PROGRAMME OF RESEARCH ON THE EVALUATION OF MODELS OF SERVICE DELIVERY AND ORGANISATION IN HEALTH CARE

EVALUATION OF OUTREACH SERVICES IN CRITICAL CARE

The SDO Programme is inviting proposals to evaluate a specific innovation in the organisation and delivery of secondary health care, that of ***outreach services in critical care.***

Background

The outreach concept for critical care originated in New South Wales, Australia, with the development of the Medical Emergency Team (MET).[1] In England they have developed rapidly since publication of the Department of Health's *Comprehensive Critical Care. A Review of adult critical care services*[2] in August 2001. This document systematically assessed current and future issues in the delivery of critical care services, based on recognition that 'critical care is a need and not a place'.

The document identified the characteristics which critical care services are expected to have. These included systematic planning and delivery across the whole health system, and a hospital wide approach to critical care, with services extending beyond the physical boundaries of intensive care and high dependency units. Services were to be provided within the context of an integrated network, involving several Trusts working to common standards and protocols.

The document recognised that a planned approach to human resources, workforce planning, recruitment and retention issues and education and training for medical, nursing, therapy professions, technical, administrative and clerical staff and other support staff was required. In addition, there needed to be a data-collecting culture promoting an evidence base. Underpinning by good information was essential to ensure the delivery of effective services, to support clinical governance, and to enable critical care services to move from being reactive to proactive.

The document classified critical care into a system that could be readily translated into service goals. The previous division into high dependency and intensive care based on beds was to be replaced by a classification focusing on the level of care that individual patients need, regardless of location. The four levels are as follows:

Level 0: Patients whose needs can be met through normal ward care in an acute hospital.

Level 1: Patients at risk of their condition deteriorating, or those recently relocated from higher levels of care, whose needs can be met on an acute ward with additional advice and support from the critical care team.

Level 2: Patients requiring more detailed observation or intervention including support for a single failing organ system or post-operative care and those 'stepping down' from higher levels of care

Level 3: Patients requiring advanced respiratory support alone or basic respiratory support together with support of at least two organ systems. This level includes all complex patients requiring support for multi-organ failure.

Consideration of this classification indicated that a more flexible system of care was required to deliver level 2 support. The proposal that the needs of these patients can be met on an acute ward with additional advice and support from the critical care team represents ***an alternative model of service delivery and organisation.*** These patients were to be supported by ward teams in a more general setting, and by the specialist support of critical care teams functioning in an outreach capacity.

The Review identified **outreach services** as being an integral part of comprehensive critical care. They were considered to have three essential objectives:

- to avert admissions to Critical Care Units, by identifying patients who are deteriorating, and either helping to prevent admission or ensuring that admission to a critical care bed happens in a timely manner to ensure best outcome.
- to enable discharges from Critical Care Units, by supporting the continuing recovery of discharged patients on wards and post discharge from hospital, and their relatives and friends.
- to share critical care skills with staff in wards and the community, ensuring enhancement of training opportunities and skills practice, and to use information gathered from the ward and community to improve critical care services.

Outreach services were to be provided by a team trained not only in the clinical aspects of care, but also in effective ways of sharing their skills so that ward staff felt supported rather than diminished. The outreach team was expected to be multidisciplinary and led by a qualified critical care clinician.

In response to the '*Comprehensive Critical Care Review*' the medical profession has produced position statements and guidance on the development of outreach critical care. The Intensive Care Society (ICS) published *'Guidelines for the introduction of Outreach Services - Standards and Guidelines'* [3] in 2002. This document gives detailed clinical guidance, and also guidance on the membership of outreach teams, education, initiation of service and on audit and research.

The Royal College of Physicians (RCP) produced a position statement entitled '*Three Ways to Improve Care for Seriously Ill Patients'* [4], also in 2002. It recognised that the organisation of care for acutely ill patients must change. Studies had shown that difficulties occur in many areas - in finding suitable beds in the first place, in placing patients in unsuitable wards, in having to transfer patients over long distances between hospitals, and in poor care both before and after admission.

In a further document *'The Interface between Acute General Medicine and Critical Care'*, [5] an RCP working party made a number of recommendations that put the seriously ill patient at the centre of the service. Better organisation of services would include the introduction of Early Warning Scoring Systems and of outreach services: better facilities for particular sorts of patients: major changes in doctors training: and increasing involvement of junior medical staff in the provision of outreach services.

A number of models of outreach services in critical care have subsequently been developed. Examples include the Patient At Risk Team (PART)[6] at the Royal London Hospital, which assessed patients who fulfilled certain physiological criteria as well other patients who were causing concern to medical and nursing staff. The Modified

Early Warning Score system (MEWS)[7] established at Queen's Hospital, Burton on Trent, was also developed to provide an early predictor of clinical deterioration.

Current call for proposals

The critical care outreach service is a model of service delivery that has developed rapidly. However, the exact nature of the development has differed substantially from hospital to hospital. Yet to date there is little firm evidence to support the wholesale implementation of the model, and no evidence to indicate which elements of which models are of greatest importance. Experience of related developments such as Acute Pain Teams may offer some insight into the development of critical care outreach services, and it may be that this literature can help to answer some of the questions being asked.

The research outlined in this call is designed to provide answers to some of the questions that remain unanswered. The current call for proposals involves a rigorous scientific evaluation of outreach services in critical care. In evaluating outreach as a model of service delivery the following questions need to be addressed:

1. To what extent have critical care outreach services achieved the essential objectives set for them in the *Comprehensive Critical Care. A Review of adult critical care services*? (see above). In addressing this question it will be necessary to undertake some before and after comparisons. The feasibility of this will depend on the availability of prior data. Specific issues which need to be addressed are:

    - What impact have outreach services had on admission rates to critical care units?
    - What impact have outreach services had on clinical outcomes for patients admitted to critical care units?
    - How clearly have standards of care for critically ill patients been defined?
    - How valid, reliable and sensitive are current scoring systems for detecting deteriorating patients?
    - How successful have they been in identifying deteriorating patients?
    - Have there been differences in the success of different scoring systems, and if so what elements have contributed to greater success?
    - To what extent has continuing support for discharged patients on wards and post discharge contributed to quicker discharge?
    - What contribution has support for relatives and friends made to faster discharge?
    - To what extent have critical care skills been shared with staff on wards and in the community?
    - To what extent have training opportunities and skills practice in critical care been enhanced?
    - In what ways have information gathering from the ward and the community contributed to improved critical care services?

2. What have been the resource implications of the introduction of outreach services in critical care? In particular:

- What have been the manpower implications, including impact on recruitment and retention of staff, grading profiles and staff morale?
- What have been the equipment implications, such as the need for additional ventilators outside critical care units?
- What have been the space implications, such as space for additional equipment?

3. What have been the implications of outreach beyond critical care? In particular:
    - What impact has it had on other hospital services?
    - What impact has it had on other organisations, such as social services?
    - What impact has it had on carers, relatives and friends?

This is therefore a large and comprehensive evaluation of an important innovation in secondary care service delivery and organisation. It is anticipated that the evaluation will involve contact with a substantial number of hospitals in England where critical care outreach has been introduced, and in-depth evaluation of a large sample of them. This call also includes a literature review on outreach and an evaluation of critical care scoring systems. It is for a single study which is expected to take three years to complete.

The call therefore consists of three components:

- a review of the literature on outreach services in health care (including but not restricted to critical care).
- a critical evaluation of scoring systems for detecting deteriorating patients.
- an evaluation of outreach as a model of service delivery.

Applicants should be aware of any other related research underway in this field, including any which may be commissioned by the National Confidential Enquiry into Peri-operative Deaths, and by other agencies.

Methods

Applicants should clearly outline their proposed methods for each component of the evaluation.

- *For the review of the literature* methods for identifying relevant published and grey literature should be listed. It is expected that applicants will plan to use a variety of methods, including the research team's prior knowledge, the search of electronic databases, and advice from key researchers and practitioners in the field. Methods for judging the quality of the literature available, and for summarising the results, should also be made explicit.

- *For the critical evaluation of scoring systems for detecting deteriorating patients* researchers should indicate how they propose to capture all relevant scoring systems in use, and the list of criteria against which they will be evaluated.

- The evaluation of outreach from Critical Care Units as a model of service delivery will involve empirically based multi-site evaluations. Researchers should indicate how they propose to carry out this evaluation, including their

study design, the methods to be used, and the way in which appropriate sites will be selected.

Applicants should demonstrate that they have assembled a team of researchers whose knowledge and skills are appropriate for the task.

Outputs

The principal output of the call will be a detailed report consisting of three elements, one for each component of the study , i.e.

- a review of the literature on outreach services in health care (including but not restricted to critical care).
- a critical evaluation of scoring systems for detecting deteriorating patients.
- an evaluation of outreach as a model of service delivery.

In addition the report should

- contain a short and coherent executive summary.
- critically describe the methods used.
- provide rigorous and detailed conclusions about scoring systems for detecting deteriorating patients.
- provide rigorous and detailed conclusions about outreach as a model of service delivery in critical care.
- contain a commentary which indicates how the findings relate to current policy and practice in the NHS.
- clearly identify areas for further research and how these might be addressed.

Outline proposals should:

1. cover no more than **FOUR** pages – projects longer than this will not be considered.
2. identify the proposed research team
3. describe the locations and context of the proposed study
4. include a description of the methods to be used
5. state the intended outputs of the evaluation
6. include arrangements for project management, such as an advisory board
7. outline plans for the dissemination of findings.

Applicants should indicate how they will:

- demonstrate the involvement of service users and carers and other relevant stakeholders at each stage of the proposed research project;
- build in an active programme for disseminating the results, and discussing them with those who plan, manage and deliver services.

Application process

The process of commissioning for each study will be in **two stages**. At this stage we are requesting applicants to submit **outline** proposals. Outline proposals will be shortlisted, and a number of applicants subsequently invited to submit full proposals.

Applicants must submit proposals using the A4 Outline Proposal application form, which is available as a Word 97 file or Rich text format from:

- the SDO website, at http://www.sdo.lshtm.ac.uk/criticalcarecall.htm or
- by email from damian.o'boyle@lshtm.ac.uk

Please do not use any previously obtained version of an SDO programme application form.

Applicants are asked to submit proposals by **1pm on Wednesday 18th June 2003** to:

Mr Damian O'Boyle,
Commissioning Manager,
NCCSDO,
London School of Hygiene and Tropical Medicine,
99 Gower Street,
London WC1E 6AZ.

TWENTY FIVE HARD COPIES of the completed A4 Outline Proposal application form should be submitted together with a copy on disk or CD. Please note we will not accept electronic submissions or hand written proposals. **No late applications will be considered.**

Guidance notes for the completion of the A4 Outline Proposal application form can be found at the front of the application form.

Funding of **£250,000** is available for this topic**. Applicants should note that value for money is an important consideration in respect of this research.**

Following submission of outline proposals, successful applicants will be notified no later than **mid July 2003.** They will then be invited to submit full proposals by **late August 2003.** The outcome of the review of full proposals will be notified by **early November 2003.** The project should take no longer than **three years** to complete and start no later than **December 2003.**
Proposed costs of individual projects should not exceed the limits stated above.

In addition, applicants should indicate how they will work with the SDO Programme and relevant stakeholders to build in an active program for disseminating their research findings in policy, practice and research contexts.

Please clearly label the outside of the envelope in which you submit your proposal with the following: **'Tender Documents'**. This will enable us to identify proposals

and keep them aside so that they may all be opened together after the closing date and time.

Teams should ensure that their proposal complies with the Research Governance Framework, which can be found on the Department of Health website, or via a link on the SDO website under the 'Call for Proposals' page.

Before funding, successful teams will be required to provide proof of research ethics committee approval for their project, if this is required (information regarding this can be found on the SDO website under the 'Calls for Proposals' page).

We anticipate that there will be informal discussions with NCCSDO throughout the duration of the project regarding the final report.

Applicants should visit the SDO website: http://www.sdo.lshtm.ac.uk to familiarise themselves with the work of the SDO Programme in general and with previous scoping exercises in other topic areas.

---

[1] Lee A, Bishop G, Hillman KM, Daffurn K, 'The Medical Emergency Team', *Anaesthetic Intensive Care*, 1995, 23, 183-186.

[2] *'Comprehensive Critical Care Review of adult critical care services',* London: Department of Health, 2001.

[3] *'Guidelines for the introduction of Outreach Services - Standards and Guidelines',* London: Intensive Care Society, 2002.

[4] *'Three Ways to Improve Care for Seriously Ill Patients',* London: Royal College of Physicians, 2002.

[5] *'The Interface between Acute General Medicine and Critical Care'*, London: Royal College of Physicians, 2002.

[6] Goldhill DR, Worthington L, Mulcahy A, Tarling M, Sumner A, 'The Patient At Risk Team: Identifying and Managing Seriously Ill Ward Patients', *Anaesthesia,* 1999, 54, 853-860.

[7] Stenhouse C, Coates S, Tivey M, Allsop P, Parker T, 'Prospective Evaluation of a Modified Early Warning Score to Aid Earlier Detection of Patients Developing Critical Illness on a Surgical Ward', *British Journal of Anaesthesia,* 2000, 84, 663P.

Addendum

This document was published by the National Coordinating Centre for the Service Delivery and Organisation (NCCSDO) research programme, managed by the London School of Hygiene & Tropical Medicine.

The management of the Service Delivery and Organisation (SDO) programme has now transferred to the National Institute for Health Research Evaluations, Trials and Studies Coordinating Centre (NETSCC) based at the University of Southampton. Prior to April 2009, NETSCC had no involvement in the commissioning or production of this document and therefore we may not be able to comment on the background or technical detail of this document. Should you have any queries please contact sdo@southampton.ac.uk.