultative process may be far more important for attaining other positive health and social outcomes.

## Complexities of decision-making at a time of vulnerability

Decision-making about care can be particularly difficult for older people who may feel vulnerable and overwhelmed by the implications of their health condition(s). In these instances service users may hold on to what they are familiar with, meaning that they wish to stay in an acute care setting which they perceive as safer and more secure than another residential ESD option.<sup>87</sup> The notion that it is possible for negotiation about the objectives of care to take place on an equalfooting may be optimistic when service users are in a vulnerable state. This applies even when professionals are doing their utmost to implement a service user-centred approach, for example:

"I didn't like being moved. I understood I had to be and I felt pretty desolate for about two days getting used to another place" (older person who had been transferred to a residential ESD service)<sup>87, p.41</sup>

Again, this evidence suggests that whilst collaborative decision-making remains a worthy goal, there are limits to the extent to which a genuinely collaborative approach can be implemented where health and social care professionals also have an important role in acting in the best interests of vulnerable people in their care.

However, endeavouring to act in the best interests of service users could result in them feeling pressurised to return home before they felt they were ready. For example, for people entering a home ESD service following admission to hospital with exacerbation of COPD (which may provide respite for carers as well as support for management of the condition):

"I wanted to stay a little while longer... I wanted them to look after me for at least another 2-3 days... But I couldn't tell the doctor... They'll say then 'Why don't you want to go home?' Then what would I say?" (71-year old service user with COPD)<sup>52, p.96</sup>

Clarke et al.<sup>52</sup> imply that this perception arose through a mixture of deference to medical authority and the difficulty of explaining to health care staff why hospital could be preferable to home at certain times. Similarly, at the end of a home ESD service, older service users felt unable to negotiate what they believed to be a more tapered withdrawal of support services.<sup>82</sup> This could lead to a sense of abandonment, as the experience for some older people who were still in a somewhat vulnerable state was that IC support services just 'stop'. The extent to which negotiation about the objectives of care can take place is therefore dependent on both professional norms and the conventions of service provision in a locality - not simply the willingness or ability of individual practitioners to engage service users in collaborative decision-making.

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Put simply, decision-making about ESD for service users at a time of vulnerability is difficult. This difficulty can limit the extent to which collaborative decisionmaking can take place when endeavouring to balance a service user's wellbeing with current service configurations. Whilst service users may be able to retrospectively balance their long-term wellbeing with their own fears about the difficulties of rehabilitation, doing so at the time at which care is negotiated can be very problematic. At a time when service users feel vulnerable and exhausted, the hard work that rehabilitation involves can be daunting:

"She [the physiotherapist] was a very hard one when she takes you to do your exercise. Oh my god, when you go on that bed, you have to hop, hop, hop. Yes, she was a good one. Sometimes it's 'Oh my lord, you're killing me today'... you feel the pain but you have to do it." (female service-user)<sup>62,</sup>  $_{p.947}$ 

For older people, feelings of distress or fear may make it problematic to try and engage in a complex decision-making process that may have profound implications for their future wellbeing.<sup>70</sup> In tandem with a lack of awareness about the extent of their recent physical and emotional decline,<sup>62, 70</sup> the loss of close relatives or friends,<sup>62</sup> the implications of future illness,<sup>62</sup> and/or the loss of physical, emotional or cognitive abilities,<sup>85</sup> this could manifest as over-ambitious ideas about what realistic goals might be<sup>70</sup> and an overly-optimistic assessment about how being back in their home environment would enable a multitude of issues surrounding their recent ill-health to be resolved.<sup>46</sup> Whilst the available evidence does not enable the effects of these issues in terms of outcomes to be assessed, it is clear that the vulnerability of some service users at the point of decision-making makes it necessary for collaborative decision-making to be made with service users' significant others. The ideal of collaborative decision-making with a vulnerable individual needs to be tempered with a substantial advocacy component in the effort to act in their best interests.

However, an ethnography of a home ESD service for older people suggests that service users may simply have a longer-term perspective than health and social care professionals. Older service users can view recovery in the context of the trials and tribulations of their whole life rather than the parts of which health and social care professionals are aware.<sup>62</sup> Service users may find it crucial to hold onto these longer-term goals in order to facilitate adaptation to changes in their wellbeing.<sup>85</sup> Decision-making with service users therefore needs to recognise this long-term perspective, engage with the aspects of service users' lives that are of significance to them, and reach agreement on objectives of care that link with these goals that extend beyond the period of IC.

## Continuity of care in the health and social care system

The complexities of the health and social care system are commonly recognised. These complexities can impact substantially on efforts to involve patients in decisions about their care and achieve continuity of care between different service providers. A lack of communication with service users can result in them

© Queen's Printer and Controller of HMSO 2013. This work was produced by Anderson et al. under the terms of a commissioning contract issued by the Secretary of State for Health 66 Project 10/1012/07 feeling disconnected from the care planning process and create unrealistic expectations about the nature or extent of health and social care available as part of a home ESD service.<sup>71</sup> Service users may have sufficient trust in health and social care professionals and make a choice to 'leave it to the experts',  $^{71}$  but this is a decision that needs to be explicitly sought. For example, incomplete communication with service users and assumptions about their best place of care can lead to misunderstanding and anxiety:

"They said, 'we can let you go to the community ward', and I said 'What is that?', and because I had a feeling at first that it was where the very very old people were and perhaps there were some there... that weren't all there up top. I thought I don't want to go to a ward like that. Well, they didn't say too much about it, they simply said they had got this community ward, 'it's very pleasant'" (older service user)<sup>51, p.7</sup>

In this sense, consultation with the service user is central to achieving the aims of IC. Whether the service user chooses to be involved fully, partially or even not at all in the decision-making process, the process of explicit and ongoing consultation with them about their care remains central.

When discussing care objectives and the place of care, health and social care professionals may need to maintain an awareness of service users' prior experiences of community services. Service users who feel they have been 'let down' by promises of health and social care provision in the past are likely to be reluctant to take-up what they perceive to be similarly weak services.<sup>76</sup> It seems to be essential to address this perceived risk about home ESD services where service users have previously had negative experiences as it constitutes a substantial risk to the feeling of safety in one's home that is valued so highly.<sup>72</sup> Collaborative decisions about care and place of care can therefore only be made where service users have reason to feel confidence in receiving a standard of services that they believe to be adequate.

Collaborative decision-making can be made problematic by the opacity of complex health and social care systems to service users and their families, making it difficult for them to understand what services are available and how they operate. This can lead to a sense of lack of control and disengagement from the decision-making process about transfer to a home ESD service for older people.<sup>46</sup> Applied research linked such disengagement with a widespread view amongst health care professionals of older people as passive recipients of care,<sup>67</sup> but a conceptually-richer study challenged this view. Swinkells & Mitchell<sup>46</sup> found that older people did not feel they had been deliberately excluded from decisionmaking about their care, but did experience a sense of helplessness at moving events in a complex system forward.<sup>46</sup> This sense of helplessness was compounded by a perception that acute hospital staff were similarly helpless in moving transfer arrangements to a home ESD service forward.<sup>46</sup> To engage in collaborative decision-making as far as they are able, the conditions need to be created for service users to see how their continuing input will actually have some impact on the arrangements for their future care.

### **Role of carers**

The role played by service users' significant others in discussing care was rarely mentioned in service users' or health and social care professionals' accounts. One possibility is that these carers are already highly integrated into decision-making processes within the health and social care system and subsequently do not 'need' to be mentioned. Another possibility is suggested by an Australian study of a home ESD service which found that service users and professionals often assumed that a significant other would take on the role of carer. Discussions about care proceeded without further examination of the willingness or ability of the significant other to take on this often demanding role.<sup>56</sup> This was particularly the case for women (who formed ~90% of the study sample), who reported taking on the role of carer as something that 'just happened' without an explicit discussion about or exploration of the role. Male carers, whilst far fewer in number, reported a similar experience.<sup>56</sup> Carers reported the significant impact that taking on the role of carer had on all areas of their own lives, with feelings of obligation and responsibility meaning that activities which took them away from the caring role were experienced as 'uneasy'.<sup>56</sup> Whilst the extent to which service users' family and friends are pivotal to continuity of care will vary, it is clear that consultation with service users in isolation from these primary social and care networks is inadequate for organising continuity of care.

## 'Re-enablement' environments

Perspectives on the location that provided the 'best' environment for the 'reenablement' of service users reflected differences in the priorities of health and social care professionals and service users. Professionals tended to focus on the suitability of environments to promote the recovery of functional abilities, whilst service users usually adopted a wider focus that considered the suitability of environments for promoting their wellbeing as a whole (of which recovery of functional abilities was a part). Professionals valued the home for the way that it enabled them to observe service users engaging in rehabilitation activities in their usual environment, thereby allowing problems to be addressed that would have otherwise been missed.<sup>47, 59, 75, 88</sup> There is a danger here that professionals prioritise a desire for service users to attain certain functional goals within a specified time period over service users' self-knowledge and desire to reach a wider set of goals over a longer, less clearly defined time period. However, health and social care professionals were able to promote the recovery of functional abilities within an understanding of day-to-day activities that were meaningful for service users.<sup>71</sup> Also, health and social care professionals acknowledged the importance of the home environment for enabling continuity with social networks and for providing continuity through being 'back on home territory'.<sup>45, 80</sup>\_ENR<u>EF\_69</u> Collaborative decision-making therefore remains central to organising successful ESD services. Forming an awareness and understanding of what motivates service users and the environment that is most

© Queen's Printer and Controller of HMSO 2013. This work was produced by Anderson et al. under the terms of a commissioning contract issued by the Secretary of State for Health 68 Project 10/1012/07 likely to help them reach their goals can be central to engagement in re-enabling activities.

The importance of understanding service users' goals to be about more than the recovery of functional abilities is illustrated by both a home ESD service for stroke<sup>47</sup> and a combined AA/ESD service for older people.<sup>62</sup> The familiarity of the home environment was identified as supporting both the recovery of functional abilities and 'meaning' in service users' lives. Meaning was found in activities, relationships and social roles (such as grandparent or housewife) and could be fostered through a holistic approach to the person's wellbeing. The home environment provided a sense of continuity and meaning in service users' lives as a whole, thereby facilitating re-enablement.<sup>47, 62</sup> A trial of a home ESD service for stroke showed longer-term functional outcomes (at 12 months and five years) for service users receiving ESD were mixed but there were statistically significant differences favouring the intervention group shown by some assessment tools.<sup>96, 120</sup> However, the sample size was small (N=83) and attrition was high (>33%) at the five year follow-up. Overall, the evidence from both these studies suggests that the most 're-enabling' place of care for service users will be the one that best allows psychological and social, in addition to functional, continuity to be attained by the service user.

The potential role of home for providing 'structure, meaning rhythm and a sense of belonging to lives'<sup>46, p.50</sup> and facilitating meaningful social engagement should not be underestimated. However, a desire to return home as soon as possible was not overwhelming for service users, some of whom offered a complex account of what home meant for them in terms of its suitability or otherwise as a place for re-enablement. Some older service users favoured rehabilitation (in the shorter term) in a specialist environment where physical adaptations were already in place,<sup>45</sup> suggesting a conceptualisation of home as a goal (to return to when well) rather than an environment in which to recover. This conceptualisation is echoed in Godfrey & Townsend's<sup>62</sup> interviews with older people who had used IC services, which suggested that service users had mixed feelings about returning home at a time of vulnerability when this was so closely equated with having recovered. The impact of collaborative decision-making on outcomes is unclear in situations where service users feel such ambivalence about returning home, but it is clear that if efforts to engage in collaborative decision-making are to be made then the validity of such feelings have to be recognised.

Service users' knowledge about their chronic medical conditions and how they cope with them was not always appreciated by acute hospital staff. For example, for people with COPD using a home ESD service:

"... they forget that when you're in hospital you're on oxygen all the time, you don't have to do a thing...then suddenly a week later they say 'oh, you're fine now, your breathing's great'. Well of course it is, you've done nothing... and they send you home... and you've got to start." (service user)<sup>52, p.97</sup>

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A focus in a home ESD service on addressing the functional needs of service users with COPD could fall some way short of enabling service users to reintegrate with their prior social network,<sup>52</sup> resulting in the home environment being experienced as isolating and boring. Some health professionals recognised the different meanings that home could hold for service users, observing that the home environment could actually *inhibit* re-enablement if service users' used its safety and security as a reason to 'give up' rather than a spur to rehabilitation and re-engagement with past activities.<sup>45</sup>

It was not uncommon for professionals to view hospital environments as 'institutionalising' and disabling in contrast to the perceived benefits of service users' home environments,<sup>44, 45, 59, 75</sup> a view echoed by many older service users who associated hospital with dependence on others, a loss of autonomy, and additional risk.<sup>46</sup> However, it is not clear whether this view is held because of the way that rehabilitative care is conventionally organised and delivered in hospital or whether any 'non-home' environment inherently limits 're-enablement'. Existing comparative studies do not allow this theory to be tested, but do suggest a mixed picture relating to hospital and home environments. Whilst functional outcomes at six months were statistically significantly better in a residential ESD service (rather than 'usual care'),<sup>105</sup> another study comparing a residential ESD service with 'usual care' at home reported no statistically significant difference in functional outcomes at six or 12 months.<sup>127</sup> However, the timeliness of transfer to a residential ESD service may be key. A statistically significant difference in improved functional outcomes between intervention and control groups was reported when transfers were completed within two days of the decision to transfer.<sup>125</sup> This suggests that the ability of health and social care services to deliver the care agreed through a collaborative decision-making process is of importance.

Where older people were engaged in rehabilitation over weeks rather than days, residential ESD could be highly-valued for the way in which the location of care environments such as community hospitals facilitated visits from family and friends.63, 84, 87 Such residential ESD environments also enabled a sense of a 'return to normality' through returning service users to the care of their regular GP whilst also retaining the sense of security that there were always care staff nearby.<sup>87</sup> This is further evidence of the need for health and social care professionals to understand the meaning of home and other care environments to individual service users. These understandings can differ as much within as between different patient groups, yet appear to be of substantial importance for explaining how service users can attain functional, psychological and social continuity. It is only by engaging with service users in an effort to understand these different meanings that joint decisions can be reached about the best environment for a person's re-enablement.

A 'home-like' environment with an emphasis on 're-enablement' can also be created, in principle, within a separate unit in a residential home. For example, a residential ESD service was valued by many service users as a transition point between hospital and home.<sup>44</sup> When this residential ESD service was compared

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with usual residential home care, there were no statistically significant differences in survival, re-admission, functional, psycho-social or overall health outcomes at three or 12 months follow-up.<sup>119</sup> The small sample size, and relatively low levels of active rehabilitation in this service identified by the researchers in the trial (2.0 whole-time equivalent OTs worked across the six care home sites with a total of 40 beds), may partially explain these outcomes, even though care home staff were also trained to provide rehabilitative care.<sup>119</sup> Contrary to the 'home-like' environment that had been created, researchers also observed a 'creeping institutionalisation' as rehabilitation professionals sought to expand the service through the development of, for example, a number of 'training kitchens'.<sup>44</sup> This evidence suggests that some rehabilitation professionals experience a difficulty in attaining a balance between improving service users' outcomes and their own professional development (pursued through delegation of 're-enablement' care and expanding services). If this balance is not attained then services may appear to offer care that is more closely attuned to service users' preferences about objectives and location, but not actually attain this goal.

Ultimately, 're-enabling' environments may also be significantly about helping service users to marshall their own social and psychological resources to achieve continuity.<sup>62</sup> In an ESD service for stroke, the development of a trusting relationship between service user and professional was posited as crucial for supporting re-enablement and continuity in service users' lives.<sup>47</sup>

## Impact of the local health and social care system context

The characteristics of the local health and social care system could significantly bound care options for service users. Decisions about these options were largely mediated by health and social care professionals using their knowledge of available resources in the local system<sup>80</sup> to guide decision-making about the best place of care and negotiate the bureaucracy in order to access those services, funds or care.<sup>18</sup> Professionals working in a locality over an extended period, such as GPs, can develop very fine-grained knowledge about the make-up of local services and the likelihood that these would benefit a particular service user.<sup>63</sup> In contrast, referral procedures that are difficult to understand can inhibit access to IC,<sup>74, 80</sup> particularly when professionals are reluctant to place their trust in services they regard as unproven.<sup>66</sup> Taken as a whole, these studies suggest that better outcomes for service users *might* be attained through professionals paying close attention to their knowledge of local services when making collaborative decisions with service users. However, there is no evidence on outcomes available to test this.

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# **Programme theories 1 and 2: Summary**

## Intermediate care can improve outcomes through collaborative decisionmaking with service users about objectives and place of care when:

Health and social care organisations -

- facilitate professionals to implement collaborative decision-making with service users.
- are able to co-ordinate the delivery of agreed care in a timely fashion.

Health and social care professionals -

- have detailed knowledge of the characteristics of local intermediate care provision and are able to combine this knowledge with the needs and preferences of service users.
- establish the *meaning* which different care environments have for service users and explore the implications these may have for decisions about the place of care that best allows functional, psychological, and social continuity to be attained.
- engage with service users in planning longer-term goals that extend beyond the timeframe of intermediate care.
- acknowledge and engage with service users' primary social and care networks.
- develop a trusting relationship with service users in order to support continuity in their lives.

#### <u>Service users</u> -

- have confidence in the standard of intermediate care services they will receive.
- believe that their input will be listened to and acted upon.
- are recovering from a discrete acute medical event such as stroke, rather than the complex acute-on-chronic co-morbidities of old age. Whilst collaborative decision-making with older people may be important for attaining positive psychological and social outcomes, it does not appear to be so important for attaining positive functional outcomes.

#### Collaborative decision-making may be made considerably more complex when the vulnerable state of service users means that:

Health and social care professionals -

are required to balance advocacy and a duty of care with engagement in a collaborative decision-making process with service users.
### 3.2.2 Integrated working between health and social care professionals and carers

#### **Programme theory 3:**

Improved service user outcomes are achieved when:

Health and social care professionals work in an integrated fashion with each other and carers.

#### Change management across and between health and social care organisations

The integration of services, across both acute and community care in the health sector, and health and social sectors in the community, was frequently identified as requiring changes in service organisation and professional practice.<sup>17, 50, 59, 60,</sup> <sup>64-66, 74, 75, 81, 92</sup> For example, a combined AA/ESD service was not viewed by hospital practitioners as part of the system of care, thereby substantially limiting the extent to which integrated working could take place.<sup>59</sup> Inconsistencies between service perceptions at a strategic level and the extent of integration<sup>17, 50</sup> or service user focus<sup>71, 87, 127</sup> at the level of practice highlights the way in which service re-configuration requires active intervention at a range of organisational levels. A reluctance amongst health and social care professionals to place their trust in novel services to provide care was identified as a barrier to integrated working.<sup>59</sup> Professionals can find change unsettling – the rationale for work routines, roles and processes that were previously taken for granted may be challenged. There may be a fear that de-skilling or disempowerment will occur,<sup>66,</sup> <sup>86</sup> although this is by no means always the case as overlap in professional roles can be experienced as complementary and an opportunity to develop practice.<sup>74</sup> However, the evidence suggests that development of services to deliver intermediate care in an integrated way requires active management of change processes across and between health and social care organisations.

Managing this change process effectively entails a multi-component approach that operates at both local and strategic levels. The emphasis that it is necessary to give to each component in such an approach will be contingent on the extent to which current practice already encompasses it. The five components are: engagement with staff; professional development; leadership; supporting organisational structures and processes; and active engagement of carers and voluntary services as part of the team. Only one of the sources included in this section<sup>88</sup> was linked to comparative effectiveness studies.<sup>96, 120</sup>

#### Engagement with staff

By definition, an integrated approach cannot be achieved without a collaborative care planning process. Encouraging and enabling front-line staff, both professionals and support workers, to contribute to planning care for individual service users was identified as important for implementing an integrated

approach.<sup>60</sup> It is possible that such an approach communicates a recognition and valuing of practitioners' and support workers' experiential skills and knowledge<sup>49</sup> and thereby contributes to supporting front-line staff's autonomy in practice.<sup>60</sup>

#### Professional development

The role played by the working environment in facilitating the development of professionals and support workers was identified as important.<sup>88, 103</sup> Regular face-to-face meetings of teams that included all grades of staff were reported to provide an important forum for communicating about service changes and providing support for the development of working roles,<sup>103</sup> as was an approach that maintained a distinct contribution for each professional group whilst allowing for a blurring of boundaries in other aspects of professional roles.<sup>66</sup> In an ESD service for stroke, weekly team meetings for all health rehabilitation professionals involved in the programme were held with the aim of providing a forum in which these professionals could assist, support, teach and learn from one another:

"We can discuss the patients and ventilate things, otherwise it would be difficult. You get advice, support and a few reminders. Sometimes I have deep thoughts about various things, and then the team provides a lot of good support." (therapist)<sup>88, p.580</sup>

The apparent success of these meetings was attributed by the researchers to the time and space they provided for professionals to learn new ways of working and adjust to the increased responsibilities that these entailed.<sup>88</sup> Longer-term functional outcomes (at 12 months and five years) for users of this service were mixed, but there was a statistically significant difference favouring the intervention group shown by some assessment tools.<sup>96, 120</sup> However, this study was underpowered to detect a statistically significant difference. A home ESD service for older people identified a similar role for face-to-face meetings in facilitating the learning and development of support staff.<sup>49</sup> This was echoed in a residential ESD service for people with cognitive impairment where explicit efforts were made to develop a shared understanding with care home staff and managers of what the IC service could offer - this was viewed by the practitioner-authors as vital for the development of integrated working.<sup>92</sup> The process of communication and of reaching a shared understanding between professionals, support workers and managers prevented the service from being viewed as a 'quick fix' intervention and enabled a longer-term, preventive, collaborative and trusting working relationship to be developed.<sup>92</sup> Whilst the available evidence only suggests that building working relationships between professionals and support workers improves service user outcomes, there is consistent evidence of improved outcomes in terms of professional development that may contribute to achieving improved service user outcomes.

Whilst formal face-to-face meetings could make an important contribution to the development of working relationships, in a home ESD service it may be necessary for community staff to pursue informal working relationships with acute hospital staff. The development of this personal, trusting working

relationship was observed to facilitate communication and enable flexibility in service provision:

"They [ward nurses] want the contact because when you turn up there [on the ward] they often troubleshoot with you. They often sit you down and things will come up, whereas they probably wouldn't have bothered to phone... even if it's just to de-brief... They know you're there when a crisis arises... but they also need to know there is support there as well." (home ESD service for older people assessment team member)<sup>81, p.492</sup>

In other contexts, where combined AA/ESD services are provided, it may be appropriate to adopt other approaches that increase professionals' knowledge of IC services and promote the development of working relationships between hospital and community staff. Such approaches may include as post rotations,<sup>50, 74, 75</sup> the development of inter-professional teams that provide experience of different ways of working,<sup>73</sup> and social events in which health and social care professionals could meet in an informal atmosphere.<sup>66</sup> The evidence suggests that a range of approaches may be appropriate to promote integrated working, but that whichever is adopted, they must increase knowledge of others' practice and promote the development of working relationships.

#### Leadership

The importance of leadership was identified both for providing a consistent sense of direction in the development and delivery of services and for managing working relationships between professionals and between professionals and support staff.<sup>65</sup> Leadership could play a particularly strong role where traditional professional hierarchies or conventional professional practices countered the ethos of integrated working or weakened a focus on service user outcomes.<sup>65</sup> The power differential between hospital and community staff, which can be accentuated by the way that pressure on acute beds can drive demand for IC services<sup>53</sup> may require bold and proactive action by leaders from one environment (e.g. community) to develop critical, but constructive, personal working relationship with leaders from another environment (e.g. hospital).<sup>81</sup> Leadership also had a strong role to play in establishing co-ordinated communication channels between community and hospital settings that enabled practitioners to link IC services into the wider health and social care system of which they were a part.<sup>64</sup> The evidence suggests that proactive leadership has an important role to play in developing services, constructively addressing takenfor-granted working practices and power relations, and providing the strategic vision that translates into the development of structures that support delivery of IC services.

#### Supporting organisational structures and processes

A number of processes are necessary, but not sufficient, to achieve integrated working. For example, formal joint working arrangements,<sup>60</sup> pooled budgets and shared communication and assessment systems<sup>49, 71, 82</sup> were all identified as highly important, although there were sensitivities about shared assessment tools if these were introduced in a way that suggested replacing rather than

complementing professional expertise.<sup>75</sup> The drivers of practitioners' actions may need to be considered. For example, acute nursing staff's practice is likely to be evaluated on the basis of their provision of acute care rather than their contribution to re-enablement care planning in conjunction with IC staff.<sup>81</sup> Whilst the timeframe in which meaningful change towards integrated working could take place depended on the extent to which the above enabling factors were already present in a local system, a change process measured in years rather than months was considered realistic.<sup>49, 65, 66</sup> This was because change was required at a number of levels (local policy, management, and practice)<sup>65, 66</sup> and frequently entailed challenging established norms:

"... the difficulty with integration is that the detail of trying to make it work is extremely difficult and it has to be done slowly... you cannot alter people's mindsets in the way that they've been working for the last 30 years within a matter of months." (social care manager)<sup>66, p.376</sup>

Depending on local conditions, a very delicate balance may need to be struck between driving change forward and excluding frontline professionals who may feel either that changes undermine their expertise or introduce additional responsibilities that they do not consider to be part of their role.<sup>66</sup> The evidence suggests that formalised agreements about, and processes to support, integrated working are insufficient on their own. Co-ordinated engagement with health and social care professionals at multiple strategic and practice levels is required to engage with and challenge assumptions about how care delivery should be organised in a locality.

Changes in the way that services were commissioned could enable or constrain the development of integrated working in IC services with a collaborative decision-making approach. For example, changing from 'bulk-buying' of taskoriented care to a service user outcome-focused model in which services were delivered according to a care plan and billed retrospectively required pro-active management that addressed the sensitivities surrounding the move in power from commissioners to providers and service users.<sup>60</sup> This shift in power required well-developed working relationships and trust between purchasers and providers, established and open communication channels, and administrative and financial management systems that supported the change in service commissioning and delivery.<sup>60</sup> The extent to which professionals engage in integrated working can therefore be enabled or constrained not only by their employing organisation, but also other organisations in the system of which they are a part.

#### Active engagement of carers and voluntary services as part of the team

Carers and voluntary services are equally part of the 'integrated' team, yet are conspicuous by their absence from many (but not all) practitioner and service manager perceptions of health and social care teams.<sup>56, 71</sup> As carers may not share the goals of service users or the goals expressed in care plans, this can be a significant issue for integrated working, in particular for home ESD services. For example, carers who are often one of the most significant people in a service

user's life, may play a significant role in setting expectations for re-enablement. A carer's identity, for example as a spouse or sibling, may lead to a perceived need to care by 'doing for' rather than 'enabling' their significant other, countering the 're-enabling' ethos of IC.<sup>45</sup> The nature of power relations within a person's home are such that a professional cannot simply 'over-rule' a carer's input:

"You can't say 'excuse me, can you leave the room while I do this?' because you are in their home" (Rehabilitation professional)<sup>45, p.1902</sup>

Professionals may find this mismatch in expectations highly frustrating and hard to deal, resulting in carers being labelled as difficult, resistant or obstructive.<sup>56</sup> Providing ways for professionals to address these frustrations and subsequently engage with carers and collaboratively develop care plans, is therefore vital for the delivery of integrated working. This process may differ substantially depending on the concordance or otherwise between the expectations of carers, service users and professionals.

#### Programme theory 3: Summary

Intermediate care can improve outcomes through integrated working between health and social care professionals and carers when:

Health and social care organisations -

- Pro-actively manage change at practice and strategic levels so as to engage with and challenge assumptions about how care delivery should be organised in a locality.
- Implement change management that:

- engages with staff in a way that values their experiential skills and knowledge and supports autonomy in practice.

- builds working relationships between practitioners (both within and between sectors), in particular through improving knowledge of others' roles.

- facilitates professional development of practitioners and support workers by providing the time and space for reflection and discussion about care provision.

- constructively addresses taken-for-granted working practices and power relations and links service re-configurations into a wider strategic vision.

The most effective mix of these components should be informed by knowledge of the local health and social care sector, but may also be enabled or constrained by other organisations within the wider health and social care system.

Formal integration of organisational processes such as joint working • arrangements, pooled budgets and shared communication systems are insufficient without an approach to change management that includes engagement, professional development, and recognition of the impact of power relations in the delivery of care.

Facilitate professionals to collaboratively develop re-enablement care plans with service users and their carers, particularly where there is limited concordance between expectations.

# 3.3 The cost and cost-effectiveness of intermediate care

# 3.3.1 Characteristics of the included studies

Of the 17 UK-based economic evaluations or comparative cost studies included in our review, there was substantial variation in the type of IC delivered - early supported discharge, or admission avoidance or both ESD & AA (Table 17). Twelve of the economic studies were of ESD models of intermediate care, seven of IC for older people (usually following hospitalisation for an acute illness),<sup>98, 99,</sup> <sup>130-135</sup> and five of IC for people following a stroke.<sup>136-140</sup> Four other economic studies were of models of IC which cared for a mixture of ESD and admission avoidance service users. Campbell et al. 2001<sup>61, 100, 141, 142</sup> Only one of the included economic studies, a 1999 study by Jones and others, was of an admission avoidance model of IC.143

There were therefore no UK economic studies of IC exclusively in people with COPD, chronic heart failure or cognitive impairment/dementia (although, the cost-minimisation analysis by Shepperd et al included 32 people with COPD, and whose results were reported separately). <sup>131</sup>

As with effectiveness studies, the results of cost-effectiveness and comparative cost studies will be dependent not only on differences in the specific models of IC evaluated, but also on the service models with which they have been compared. For most of the economic studies, IC was compared with usual hospital acute admission or usual hospital discharge processes, followed by usual social care and rehabilitation services. However, in two of the studies the model of IC was compared with care in day hospitals,<sup>135, 136</sup> three studies compared several different IC schemes with each other, 100, 135, 139 and one study of IC in a residential rehabilitation unit compared this with usual community services to support people in their own homes.<sup>99</sup> Lastly, the 2005 study by Walsh and others compared a within-hospital form of IC – a nurse-led inpatient unit - with usual hospital care, so was not strictly a "community-based alternative to inpatient care".<sup>132</sup> However, since this was related to an RCT of a model of IC which was included in our synthesis of effectiveness studies (i.e. it was still judged to meet our working definition of intermediate care),<sup>109</sup> this economic study was included.

The key study characteristics of the 17 included UK economic studies of intermediate care are shown in Table 18 (p.88). In terms of the types of economic study used, five were cost-utility analyses – that is, they aimed to estimate the incremental cost per additional quality-adjusted life-year (QALY) produced by the IC models of care.<sup>61, 133, 134, 139, 140</sup> All of the remainder except one were comparative cost analyses, primarily estimating the cost of one or more models of IC and comparing this with the cost of the usual alternative provision of health and social care for those service users. Although some were labelled 'cost-minimisation analyses', such study designs are essentially the same as comparative cost studies in terms of the estimation and presentation of results (the only difference being that for cost-minimisation analyses the presumption of equal or similar effectiveness should be more reliably and empirically justified).

Only two of the economic studies reported the incremental costs of IC as a ratio with the incremental unit gains in outcomes other than QALYs. These studies estimated the incremental costs per point score gains in ASCOT score (a measure of social care outcomes),<sup>61</sup> and also the cost per 1% decrease in the combined endpoint of the "rate of deaths or institutionalisations".<sup>139</sup> Although the comparison of different ESD and AA service arrangements in 5 areas by Kaambwa and others and Barton and others, did report cost differences alongside changes in both the Barthel index (functional status) and EQ-5D scores, it did not use these to estimate incremental cost-effectiveness ratios.

Note that although there are 11 economic studies which were *published* since 2000, including five published since 2005, there is often a time-lag of several years between the completion of the empirical effectiveness study and the publication of the related cost study or economic evaluation. In terms of the base years for which the economic analyses were conducted (i.e. for which their unit costs were sourced) only three were after 2005 and only seven after 2000.

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Project 10/1012/07

Study & location	Patient group	No. and source of referrals	Type of IC	Type of IC: detailed	Comparator (s)	Price year	Perspectiv e
Coast et al. 1998 Bristol	Older people	241 hospitalised but medically stable elderly patients	ESD	home-based rehab. care (day and evening) by a team of 2 nurses, 1 physio, 1 OT, 3 support workers	Acute inpatient care	1995-6	1. NHS & Social Services, 2. Patient/family
Trappes-Lomax et al. 2002 (& Ellis et al. 2006) Devon	Older people	206 elderly patients likely to benefit from a short (<6 week) programme of rehabilitation, in 10 community hospitals	ESD (short- stay Residential rehab unit)	A 19-bed residential rehabilitation unit within a residential home with designated staff (OTs, Physios, rehab. Assistants)	Usual NHS or social services community services	1999- 2000	NHS & Social Services
O'Reilly et al. 2006 Bradford	Older people	220 older people needing rehabilitation after an acute illness (mean age 85 years)	ESD	Prompt transfer to a community hospital	Acute hospital (Multidisciplinary care in an elderly care dept. of a DGH)	2001-2	Health and Social Care
O'Reilly et al. 2008 Mid- & North England	Older people	490 medically stable older people needing rehabilitation after an acute illness in 5 DGHs (& excluding those needing stroke unit or coronary care) (mean age 85 years)	ESD	Multidisciplinary team care/rehabilitation in community hospitals	Acute inpatient care (in- hospital rehabilitation)	2001-2	Health and Social Care
Parker et al. 2009 4 trust locations (Wiltshire, North	Older people	89 patients, mean age 75 (20% aged 65 or younger); half with a	ESD (home- based rehabilitation)	Home-based rehabilitation, including at least	Day hospital ESD, full or half-day visits, comprising functional	2006	Societal (NHS, LA and patients and carers)

#### Table 17. Types of intermediate care and other characteristics of the included economic studies

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Project 10/1012/07

Tyneside, Newcastle, Barnsley)		carer		physiotherapy and OT in people's own homes. Especially following a stroke or falls	assessment, Medical/nursing procedures, physical maintenance, social care and respite)		
Shepperd et al. 1998 Northamptonshire	Older people & COPD (& 3 other surgical) over age 60: mean age 77 years (elderly medical) or 72 years (COPD)	535 patients in 5 different disease/surgical procedure groups (incl. 96 elderly medical; 32 COPD) whose hospital consultants and GPs agreed they were suitable for early discharge to HaH care i.e. clinically stable and did not need immediate access to diagnostic or specialist medical care (and home suitable for HaH; carer consented to participate);	ESD	Tailored package of nursing care (24 hr if needed), physio, OT, pathology and S&L therapy	Acute inpatient care	1994-5	Health service (+ patient/family)
Walsh et al. 2005 Southampton	Older people (after acute illness)	238 medical patients	ESD (Nurse- led IC within hospital)	Nurse-led inpatient unit	Acute inpatient care	1998-9	NHS
Young & Forster 1993 Bradford	Stroke	95 patients from acute hospital following a new stroke	ESD	Home-based physiotherapy (2 physiotherapists based in a health centre)	Day hospital	1988-9	NHS & Social Services
McNamee et al. 1998 Newcastle	Stroke	92 people admitted with acute stroke from their own homes, within 72 hours of	ESD	Multidisciplinary team care/rehabilitation involving physio, OT,	Acute inpatient care	1995-6	Health and Personal Social Services

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Project 10/1012/07

		onset and with no comorbidity likely to affect rehabilitation (46 randomised to each arm; median age 73 years)		S&L and social worker plus a home care staff bank; plus GP medical cover & consultant support where required; loan equipment;			
Beech et al. 1999 London	Stroke	331 patients mean age 70 years representing 45% of all stroke admissions during the study period (60% of those who survived to discharge). Randomised when medically stable.	ESD	Early supported discharge following admission for a stroke; comprising eligibility for home- based therapy (a planned programme of care for 3 months, with weekly review meetings - max 1 visit per day from therapists); plus rapid access to aids and adaptations at home	Acute inpatient care - conventional programme of care and therapy on care of the elderly wards	1997	NHS & Social Services (implicit)

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Project 10/1012/07

Patel et al. 2004 London	Stroke	457 patients within 72 hours of stroke onset (Of which 424 were not excluded and had relevant cost and EQ- 5D data)	ESD (Domiciliary care)	Managed in their own homes under the joint care of a stroke physician and GP; investigations as outpatient appointments; therapy by specialist staff; with district nursing; personal care from social services.	<ol> <li>Stroke Unit (in hospital): specialist stroke physician-led; guidelines for stroke management; multidisciplinary staff with specialist experience in stroke; plus "joint assessment, goal setting, treatment and discharge planning"</li> <li>'Stroke team': on general medical wards and under care of general physicians; assessments by roving specialist stroke team that advised on management, investigation and discharge planning; non- specialist nursing and therapy staff.</li> </ol>	1995-6	Societal; including health services, other care agencies costs to informal caregivers
Saka et al. 2009 South London	Stroke	844 people with ischemic stroke from the South London Stroke Register	ESD (after stroke unit care)	Not clearly stated, but is the same as in Beech et al. 1999: home-based therapy (a planned programme of care for 3 months, with	1. Stroke unit without ESD, 2. General Medical ward without ESD	2005-6	Health service and societal

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Campbell et al. 2001	Older people	51 elderly medical and	Both	weekly review meetings - max 1 visit per day from therapists); plus rapid access to aids and adaptations at home Rapid response'	Acute inpatient care	1998	NHS & Social
West London		orthopaedic surgical patients (age >60 years; mean age 83 years for elderly medical; 78 for orthopaedic patients) assessed as needing <=14 days of hospital- at-home care; Admission Avoidance patients referred from hospital A&E dept.; Early Discharge patients referred from care of the elderly and orthopaedic wards	(AA & ESD)	hospital-at-home service (maximum daily service capacity of 18 patients)			Services
Patel et al. 2003 South London	Older people	156 elderly patients in 3 schemes (mean age 79.7 years; between a third and a half following a fall). Point of referral was either hospital wards (i.e. ESD patients) for 68% and 75% of Lambeth and Southwark patients, 21% of Lewisham's patients. Remainder	Both (ESD & AA)	Home-based supported discharge and rapid response teams (led by qualified nurses and staffed mainly by 'rehabilitation support workers', plus physio and OT as necessary), especially to provide rehabilitative support	The other 2 IC schemes	2000- 01	NHS & Social Services

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Project 10/1012/07

			were mostly from A&E departments to avoid acute hospital admission.		for patients discharged from hospital after disabling acute illness, injury or surgery. GP is responsible for medical care; access to advice from geriatricians also available to teams.			
Kaambwa et al 20 (& Barton et al. 2006) 5 localities	800	Older people	2,253 patient episodes (various reasons and referral sources)	Both (ESD 42% or AA 55%)	Wide range of IC services and settings, across and within the 5 localities.	Comparative across five IC services, and ESD vs AA patient groups within them	2004	Health sector
Glendinning et al 2010 5 local authority areas		Older people	1,015 (of which 654 had home care reablement, 361 conventional home care); but cost data for 438 and 259 respectively, most referred from hospital but many just referred fro home care support.	Both (ESD & AA)	Home care re- ablement organised by adult social care services to regain confidence and relearn self-care skills, plus timely access to relevant equipment	Conventional home care (from adult social services)	2009- 10	1. NHS & Social Services 2. Social Care only
Jones et al. 1999 Leicester		Older people (after acute illness)	199 consecutive patients assessed and referred by GPs as being suitable for hospital at home (median age 84 years)	АА (НаН)	Admission avoidance hopsital at home (not described in further detail in either paper)	Acute inpatient care	1996	NHS only (implied)
Abbrevia IC ESD AA HaH	tions u Inter Early Admi Hosp	used in the tal mediate Care Supported Di ssion Avoidan ital at Home	ble: ischarge ice					

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- Speech and Language (therapy or therapist) Chronic Obstructive Pulmonary Disease S&L
- COPD
- Quality-Adjusted Life-Year QALY
- LĂ
- Local Authority Difference not statistically significant NS

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### 3.3.2 Quality of economic studies

Overall, the quality of most of the studies was good, especially for the critical criteria of (a) separately estimating the quantity of different types of resources used and the unit cost/price of those resources (b) including a comprehensive range of the types of both health and social care services or care professionals that might be used (Table 18). The quality of the economic studies was more variable, however, in relation to whether the 'case mix' of service users was either demonstrated to be equivalent between the IC model(s) and chosen comparator(s), or (where not equivalent) whether appropriate statistical methods of adjusting for these differences were used. There were also more subtle variations in whether service use data was collected at the level of individual service users, or involved allocating service-level costs across service users by some other method.

The main limitations of some of the economic studies arise from the poor study design and small sample size of the effectiveness research on which they are based (Table 18). Although twelve of the studies were based on RCTs, some had very small sample sizes (n < 100, and would almost certainly be underpowered to detect relevant cost differences – even if such economically determined sample size calculations had been made).<sup>135, 137</sup>

Finally, two of the included economic studies should probably be highlighted as "fatally uninformative" in relation to their validity and relevance to intermediate care in the current UK health and social care context. The comparison of the cost of day hospital and home physiotherapy for stroke patients in Bradford by Young and Forster is based on very old cost and randomised trial data (from the late 1980s), and also the home-based service was physiotherapy only (i.e. only based on physical functioning goals, and not based on care planned or provided by multidisciplinary teams of health and social care professionals).<sup>136</sup> It was therefore borderline in terms of meeting our working definition of intermediate care, and probably would not meet the definition in our final conceptual framework. The modelling-based cost analysis by Campbell and others is also of questionable quality and relevance because it was not operating anywhere near full service capacity during the evaluation, and the small (n=21) comparator group were self-selected (those who were assessed as suitable for 'hospital at home' but did not consent to hospital at home).<sup>141</sup> Furthermore, the comparator group contained one very expensive 'outlier' patient, and the group who did not consent to hospital-at-home were in fact more likely to reside in the community for the duration of the three-month follow-up period (67% vs 50% of those allocated to hospital at home). Rather than the usual rationale to extrapolate the empirical study's results, the modelling in the Campbell study was to explore uncertainties and correct limitations in the primary research data; so the results should similarly be viewed as mainly exploratory.

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	Table 18. Study	y designs of the	economic studies
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Study & IC type	Analysis type	Effectiveness study design	Types of costs and savings estimated	Results calculated	Time horizon & discounting
Coast et al. 1998	Cost-	RCT	Acute hospital (initial stay &	Cost differences, total and	3 months post-
ESD for Older people	minimisation		readmissions); elective surgery hospital	by type of service use.	randomisation
			stays; Hospital at home team (time of		(no
			physios, OTs, support workers, nurses);		discounting)
			Outpatient visits; GP; Practice nurse;		
			community services; day care; social		
			services; meals on wheels.		
Trappes-Lomax et al.	Cost-	non-RCT	Hospital stay (days); Rehabilitation unit	Cost differences (incl. NHS	12 months (no
2002 (& Ellis et al.	minimisation		stay (days); Hospital re-admissions;	& Social services	discounting)
2006)			Visits/contacts with: A&E dept., GP, GP	separately)	
ESD for Older people			nurse, OT, Physiotherapist, community		
			nurse contacts, continence nurse, S&L		
			therapist, consultant; residential care,		
			nursing home care, day care, respite		
			care, social services staff home visits,		
			personal care assistant; aids and		
			adaptations, community meals.		

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Project 10/1012/07

Study & IC type	Analysis type	Effectiveness study design	Types of costs and savings estimated	Results calculated	Time horizon & discounting
O'Reilly et al. 2006	Cost-utility	RCT	DGH hospital stay (days); Community	QALYs; resource use; cost	6 months for
ESD for Older people			hospital stay (days); Hospital re-	per patient; (No ICER -	QALYs and
			admissions (non-elective, days);	dominance)	costs (no
			Visits/contacts with: A&E dept., GP,		discounting)
			nurse, outpatient consultant, therapist,		
			domestic services, non-residenttial		
			respite care, social worker, meals on		
			wheels; use of equipment &		
			wheelchairs; journeys by ambulance		
O'Reilly et al. 2008	Cost-utility	RCT	DGH hospital stay (days); Community	QALYs; resource use; cost	6 months for
ESD for Older people			hospital stay (days); Hospital re-	per patient; ICER (£ per	QALYs and
			admissions (non-elective, days);	QALY)	costs (no
			Visits/contacts with: A&E dept., GP,		discounting)
			nurse, outpatient consultant, therapist,		
			domestic services, non-residenttial		
			respite care, social worker, meals on		
			wheels; use of equipment &		
			wheelchairs; journeys by ambulance		
Parker et al. 2009	Cost-	RCT	Hospital stays; outpatient visits;	Mean and median costs	13 months
ESD for Older people	minimisation		primary care visits; home adaptations;		from
			medication; private health care costs;		randomisation
			social care and community care (nurse,		(no
			physio, OT, S&L, clinical support		discounting)
			worker, social worker, LA home care		
			worker); residential/home care		

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Project 10/1012/07

Study & IC type	Analysis type	Effectiveness study design	Types of costs and savings estimated	Results calculated	Time horizon & discounting
Shepperd et al. 1998 ESD for Older people & COPD	Cost- minimisation	RCT	Initial and re-admission hospital stay (days), HaH costs (all staff an non-staff running costs), GP (home or surgery visists).	Cost total (and medians) and by type of service use (including or excluding refusers of the allocated service).	3 months from admission (no discounting)
Walsh et al. 2005 ESD for Older people	Cost- minimisation	RCT	Hospital stay (days); Nurse-led unit stay (days); Community hospital; Hospital re-admissions (non-elective, days); Visits/contacts with: A&E dept., GP, GP nurse, outpatient consultant, outpatient physiotherapy, community nurse contacts, primary care phone contacts, residential care, nursing home care.	Cost difference	6 months for QALYs and costs (no discounting)
Young & Forster 1993 ESD for Stroke	Cost- minimisation	RCT	Community hospital (per visit); Home physiotherapy (per home visit); other health authority, district nursing, home care, and other LA services.	Median costs and "Median of differences" (?)	8 weeks of trial
McNamee et al. 1998 ESD for Stroke	Cost- minimisation	RCT	DGH hospital stay (days); rehabilitation (per staff hour: physio; OT; S&L district nursing; social worker; home care); service coordinator salary; other services received at home (per visit to: day hospital; outpatient; GP); (also, an apportionment of service set-up costs)		6 months (no discounting)

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Project 10/1012/07

Study & IC type	Analysis type	Effectiveness study design	Types of costs and savings estimated	Results calculated	Time horizon & discounting
Beech et al. 1999 ESD for Stroke	Cost- minimisation	RCT	Acute inpatient services (days, tests & procedures); Rehab. Services (physio; OT; S&L); Clinical non-inpatient	Cost differences, total and by type of service use.	12 months post- randomisation
			surgery visits; GP home visits; Other community-based services (Meals on Wheels, home help; district nurse; day hospital; lunch club); plus Staff		discounting)
Datal at al. 2004	Cost utility 9	DCT	overhead costs (at 69% of staff costs)	Cost per 10/ in	12 months
Patel et al. 2004 ESD for Stroke	Cost-utility & cost- effectiveness	RCT	During immediate rehab.: hospital admission; stroke team coordinator; stroke team physician; physio; OT; S&L. After immediate rehab. : Hospital admissions; outpatient visits; A&E day hospital; GP; physio; OT; social worker, various other therapists/professionals; district nurse; home help; social services/agency care (personal & domestic); meals on wheels; etc.	Cost per 1% in deaths/institutionalisations avoided; also cost per QALY	12 months post- randomisation (no discounting)
Saka et al. 2009 ESD for Stroke	Cost-utility (model-based)	Routine service data	"Direct costs": inpatient stays; specialist visits/time; physicians; physios; OTs; S&L. "indirect costs": income losses due to mortality or morbidity (assuming those aged over 65 years are retired)	Cost per QALY	10 years (costs and QALYs discounted at 3.5% per year)

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Project 10/1012/07

Study & IC type	Analysis type	Effectiveness study design	Types of costs and savings estimated	Results calculated	Time horizon & discounting
Campbell et al. 2001	Cost modelling	non-RCT	Hospital stay (days); Hospital-at-home	Cost differences, by phase	3 months after
Both (AA & ESD) for	(discrete event		service (nursing time & consultant	of care (hospital/HaH or 3-	'treatment
Older people	simulation)		cover); Hospital re-admissions (non-	month follow-up)	phase' (no
			elective, days); Community Trust or		discounting)
			social services visits/contacts with:		
			A&E dept., GP, GP nurse, outpatient		
			consultant, physiotherapy, chiropody,		
			S&L, meals on wheels.		
Patel et al. 2003	Cost-	RCT	Health and social care use in month	Cost differences between	IC episode
Both (ESD & AA) for	effectiveness		before and during IC episode. In IC	the 3 IC schemes & cost	length (mean
Older people	and cost		episode: visits by team leader/nurse;	per point improvement on	19 to 33 days
	analysis (plus		rehab. Support worker; physio; OT;	the Barthel Index	across the 3
	some		social worker. Also, District nurse; CPN;		schemes) plus
	exploration of		social services/agency care (personal &		1 month post-
	links between		domestic); meals on wheels; GP;		discharge
	costs and		iutpatient, inpatient, A&E.		(based on care
	outcomes)				plan)
Kaambwa et al 2008	Cost analyses	Routine service		Factors determining	Length of the
(& Barton et al. 2006)	(comparative	data (in 5		changes in EQ-5D, Barthel	IC episode
Both (ESD & AA) for	case study &	localities)		index & costs	
Older people	regression				
	analysis)				

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Project 10/1012/07

Study & IC type	Analysis type	Effectiveness study design	Types of costs and savings estimated	Results calculated	Time horizon & discounting
Glendinning et al. 2010 Both (ESD & AA) for Older people	Cost-utility and cost- effectiveness analysis	Controlled before and after study	Health: Hospital stay (days), Hospital outpatient, visits/contacts with: A&E dept., GP, Nurse, Therapist, chiropody. Social care: Re-ablement services, in- house home care, independent home care, day care, meals on wheels	Cost differences (by Health and Social Care, separately and combined, and with and without imputation of missing data); also incremental cost per QALY and incremental social care cost per ASCOT score change (expressed as "probability cost-effective" at different WTP)	12 months (no discounting)
Jones et al. 1999 AA for Older people (after acute illness)	Cost- minimisation	RCT	Hospital stays (days); community hospital (days); nursing/residential care (days); HaH staff (no. of contacts: NHS grades only specified; Physio; OT).	Cost differences, total and by type of service use (including or excluding refusers of the allocated service).	3 months from admission (no discounting)

Abbreviations used in the table:

- IC Intermediate Care
- ESD Early Supported Discharge
- AA Admission Avoidance
- HaH Hospital at Home
- S&L Speech and Language (therapy or therapist)
- CPN Community Psychiatric Nurse
- A&E Accident and Emergency
- COPD Chronic Obstructive Pulmonary Disease
- QALY Quality-Adjusted Life-Year
- LA Local Authority
- WTP Willingness-To-Pay

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Project 10/1012/07

### 3.3.3 Cost results

Table 19 below shows the base case cost and cost-effectiveness estimates of intermediate care versus their comparators for the included economic studies. In most of the studies, intermediate care was either found to be statistically significantly cheaper than the comparator service arrangements, or similar in cost (i.e. not statistically significant difference in total costs). However, explaining the variation in these results across the studies or groups of studies is more difficult.

There is a wide range of factors that might explain these variations in costs and cost differences, related both to the study design and the specific nature of the models of care compared (see Table 17 and Table 18). In order to better identify similar studies, and also identify "outlier" economic studies which were entirely different in important ways to any of the other studies, some of the main characteristics were tabulated and colour coded together in the Excel data extraction forms. This was done after inflating the published cost results to 2010  $\pounds$ s (using the inflation indices published in the PSSRU's Unit Costs of Health and Social Care reports).

Amongst the six economic studies of ESD for older people, ESD was only conclusively more costly in one study, and for two of the user subgroups in another (those with COPD or recovering from a hysterectomy). For service users with COPD within the RCT-based study by Shepperd and others median health care costs for 3 months care were £2,380 vs £1,248, or £3,958 vs £2,075 when inflated to 2010 £s),<sup>131</sup> and for service users in Walsh and others' evaluation of nurse-led intermediate care within a hospital (£3,968 or 35% more costly per patient than usual acute inpatient care, over 6 months).<sup>132</sup> However, for the other studies that estimated a difference in the mean health and social care costs of community-based ESD versus usual acute hospital or day hospital care, the cost differences varied from non-significantly higher costs of £720 (9% higher than non-IC; £930 in 2010 £s) over 6 months, to statistically significant cost savings of £1,239 (over 3 months) or £1,977 (over 13 months, compared with day hospital care; both after inflation to 2010 £s).<sup>130, 135</sup> The study of residential ESD for older people in Devon plus the two studies by O'Reilly and others all reported relatively small and statistically non-significant differences between IC and hospital discharge to usual health and social care services  $(+\pounds 45, -\pounds 152 \text{ and})$ +£930 in 2010 £s per patient).

The results for ESD for people in hospital following a stroke are more consistent and positive. Apart from the model-based cost-utility analysis by Saka and others,<sup>140</sup> the other four studies which evaluated ESD after stroke estimated statistically significant savings of between £265 and £4,610 per patient (between £676 and £7,458 in 2010 £s).<sup>136-139</sup> Note that the analysis base years for these four studies were from 1989 to 1997, and the effectiveness trials on which they

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The exception to these positive cost findings about home-based ESD for stroke patients is the 10-year duration Markov modelling study by Saka and others.<sup>140</sup> This estimated that home-based ESD after stroke unit care cost either £1,400 or £6,400 more (than care in a stroke unit without ESD or on a medical hospital ward without ESD, respectively), and these amounts being only 3% and 16% of the 10-year estimated comparator costs. The direction of this cost finding is especially anomalous because this and the Beech economic study are both purportedly based on the trial of ESD by Rudd and others.<sup>145</sup> However, the Saka study used baseline service use and health outcomes from the South London Stroke Register. The other major difference in this study was the societal perspective adopted, which meant (unlike all the other studies included) income losses due to mortality or morbidity were included in the analysis. Ultimately however, when the estimated greater QALY benefits of ESD in this study are taken into account, the stroke unit followed by home-based ESD was judged as cost-effective (produced QALYs at a cost of less than £30,000 per QALY) with a likelihood of 97.1% and 96.4% (depending on the comparator service; see next section).<sup>140</sup>

For evaluations of IC which combined both ESD and AA goals and referrals, there is no consistent pattern of cost differences. Only the study by Glendinning and others compared their re-ablement IC and/or conventional home care (sometimes after acute hospital care), while the studies by Patel and others and Kaambwa and others made cost comparisons between IC services in different localities.<sup>100, 142</sup> This study showed no significant cost difference between re-ablement IC and conventional home care, even after adjusting for baseline differences (at  $\alpha$ <0.05 significance level).

In the case of the Patel evaluation in three boroughs of South London, it mainly serves to illustrate that intermediate care services that share the same goals and many operational features can have quite different per patient costs (from  $\pounds 2,358$  to  $\pounds 3,603$  for the episode of IC care, in 2000-01  $\pounds$ s). These cost differences were particularly attributed to differences in case-mix and scale of service and staff activity patterns, with the service with smaller user numbers, and relatively more admission avoidance users having the highest cost. Regression analyses showed that the user's length of stay on the scheme was the main factor that determined cost variations between patients, while functional ability, diagnosis and demographic factors were not significant factors.

The more recent economic studies by Glendinning and others (2010) and by Barton and others (2006) also used regression analysis to try and identify which service or patient characteristics were associated with higher intermediate care

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costs.<sup>50, 61</sup> In approximate order of importance, the analysis of data from IC services in 5 different localities in the national evaluation by Barton and others showed that residential versus home-based services, source of referral, and the likely alternative to IC (hospital admission or not) were the really important determinants of patient-level health and social care costs while demographic factors explained very little of the variation in costs (data from n = 2,253 IC episodes). Of the demographic factors, the only significant factor was whether the service users lived alone, and this only increased the per patient costs by 7% on average. In contrast, those using residential IC services were associated with costs three times as high as non-residential IC service-users, source of referral (primary care vs hospital vs social worker vs other) accounted for cost variations of up to 27%, and (unsurprisingly) patients who were judged as otherwise needing a hospital stay were still 14% more costly as IC patients than those who would probably not have needed a hospital inpatient stay. Interestingly, after adjusting for these various demographic, service setting/design, referral source and in baseline severity indicators, the duration of IC provision was only associated with 2% higher costs per day of IC care.

The multivariable analysis of the cost of home care re-ablement and comparator services in five localities by Glendinning and others separately examined the predictors of total service and social care per patient costs (using data from n=697 users). As with the Patel and Barton analyses, all demographic or household characteristics were not significantly associated with per patient total costs, except that again living alone was associated with higher costs (estimated additional costs of £1,337 per patient). People who at baseline could perform fewer activities of daily living also cost more (£479 more per point change in ADL score) and also those referred from hospital (that is, ESD patients, costing £1,344 more than admission avoidance referrals). Consistent with the direct comparison of re-ablement and comparator patients, there was also no significant marginal effect on total costs of re-ablement. For predictors of social care expenditure, the pattern of significant and non-significant predictors was similar (living alone and baseline ADL score having statistically significant marginal effects), but this time without a significant association with referral from hospital (i.e. ESD vs AA users) and again no association with receiving home care re-ablement. In the same study, a multi-variable analysis of length of hospital stay adjusting for various demographic, household and illness severity factors, found that although hospital stays were on average 2.1 days longer for re-ablement patients, this difference was not statistically significant (95% confidence interval -1.0 to +5.2).

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Study & IC type	Mean cost £ with Intermedi ate Care (SD)	Mean cost £ with the comparato r(s) (SD)	Cost difference, IC less comparator( 95% CI)	Incremental Effectiveness	Incremental Cost- effectiveness
Coast et al. 1998 ESD for Older people	2,526	3,292	-766 (No CI or p- value calculated)	N/A	N/A
Trappes- Lomax et al. 2002 (& Ellis et al. 2006) ESD for Older people	8542 (SD NR)	8510 (SD NR)	+32 (CI NR)	N/A	N/A
O'Reilly et al. 2006 ESD for Older people	7,233 (5,031)	7,351 (6,229)	-118 (-1,639 to 1,403)	0.06 QALYs (- 0.05 to 0.18) [All patients]; 0.02 QALYs (-0.12 to 0.15) [Surviving patients] at six months	N/A: Community Hospital care dominated DGH dept for care of elderly care
O'Reilly et al. 2008 ESD for Older people	8,946 (6,514)	8,226 (7,453)	+720 (-523 to 1,964)	0.048 QALYs (- 0.028 to 0.123) at six months [All patients]	£16,324 per QALY [bootstrapped]; £15,000 per QALY [deterministic]
Parker et al. 2009 ESD for Older people	Total public 6,113; Total 19,423	Total public 7,902; Total 24,088	Total public - 1,789; Total - 4,665	N/A	N/A

#### Table 19. Base case cost and cost-effectiveness results (costs and ratios in £ in original price year)

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Study & IC type	Mean cost £ with Intermedi ate Care (SD)	Mean cost £ with the comparato r(s) (SD)	Cost difference, IC less comparator( 95% CI)	Incremental Effectiveness	Incremental Cost- effectiveness
Shepper d et al. 1998 ESD for Older people & COPD	median (elderly medical) = 1,705 (IQR = 914 to 3,122); median (COPD) = 2,380 (IQR = 1,458 to 2,759)	median (elderly medical) = 1,389 (IQR = 645 to 2,095); median (COPD) = 1,248 (IQR = 773 to 1,619)	N/A (because = difference between medians)	N/A	N/A
Walsh et al. 2005 ESD for Older people	10,529 (SD NR); = 7,892 pre- discharge + 1,444 post- discharge	7,819 (SD NR); = 4,810 pre-discharge + 1,879 post- discharge re- admission + 1,130 other post- discharge	+2,710 (518 to 4,903); = +3,082 pre-discharge & -435 post- discharge re- admission + 1,193 other post-discharge	N/A	N/A
Young & Forster 1993 ESD for Stroke	median 385 (IQR = 240 to 510)	median 620 (IQR = 550 to 730)	"Median of differences"(?) -265	N/A	N/A
McName e et al. 1998 ESD for Stroke	7,155	7,480	-325	N/A	N/A
Beech et al. 1999 ESD for Stroke	6,800	7,432	-632 (No Cl or p- value reported)	N/A	N/A

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Study & IC type	Mean cost £ with Intermedi ate Care (SD)	Mean cost £ with the comparato r(s) (SD)	Cost difference, IC less comparator( 95% CI)	Incremental Effectiveness	Incremental Cost- effectiveness
Patel et al. 2004 ESD for Stroke	6,840 (9,353)	Stroke unit: 11,450 (9,745); stroke team: 9,527 (8,664)	vs Stroke unit: - 4,610 (95%CI - 1,985 to -7,235); vs stroke team: - 2,687 (95%CI - 57 to -5,316)	% who avoided death and institutionalisati on, vs Stroke unit: -9%; vs stroke team: +9; QALYs, vs Stroke unit: -0.076 (95% CI -0.018 to 0.170); vs stroke team: +0.005 (95% CI -0.099 to 0.089)	For domiciliary care vs stroke unit: £496 savings yielded per additional 1% deaths/institutiona lisations; £89,132 yielded per QALY lost.
Saka et al. 2009 ESD for Stroke	46,900	SU only: 45,500; General Medical ward only: 40,500	vs SU only: +1,400; vs General Medical ward only: +6,400	vs SU only: +0.079 QALYs; vs General Medical ward only: +0.55 QALYs	vs SU only: £17,721 per QALY; vs General Medical ward only: £11,615 per QALY
Campbel l et al. 2001 Both (AA & ESD) for Older people	from model = 2,864 (548); or 3,088 from empirical data.	from model = 4,748 (2,434); or 4573 from epirical data	-1,884 (p<0.001); or - 1,486 from empirical data (or -573 if exclude 1 outlier patient*)	N/A	N/A
Patel et al. 2003 Both (ESD & AA) for Older people	Lambeth: £2,406 per patient	Southwark: £2,358 per patient; Lewisham: £3,603 per patient	Lambeth vs Southwark: +48; Lewisham vs Lambeth: +1,197	Lambeth vs Southwark: 0.66 Barthel score improvement; Lewisham vs Lambeth: 3.16 Barthel score improvement	Lambeth vs Southwark: 73 per point improvement Lewisham vs Lambeth:
Kaambw a et al 2008 (& Barton et al. 2006) Both (ESD & AA) for Older people	Site A = £1,512; B = £926; C = £738; D = £1,230; E = £1,357	N/A	Min. = £127 (D vs E); Max. = £774 (A vs C)	NR (but mean increase from admission to discharge, in EQ- 5D = +0.16 (SD=0.32); in Barthel = +1.68 (SD=2.89)	N/A (analysis of impact on costs of: appropriateness of referral, by AA and ESD) Or analysis of impact on change in EQ-5D from admission to IC to discharge from IC.

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Study & IC type	Mean cost £ with Intermedi ate Care (SD)	Mean cost £ with the comparato r(s) (SD)	Cost difference, IC less comparator( 95% CI)	Incremental Effectiveness	Incremental Cost- effectiveness
Glendinn ing et al. 2010 Both (ESD & AA) for Older people	Unadjusted: 7,890 (5,380); With social care costs adjusted for baseline differences: 7,860	Unadjusted: 7,560 (6,090); With social care costs adjusted for baseline differences: 7,360	+500 (NS at α<0.05)	EQ-5D: +0.1; ASCOT +0.03	Re-ablement (IC) reported as 99% and 100% likely to be cost-effective (using all costs and SC only costs respectively) based on EQ-5D differences. Also assessed as likley to be cost-effective per ASCOT gained (but not clear what appropriate WTP would be)
Jones et al. 1999 AA for Older people (after acute illness)	3,671 (95% CI 3,140 to 4,231)	3,877 (95% Cl 3,225 to 4,560)	-205 (95% Cl - 1,025 to +635)	N/A	N/A

Abbreviations used in the table:

IC Intermediate Care

ESD Early Supported Discharge

AA Admission Avoidance

SU Stroke Unit

SD Standard Deviation N/A Not applicable

NR Not reported

NS Not statistically significant (at a given level of  $\alpha$ )

CI Confidence Interval

EQ-5D EQ-5D or EuroQol generic quality of life instrument (and its 'index' or social preference weight)

# 3.3.4 Cost-effectiveness results

Cost-effectiveness analyses were conducted in five of the included economic studies,<sup>61, 134, 139, 140, 142</sup> of which four involved the estimation of incremental costs per Quality-Adjusted Life-Year (QALY) (Table 19).<sup>61, 134, 139, 140, 142</sup> Unlike for QALYs, in two of these, the outcomes that were compared with increases in costs – the ASCOT score,<sup>61</sup> and the combined endpoint of deaths/institutionalisations avoided<sup>139</sup> – have no widely accepted monetary value or maximum 'willingness-to-pay', so it is almost impossible to judge whether any particular cost-effectiveness ratio would represent good value for money from a health or health

and social care perspective. For example, in Patel and others' 2004 study, every 1% of deaths or institutionalisations avoided by stroke unit versus domiciliary care, cost an additional £496.<sup>139</sup> There is no way of judging this result as cost-effective or not. Likewise, incremental costs per Barthel score point improvement are currently similarly uninterpretable.<sup>142</sup>

The different cost-effectiveness studies which used QALYs as one of their main outcomes produced point estimates of the incremental cost per QALY of £16,324 (for community hospital-based ESD for older people versus acute inpatient care)<sup>134</sup> £17,721 and £11,616 (for home-based ESD for stroke versus hospital stroke unit only or hospital general medical ward only, respectively),<sup>140</sup> but also £89,132 savings yielded per QALY lost (for home-based ESD for stroke compared with hospital stroke unit care).<sup>139</sup> The study by Glendinning and others did not report a point estimate of their cost-effectiveness ratio, but instead used their probabilistic sensitivity analysis to conclude that re-ablement would be judged as cost-effective with a probability of 99% to 100% (using the widely used willingness to pay threshold of £30,000 per QALY).<sup>61</sup>

Therefore, with the exception of the Patel 2004 study the other studies which estimated both additional costs and improved OALY outcomes for IC, found the ratio of extra costs to QALYs gained to be within the range that would normally be regarded as good value for money by NHS policy makers (specifically the National Institute for Health and Clinical Excellence).<sup>148</sup> Those evaluations which quantified the uncertainty around their base case incremental cost per QALY estimates concluded that they had either a very high likelihood of being costeffective,<sup>61</sup> or would be judged as cost-effective with a probability of only about 50%.<sup>134</sup> Note that these quality-of-life valuations within these QALYs have been derived from a measure of the *health-related* guality-of-life (the EQ-5D questionnaire), which may therefore not be sensitive to some of the wider rehabilitative, functional and social intended outcomes of some forms of intermediate care.<sup>149</sup> Potentially better (or worse) quality-of-life outcomes for carers will also have been missed by these analyses, even though spouses/carers of sick older people can experience increases in domestic chores and decreases in leisure activities.<sup>136</sup>

# 3.3.5 Economic evidence: summary

The balance of evidence from 17 economic studies from the UK is that the combined health and social care cost of intermediate care is usually either quite similar or lower than the main alternatives. Nevertheless, a few studies, including studies of services in more than one area or patient group, show that the cost of even the 'same model' of intermediate care can vary considerably in different localities, and that intermediate care can sometimes be more costly than the alternatives.

In terms of service-level factors, there is evidence to suggest that the total health and social care costs of care will be increased when:

• IC services have more referrals from hospital (ESD service users) than from homes or residential homes (AA);

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- IC services are residential (i.e. in units with beds) or have a high proportion of users who are not cared for in their own homes;
- IC services are operating considerably under full capacity (thus are probably 'over-staffed' and with a higher proportion of fixed/overhead to variable costs).

In terms of the characteristics of individual patients, there is evidence to suggest that the total health and social care costs of intermediate care will be increased when:

- Their level of assessed need for treatment or care was high (reflected variously in the included economic studies as initial functional ability (ADL), or whether hospital care would have otherwise been required);
- Referred service users ordinarily live alone.

Several studies also noted a strong association between the cost of intermediate care patients and the duration of the IC episode. While at one level longer IC episodes would inevitably be associated with more visits by carers and assessments, the longer episodes might be a further indicator of medical or social care need, or legitimately reflect limitations in the physical environment or social networks of a users' home situation. Also, the true importance of the length of the IC episode in driving costs is difficult to judge because many of the economic studies used such length of stay data to calculate the total IC costs (so the association might mainly be an artefact of the costing methods used).

Although higher levels of assessed need were associated with higher overall costs of care with intermediate care, some studies also identified that these users had the greatest capacity to benefit from intermediate care, and therefore greater cost-effectiveness.

# 3.4 Discussion and Conclusions

This review has presented a systematic re-appraisal of the concept of intermediate care, with a particular focus on those features (or 'programme theories') which are believed to critically determine how and why intermediate care produces better outcomes for service users. This re-appraisal was mainly based on published sources, both research and non-research, but also involved the suggestions and corroboration of a Project Reference Group of those involved in commissioning or providing intermediate care services in the South West of England.

We have summarised this conceptual framework as both a diagram and a table of three main programme theories which were ultimately tested in relation to evidence about the effectiveness and implementation of intermediate care in five service user groups. At a higher level of detail, there were also nine candidate programme theories – that is, key assertions about how intermediate care is thought to achieve the best health and social outcomes for service users. In the following sections we summarise our answers to the five review questions. We provide a combined response to review questions three and four (about 'contexts', and 'circumstances') because our final expression of the programme theories of IC, was not as well specified in terms of mechanisms, contexts and 'context-mechanism-outcome configurations' as we had anticipated.

# 1. What are the community-based alternatives to acute inpatient care which are specifically designed to reduce the need for acute inpatient care, and what are their main aims (intended outcomes)?

Various models of intermediate care exist and they have evolved over the last two decades to address a more comprehensive and holistic range of medical, health, functional, social care and social needs. Also, while the initial impetus and funding for such service arrangements was to create community-based alternatives to acute inpatient care, it is clear that they increasingly also cater for the unmet health and social care needs of people who may not have otherwise needed inpatient hospital care.

In the UK context at the present time, although models of intermediate care have a variety of service labels, they can be defined by the following main features:

- Being either admission avoidance (AA) or early supported discharge, or both, for a variety of patient groups. However, the evaluated IC services suggest that in the UK intermediate care is increasingly both less condition specific – to care for older people or others with complex conditions – and more likely to offer a combined AA and ESD service.
- Can support people in their own homes or be residential (bed-based e.g. in community hospitals)
- Remain short-term (usually less than six weeks) arrangements to enable transition between other more established or permanent care arrangements
- Have a focus on re-enablement and rehabilitation, but which may aim to achieve either improvement, maintenance or managed decline in functioning, health and wellbeing
- Aim to ensure continuity and coordination across health, social care and other services

# 2. What are the mechanisms by which community-based alternatives to acute inpatient care (e.g. hospital at home, virtual wards, etc.) are believed to result in their intended outcomes?

Our review identified nine candidate programme theories from the literature about intermediate care, and these were refined and corroborated with input from our Project Reference Group. Although only three of these were chosen to be tested and refined using published research, including comparative effectiveness studies, we think the nine programme theories themselves constitute a comprehensive answer to review Question 2. In approximate order of explanatory importance to our PRG, intermediate care is believed to produce the best health and social outcomes for service-users because:

- the place of care (e.g. home, day hospital, community hospital), and timing of transition to it, is decided in consultation with the service-user based on the objectives of care and the location that is most likely to enable service-users to reach these objectives
- professionals and carers foster the self-care skills of service-users and shape the social and physical environment to `re-enable' service-users
- professionals work in an integrated fashion with each other and carers
- there is sufficient flexibility in the service to respond to health and social care needs at short notice
- there is sufficient capacity and range in mainstream services for appropriate referral to and from 'intermediate care', and the interface between these services is well-developed
- service-users negotiate their care planning needs with health and social care professionals OR, if not able (e.g. because of cognitive impairment), to contribute to their care planning as far as able, with carers and/or health and social care professionals acting on their behalf
- working relationships between team members are collaborative and they have mutual respect for one another
- a holistic (bio-psycho-social) approach to health is adopted, as defined by the service-user in collaboration with their significant others and health and social care professionals
- service-users are actively involved in the design of `intermediate care'type services.

# **3. What are the important contexts which determine whether the different mechanisms produce intended outcomes?** and,

# 4. In what circumstances (i.e. with which combinations of mechanisms and contexts) are such schemes likely to be effective and cost-effective if implemented in the NHS?

The stage of our review which 'tested' and refined the programme theories was a narrative synthesis of qualitative and descriptive data, including a selection of comparative effectiveness studies. That is, the following statements are not based on revealed associations, in a quantitative sense, between on the one hand the statistical significance and magnitude of effectiveness results in groups

of comparative studies, and on the other the judged presence, absence or strength of presence of the main programme theories. Our evidence synthesis showed that intermediate care can improve outcomes through collaborative decision-making with service users about objectives and place of care when:

- Health and social care organisations facilitate professionals to implement collaborative decision-making with service users.
- Health and social care organisations are able to co-ordinate the delivery of agreed care in a timely fashion.
- Health and social care *professionals* have detailed knowledge of the characteristics of local intermediate care provision and are able to combine this knowledge with the needs and preferences of service users.
- Health and social care professionals establish the *meaning* which different care environments have for service users and explore the implications these may have for decisions about the place of care that best allows functional, psychological, and social continuity to be attained.
- Health and social care professionals engage with service users in planning longer-term goals that extend beyond the timeframe of intermediate care.
- Health and social care professionals acknowledge and engage with service users' primary social and care networks.
- Health and social care professionals develop a trusting relationship with service users in order to support continuity in their lives.
- Service users have confidence in the standard of intermediate care services they will receive, and believe that their input will be listened to and acted upon. This applies more to people who are recovering from a discrete acute medical event such as stroke, rather than the complex acute-on-chronic co-morbidities of old age. (This is because whilst collaborative decision-making with older people may be important for attaining positive psychological and social outcomes, it does not appear to be so important for attaining positive functional outcomes.)

Intermediate care can improve outcomes through integrated working between health and social care professionals and carers, when:

health and social care organisations pro-actively manage change at practice and strategic levels, so as to engage with and challenge assumptions about how care delivery should be organised in a locality, and when;

health and social care organisations implement change management that:

- engages with staff in a way that values their experiential skills and knowledge and supports autonomy in practice.
- builds working relationships between practitioners (both within and between sectors), in particular through improving knowledge of others' roles.

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- facilitates professional development of practitioners and support workers by providing the time and space for reflection and discussion about care provision.
- constructively addresses taken-for-granted working practices and power relations and links service re-configurations into a wider strategic vision.

The most effective mix of these change management components should be informed by knowledge of the local health and social care sector, but may also be enabled or constrained by other organisations within the wider health and social care system. For example:

- Formal integration of organisational processes such as joint working arrangements, pooled budgets and shared communication systems are insufficient without an approach to change management that includes engagement, professional development, and recognition of the impact of power relations in the delivery of care.
- Facilitating professionals to collaboratively develop re-enablement care plans with service users and their carers, is particularly important where there is limited existing concordance between care expectations.

In terms of the cost of intermediate care service models, from a health and social care perspective, there is evidence to suggest that the total health and social care costs of care will be increased when:

- IC services have more referrals from hospital (ESD service users) than from homes or residential homes (AA);
- IC services are residential (i.e. in units with beds) or have a high proportion of users who are not cared for their own homes;
- IC services are operating considerably under full capacity (thus are probably 'over-staffed' and with a higher proportion of fixed/overhead to variable costs).

In terms of the characteristics of individual patients, there is evidence to suggest that the total health and social care costs of intermediate care will be increased when:

- Their level of assessed need for treatment or care was high (reflected variously in the included economic studies as initial functional ability (ADL), or whether hospital care would have otherwise been required);
- Referred service users ordinarily live alone.

Several studies also noted a strong association between the cost of intermediate care patients and the duration of the IC episode, but this may partly be due to the way such costs were estimated within studies (i.e. based on length of stay). Although higher levels of assessed need were associated with higher overall costs of care with intermediate care, some studies also identified that these users had the greatest capacity to benefit from intermediate care, and therefore greater cost-effectiveness.

# 5. In what circumstances (i.e. with which combinations of mechanisms and contexts) are such schemes likely to generate unintended effects or costs?

Few of the insights from the synthesis related to specific unintended effects or costs, although worse outcomes might be expected where there is an absence of the positive factors and circumstances described in relation to Questions three and four. In fact, it is probably in the nature of theory-driven reviews that insights about contexts and circumstances get expressed as positive factors (rather than the avoidance of the negative circumstances) to be clearer and have more direct applicability.

However, for service users who were in a vulnerable state, collaborative decision making was highlighted as being more difficult and risked compromising health and social care professionals' advocacy and duty of care roles. So expectations about the type and level of collaborative decision making with service users in a vulnerable state, such as people who are frail or have cognitive impairments, may have to be altered.

In terms of unintended costs, most of the economic studies did not measure the impact on carers or their families (either financial, or the time cost of performing care or additional domestic tasks). While these costs could be considerable, there was no consistent pattern in the findings to suggest whether or not intermediate care shifts more costs onto the patient or their family.

### 3.4.1 Research recommendations

The findings of this review enable us to make three research recommendations, two relating to intermediate care and one methodological:

- Intermediate care services are often implemented with the assumption that all service users would prefer to be in their own home, but this assumption does not take account of the different *meanings* that home can have for service users at different stages of their life. These meanings can impact strongly on whether or not the provision of IC services in a person's home 'works' or not, but our understanding of these factors is quite limited. Primary research to better conceptualise and understand these factors (which may have as much variation within as between diagnostic categories) and how they can be incorporated into IC service models is required.
- As intermediate care services for older people in the UK mostly incorporate *both* 'step-up' (admission avoidance) and 'step-down' (supported discharge) services, more research is required on the effectiveness of this type of intermediate care service provision. Similarly, research should seek to explain why such service models might be more effective than condition-specific admission avoidance or supported discharge services.

- Identifying programme theories and mechanisms from sources that are not explicitly theory-driven or which do not provide adequate descriptions of the content and operation of services is problematic. This is especially so for 'black box' quantitative evaluations such as most economic studies. Greater understanding of how the research community can be motivated to provide this information would facilitate this identification, particularly with regards to:
  - expressing the theories which inform the design and delivery of programmes
  - candidly reflecting on the strengths and weaknesses of programme delivery.

### 3.4.2 Review strengths and limitations

We have endeavoured to provide a transparent account of the route we took through the diverse literature on intermediate care in order to answer the review questions, documenting our reasons for making particular judgements as much as possible. Ultimately what we have produced is a theory-driven narrative synthesis of qualitative and descriptive data, albeit one which also draws upon the results of a selection of relevant comparative effectiveness studies to test the explanatory potential of the main theories. The main output is a comprehensive and up-to-date definition of intermediate care that we hope should be relevant to health and social care commissioners and providers in the UK. We have also produced a more detailed list of service features, contexts and circumstances that our evidence synthesis suggests should increase the likely effectiveness of intermediate care. While we made use of the findings of the guantitative comparative effectiveness studies, these were not pooled or extracted in a way that would allow a quantitative assessment of the association between the presence and strength of programme theories and the level of effectiveness measured.

We acknowledge that another review team may have made different judgements at key stages, or with the involvement of a different Project Reference Group. At the initial stages of developing the conceptual framework we used a particular working definition of intermediate care (Table 4) to identify relevant published sources. This entailed making a judgement about their likely conceptual or descriptive richness, initially on the basis of the title and abstract alone. Whilst we endeavoured to be inclusive at this stage, we acknowledge that we may have missed potentially rich sources.

A similar issue arose in making judgements about whether or not the programmes evaluated in the comparative effectiveness studies (for which the full-text was obtained for all) demonstrated sufficient features to allow the programme theories to be 'tested'. Absence of reporting is not necessarily evidence of absence of these programme elements. In this sense, the realist approach is no different from any other in that it is reliant on the quality and

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detail of reporting. However, where programme theories relate to service or programme features that are not conventionally reported – perhaps because they are less observable or would simply take much longer to describe - this clearly makes the process of theory testing through the synthesis of published evidence more difficult.<sup>150</sup> Despite increasing calls for evaluators to explicitly state the underlying theories of their interventions, particularly complex interventions, and more journals allowing the publication of online appendices and other supplementary materials, the extent to which effectiveness studies report the detailed content and underlying rationale of service changes is still variable and often disappointing.<sup>151</sup> Although we could have tried to contact authors to try and address these information gaps, this could be limited by the willingness of authors to respond to such queries, often many years after publication, and the accuracy of their recall or records about the services evaluated (and, even more hopefully, the reasons the services were designed and delivered the way they were).

Nevertheless, the extent to which programme components are reported in studies has arguably risen in recent years, reflecting an increased awareness amongst researchers and journal editors of the importance of richer descriptions of both 'what was done' and also (though less often) how it was expected to produce better outcomes. Here, there is a risk of 'temporal bias' in our review. Studies published more recently may have been more likely to be included because they contained sufficiently rich descriptions to enable testing of a programme theory.

To reach meaningful conclusions about the effectiveness of intermediate care programmes in terms of the programme theories also proved problematic. The amount of literature that we were endeavouring to cover in-depth within a single review meant that we did not use formal critical appraisal on the included effectiveness studies, instead using study design as a crude proxy. We also relied on study authors' reporting of statistical significance rather than re-analysing or synthesising the reported outcomes in a meta-analysis. This limited the scope for synthesising evidence on outcomes that could be expressed in terms of their potential 'clinical significance' as well as 'statistical significance'.

Changes over time were also difficult to account for in the effectiveness studies. For example, given the broader development of health and social care services towards a more service user focused and engaged model, over 'usual care' comparators were likely to bear an increasing resemblance to the components of intermediate care that we were endeavouring to test. Likewise, for assessing costs and cost-effectiveness, early evaluations of intermediate care were likely to have been compared with acute hospital admissions which are considerably longer than current norms in the NHS.

Finally, the ambition to conduct a realist review of cost and cost-effectiveness studies was also stymied to a large extent by the reporting conventions of published studies. Compared with effectiveness studies, published economic evaluations often provide scant details of the specific elements and features of the services compared, and hardly ever express the underlying rationale or

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# Appendix 1. Terms used to describe services analogous to intermediate care

Intermediate care Hospital at home Admission avoidance (scheme) Early discharge (scheme) Step-down (care) Step-up (facilities) Geriatric day hospital/ day care Rapid response (team) Intensive rehabilitation (service) Recuperation facilities (residential or nursing home) Integrated home care team One-stop primary care centre Nurse-led/ Consultant-led/ GP-led/ Physician-led (schemes/ inpatient units) Residential (care) rehabilitation Supported discharge Day (centre) rehabilitation Acute care at home Hospital in the home Rehabilitation at home Community Assessment and Rehabilitation Teams (CARTs) **Re-ablement** Restorative care

## **Appendix 2. Example database search strategy**

#### Searches

Database: Medline

Database Host: Ovid

Data Parameters: 1948 to May Week 4 2011

Date Searched: 08/06/2011

Searcher: C. Cooper

Hits: 6069

- 1. Intermediate Care.tw.
- 2. Intermediate Care Facilities/
- 3. (Step-up or step-down adj3 (facilities or care)).ti,ab.
- 4. "restorative care".tw.
- 5. ("reablement" or "re-ablement").tw.
- 6. Or/1-5
- 7. "hospital at home".tw.
- 8. "Hospital in the home".tw.
- 9. "Hospital without Wall\*".tw.
- 10."hospital care at home".tw.
- 11."home based care".tw.
- 12."rehabilitation at home".tw.
- 13."home based service\*".tw.
- 14."Home based rehab\*".tw.
- 15."Home based medic\*".tw.
- 16.home based nurs\*.tw.
- 17."home rehab\*".tw.
- 18."Residential rehab\*".tw.
- 19.((intensive adj3 (rehab\*)) and (home or community)).ti,ab.
- 20.(rehab\* adj3 home care).ti,ab.
- 21. "home hospitalisation".tw.
- 22."home hospitalization".tw.
- 23."Home or hospital".tw.
- 24.home versus hospital.tw.
- 25.(("own home\*") and (hospital or acute or inpatient)).tw.
- 26."closer to home".tw.
- 27.(("home based") and (alternative or substitut\* or versus or preferred) and (inpatient or admission or acute)).mp.
- 28.("hospital care" adj3 (home or community)).ti,ab.
- 29."integrated home care".tw.
- 30.("homecare" and (shared or community or nurs\* or doctor or GP or manag\*)).tw.
- 31."home-based monitoring".tw.
- 32.(Post-acute and Home Care).tw.

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- 33.((acute care or "sub acute care" or "pre-acute") adj3 home).ti,ab.
- 34. ("hospital care" adj5 "home care"). ti, ab.
- 35."Transmural care".tw.
- 36.Or/7-35
- 37.(("day hospital\*" or "day centre" or "day center" or "day care") adj3 (discharge or readmission or acute admission or avoidance or transition or home or intermediate or alternative)).ti,ab.
- 38.(Admission\* adj2 avoid\*).ti,ab.
- 39.(prevent\* adj2 (admission\*)).ti,ab.
- 40.(readmission adj2 avoid\*).ti,ab.
- 41.Inappropriate admission.tw.
- 42."unplanned hospital admission\*".tw.
- 43.((Prevent\* hospitalization\* or prevent\* hospitalisation\*) and (community or intermediate or home)).mp.
- 44.(((home or community or intermediate) and alternative) adj3 (hospital admission or admission or acute admission)).mp.
- 45.Or/38-44
- 46.(supported adj2 discharge).ti,ab.
- 47.(assisted adj2 discharge).ti,ab.
- 48.(("earl\* discharge" or "earl\* transfer") and (intermediate or home or community)).mp.
- 49."same day discharge".tw.
- 50.(("discharge planning") and (home or community or intermediate or rehab\*)).tw.
- 51.("transitional care" and (home or community or intermediate or rehab\*) and (hospital or acute or inpatient)).mp.
- 52.(("post discharge care" or "postdischarge care") and (home or community or intermediate or rehab\*)).ti,ab.
- 53.("discharge planning" and (community or home or intermediate or option\*) and (admission or readmission or reduc\* or avoid\*)).ti,ab.
- 54.((discharge adj2 (ready or readiness)) and (community or home or nurse or support\*)).ti,ab.
- 55.Or/46-54
- 56.6 or 36 or 37 or 45 or 55

## Appendix 3. Database search - hits obtained in each database

Database	Hits
Medline	6069
Medline in Process	302
Embase	4213
Social Policy and Practice (SPP)	1520
HMIC	1575
BNI	775
Cochrane	544
Assia	801
Cinahl	700
Total	16499
Endnote De-Duplication	4068
Manual De-duplication	2331
Unique Records	10100

Following feedback from the second PRG meeting (01/11/2011) we conducted an additional search. This was conducted with the same rationale as the primary searches, that is to say, conceptualised as phrases not with the purpose to be exhaustive.

Database	Hits
Medline	53
Medline in Process	6
Embase	65
Social Policy and Practice (SPP)	5
HMIC	12
BNI	15
Cochrane	45
Assia	2
Cinahl	34
Total	237
Endnote De-Duplication	-14
Manual De-duplication	-54

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#### Unique Items to Screen

169

Database: Medline Database Host: Ovid Data Parameters: 1948 to October Week 4 2011 Date Searched: 07/11/2011 Searcher: C. Cooper Hits: 53 Strategy: Searches Results

#	Searches	Results
1	virtual hospital\$.mp.	49
2	virtual ward\$.mp.	4
3	1 or 2	53

## Appendix 4. Example of comparative study data extraction tables

Study [Category/ Country/ Study type]	Description of IC delivered	Comparator
Cunliffe et al. (2004) [Older people/ UK/ RCT]	<ul> <li>'Early discharge and rehabilitation service' - Multidisciplinary team of rehabilitation professionals (plus non-qualified assistants, trained for their role during the pilot phase) and Community Care Officer (liaising with social services); medical care provided by GP.</li> <li>Visits to the patient's home (up to x4/day, 8am-10pm, 7 days a week, for up to 4 weeks) could be for "the purpose of assessment or monitoring, the provision of rehabilitation therapies, or the provision of assistance and care"; package of care was "tailored to individual needs" (mean no. of visits over 4 weeks = 22).(p.247)</li> <li>Interviews conducted with patients (at between 4 weeks and 3 months after discharge) in the intervention arm noted that " their views were sought in setting the objectives of treatment within the confines of the intervention period" (p.250).</li> <li>Interviews with service staff noted that "there was an explicit team ethos in which physical, psychological, social and environmental issues were all legitimate areas for intervention, for all members of staff irrespective of their professional background. They were also explicit in the importance of the patient's views and participation in rehabilitation, and felt that the home setting facilitated this style of practice" (p.251).</li> </ul>	"Usual hospital care' managed in hospital until fit for home, using existing after-care services [out-patient department rehabilitation, geriatric day hospitals, usual social services] as required" (p.247)

#### **Description of type of IC delivered**

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Project 10/1012/07

Study [Category Country/ Study type]	Comparis on	01	02	O3	04	05	<b>O</b> 6	Study authors' <i>interpretation</i> of outcomes (e.g. from 'Discussion' section of source or other papers) and study strengths/weaknesses
Cunliffe et al. (2004)*	Cunliffe et al. (2004)* Early $\rightarrow \rightarrow \uparrow/ \rightarrow - \uparrow \uparrow$ - Improved outcomes may be as a result of:		- Improved outcomes may be as a result of:					
[Older people/ UK/ RCT]	discharge and rehabilitati on service (I) (n=185)	3m	3m	3m		3m	3m	"[1] clinicians were not masked to allocation, and this may have affected their practice.
		$\rightarrow$ 12m	$\rightarrow$	$\uparrow / \rightarrow$	_	<b>↑</b>	$\rightarrow$	[2] EDRS may have been better resourced than services in previous studies, or better organised.
	care (C) (n=185)	12	12m	12m		12m	12m	[3] 'usual care' in Nottingham may be worse than usual care elsewhere (although we have no reason to believe them to be so)".
								- "Our interview study showed that the EDRS delivered skilled assessment, negotiated treatment goals that were meaningful to the patient, and met them with a co-ordinated team. Interventions included functional rehabilitation training, the teaching of skills, information giving and advice, overcoming emotional barriers to task performance, the provision of aids and appliances and the provision of domestic and personal care. Patients reported that the emotional support derived from this approach improved their confidence and morale, and we postulate that this led both to greater task performance and psychological wellbeing".
								- "We have observed the benefit of an organised, person-centred rehabilitation service, rather than proved the inherent superiority of one setting (home) for its delivery over another (hospital). Our findings should not be extrapolated to early discharge services where untrained staff assess and plan rehabilitation, staff numbers are inadequate, the delivery of services is inflexible or limited, or where teams do not really exist or team morale is low." (p.251)

#### Comparators, outcomes, and study authors' interpretations

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#### Details of outcome measures

Study	Details of outcome measures
Cunliffe et al. (2004)	O1 (Survival) - questionnaire
[Older people/ UK/ RCT]	O2 (Re-admission to hospital) – source not stated
	O3 (Functional abilities) – BI and kitchen and domestic aspects of EADL measures statistically significantly favoured the intervention at 3m, but this only persisted for domestic aspects at 12m
	O4 (Psychosocial) - NR
	O5 (Overall health) – EQ-5D
	O6 (Carer's health) - EQ-5D

## Appendix 5. Example of non-comparative study data extraction table

Source	
Authors (year) [Ref ID]	Wohlin Wottrich et al. (2007) #13519
C-R/Thick/ Thin?	Conceptually-rich
Strengths and	Small sample size enabled highly-detailed and iterative data analysis between two researchers, and close attention being paid to
weaknesses	'bracketing' of pre-existing ideas and theories (therefore enabling a close focus on team members' experiences from their
	perspective). Development of analytic themes was also peer-reviewed to further clarify them. However, little contextual information
	on the organisational environment or the delivery of health and social care services in Sweden.
Source type	Qualitative research (Empirical Phenomenological Psychological method)
Aim	To identify the meaning of rehabilitation in the home environment after stroke from the perspective of members of a multi-
	professional team
Торіс	
Category	Stroke
Location(s)	Geriatric hospital in Stockholm (Sweden)
Description of IC type	Home-based rehabilitation (3-6 visits/ week; mean duration 29 days; mean number of home visits 18.6; mean time per visit 57m)
Research methods	
Theoretical approach	Empirical Phenomenological Psychology (Karlsson 1995)
Data collection	Semi-structured interviews to elicit a 'therapeutic story' of the whole rehabilitation process (e.g. what the patient did, said, or
	reported feeling or thinking during the rehabilitation process) – aim was to enable analysis of therapists' clinical reasoning (based
	on tacit knowledge and experience)
Participants	Home-based rehabilitation professionals (5 PTs, 5 OTs, 2 SALTs, 1 SW)
Sample	Comprehensive – all team members (n=13) who were involved in the home care of 9 patients selected for the study (patients
	selected to 'ensure variation' in age (range 63-86yrs); sex (6 women, 3 men); side of lesion (6 left, 3 right); living conditions (4 living
	alone, 5 living with spouse)
Analysis	Initial reading of interviews 'as a whole' (to "understand concrete facts, events, and actual feelings"); transcribed interviews were
	then divided into 'meaning units' ("a new meaning unit was discriminated each time there was a shift in meaning in the text"), to
	allow interpretation of "each meaning unit in the light of the whole interview and the phenomenon under study – the meaning hidden
	in the facts was the focus of the interpretation". These interpretations ('transformed meaning units') were summarised in a way that
	"arranged the features of the phenomenon in a phenomenologically significant way by identifying and interpreting the meaning of
	different aspects of renabilitation in the nome environment". Finally, analysis of the summaries for each patient enabled a move
	from 'situated structure of meaning' (specific to each patient) to a 'general structure of meaning' (that made connections between
	participants experiences) (p.781)
Time of follow-up	T week after each patient s nome-based renabilitation had finished
Evidence about	Alternatives to acute inpatient care (such as 'intermediate care') should produce the best health and social outcomes for

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programme theory#	service-users because:
	1) the place of care (e.g. home, day hospital, community hospital), and timing of transition to it, is decided in consultation with the service-user based on:
1a	the pre-agreed objectives of care
	'The process of returning home involved collaborative planning among the patients, relatives, and team members to ensure that the transfer was smooth' (p.783)
1b	the location that is most likely to enable the service-user to reach these objectives
	Supporting continuity in patients' lives (in the sense of supporting them in their transition towards their previous state of health) was
	understood to be significantly supported by patients' return nome (p.782).
	The team members stated now, during visits to the patients nome, they could see now the patients performed movements and activities spontaneously in their familiar context? - providing a 'bridge' between the 'old' and 'new' body was therefore significantly
	facilitated by the familiar environment, but could also be problematic, e.g. where a bathtub is too high for access (p. 783)
	2) professionals (health and social care) and carers:
2a	foster the self-care skills of service-users
	Patients were 'invited to try their own solutions both during and between the home rehabilitation sessions' – self-care skills were
	fostered by drawing on the patients' own creativity and desire to reach individual goals
	'Talking about the performance lef an activity) with the nations and discussing tactics such as deliberately considering how to
	achieve the next step in the activity, thereby putting trust in one's own body' (p 784)
	dome ve the next step in the detivity, thereby putting that in one s own body (p. 704)
	In addition to planned rehabilitation activities, team members sometimes simply observed patients in 'difficult but totally relevant
	situations', that is – 'the home environment offered many opportunities to be creative and to encourage problem-solving skills
	[i.e.] to encourage patients to find solutions on their own and to take their own actions' (p.784)
2b	shape the social and physical environment to 're-enable' service-users
	I aking part in the patients' nome life gave them unique opportunities to find associations or links to former (pre-stroke) activities
	[and to] re-establish these previous activities and to find substitutions in meaningful alternatives (p.762)
	'High priorities of team members were confirming and strengthening the patients' feelings of pleasure and assisting the patients to
	recognise themselves in their self-perceived former social roles [e.g.] grandparents, housewives, or family members taking part in
	family life' (p.782)
	Professionals provided opportunity for the sharing of life stories – these 'often opened up discussions on activities that the patient
	experiences, and contributing to the team members' understanding of how best to support continuity' (n. 783)
3	professionals (health and social care) work in an integrated fashion with each other and carers
	- NR
'Explanation' of	Continuity theory (Atchley 1989; Becker 1993) - 'a theory about normal aging [where] people attempt to preserve and maintain
findings?	psychological and social characteristics and circumstances. To accomplish this, people use strategies tied to their past experiences

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### Appendix 6. Critical appraisal tool used for noncomparative study evidence

1	Question	Is the research question clear?		
2	Theoretical perspective	Is the theoretical or ideological perspective of the author (or funder)		
		explicit?		
		Has this influenced the study design, methods, or research findings?		
3	Study design	Is the study design appropriate to answer the question?		
4	Context	Is the context or setting adequately described?		
5	Sampling	Is the sample adequate to explore the range of subjects and settings?		
		Has it been drawn from an appropriate population?		
6	Data collection	Was the data collection adequately described?		
		Was it rigorously conducted to ensure confidence in the findings?		
7	Data analysis	Was there evidence that the data analysis was rigorously conducted		
		to ensure confidence in the findings?		
8	Reflexivity	Are the findings substantiated by the data and has consideration been		
		given to any limitations of the methods or data that may have affected		
		the results?		
9	Generalisability	Do any claims to generalisability follow logically and theoretically from		
		the data?		
10	Ethics	Have ethical issues been addressed and confidentiality respected?		

Source: Wallace et al.<sup>129</sup>

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## **Appendix 8. Membership of Project Reference Group**

Name	Role	PRG#1	PRG#2	PRG#3
Del Cathery	Therapy Manager/ Eastern Rapid Response	Yes	Yes	No
Paul Collinge	Joint Strategic Commissioning Manager for Older People - Devon	Yes	Yes	Yes
Trudy Corsellis	Assistant Director (Planning & Performance), Torbay & Southern Devon Care Trust	No	Yes	No
Vicki Goodwin	Senior Research Fellow, Peninsula Medical School and Physiotherapist, Torbay and Southern Devon Care Trust	Yes	Yes	Yes
Maggie Gordon	Health & Social Care Cluster Manager, Northern Devon Healthcare NHS Trust	Yes	No	Yes
Tina Henry	Head of Urgent Care/ Health Improvement (Southern Locality), NHS Devon	Yes	No	Yes
lain Lang	Consultant in Public Health, NHS Devon Senior Lecturer in Public Health, Peninsula Medical School	Yes	Yes	Yes
Sandra Peacock	IC manager, Bristol City Council	Yes	No	No
Jenny Richards	Joint Strategic Planning & Commissioning Manager – Older People's Mental Health - Devon	Yes	No	No
Laura Shenton	Clinical Specialist Physiotherapist, Stroke ESD for Teignbridge - Devon	No	Yes	No
Phil Taylor	GP in Axminster/ East Devon Acute Pathways Commissioning GP Lead/Co Chair Wakley Locality Commissioning Group	No	Yes	No

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