Quality Critical Care
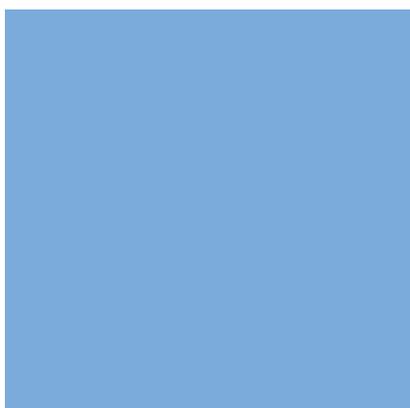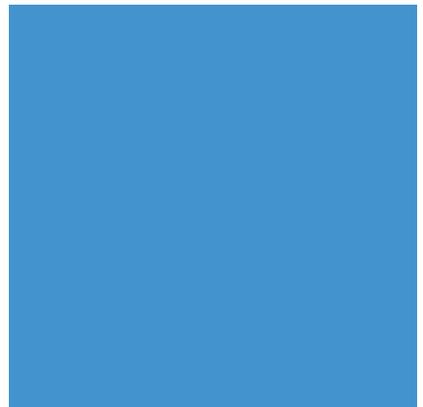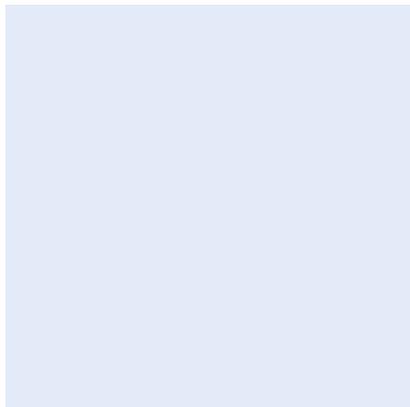
Beyond 'Comprehensive Critical Care'

A report by the Critical Care Stakeholder Forum

September 2005

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Forward by Sir George Alberti -
Medical Director of Emergency Care

Critical care is one of the core services needed by patients who are amongst the sickest in hospital. They deserve the best services possible. Recent years have seen great changes in the way critical care is delivered with more capacity, new ways of working and service improvements some of which are amongst the best in the world.

However, we must not be complacent. There is still a shortage of capacity - especially Level 3 capacity in many areas - and all commissioners and acute providers should be reviewing their needs against increasing and changing demands. However good services are, there will always be room for improvement and critical care services - like all healthcare services - should be rigorously and routinely scrutinised to see that the highest possible quality of care is being provided.

In particular, critical care services everywhere - whether in the NHS or the independent sector - should be working closely with surgical, acute

medical and emergency departments to ensure that patients in need of additional care or at risk of requiring critical care are identified and robust arrangements are in place to ensure they get the treatment they need.

This Document represents the work of all stakeholders involved in the delivery of critical care services. It provides indicators of good practice with examples or ways this can be delivered. It sets out markers of quality that need to be in place as we move towards the second decade of the twenty-first century. I commend it to all commissioners, managers and clinicians involved in delivering and developing this essential service.

George Alberti

Executive Summary

Critical care services are an essential part of the care pathway of many hospital patients and need to be fully integrated into whole hospital services to ensure best patient outcome. Patients requiring critical care are amongst the sickest in the hospital and require extensive facilities and equipment and - most importantly - dedicated, highly skilled multidisciplinary teams.

Critical illness has a great impact on the lives of patients and their families. Decisions about care should be made in partnership between the critical care team, the patient, and relatives. Continuity of care and facilities are important throughout the patient's care period but especially when stepping down to lower levels of care, to general wards or home.

The Adult Critical Care Stakeholder Forum was established in April 2004 to mobilise stakeholder involvement in the strategic development and delivery of critical care services and to provide a communications link between a wide variety of professional, operational and managerial groups delivering critical care.

The Stakeholder Forum has looked at existing critical care services and current health care developments in order to recommend ways in which an equitable, quality service can be delivered. The document will be relevant to commissioners and all those involved in the delivery of acute and emergency care in the NHS and independent sector.

Current arrangements to identify all the hospital patients that require critical care, especially those in general wards, are inadequate. Methods should be developed that identify critically ill patients across the whole hospital, including all those that require Level 1 care.

Critical care capacity in both designated critical care areas and on general wards should be evaluated at a local level. Capacity should be expanded as required to provide appropriate care of all critically ill patients wherever they present. Commissioners should work with their local critical care networks and Trust critical care delivery groups to achieve coordinated and integrated planning and delivery of the service.

Critical care needs to be viewed as a whole system, including dedicated critical care units, but also resources to support at-risk patients on general wards, and services supporting rehabilitation of patients recovering from critical illness in the hospital and in primary care.

A quality, effective critical care service will include the following components: 24/7 outreach services, provision for comprehensive rehabilitation, robust transfer and transport arrangements, and 24/7 support services. Critical care services should employ best evidence practices, such as those described in 'care bundles'.

An effective, quality service can only be delivered by an appropriately skilled workforce. There is a need to review the numbers and skills of staff caring for critically ill patients in all settings. Adequate training must be provided, roles redesigned and new roles developed as required.

Commissioners and providers need to jointly plan for the impact of Payment by Results on critical care services. Adequate data-collection and commissioning arrangements need to developed and resourced.

Purpose of the Document

1. The Adult Critical Care Stakeholder Forum (CCSF) has written this Document to:

- Highlight the significance of critical care within many patient pathways.

- Provide examples of good practice in the delivery of adult critical care services. The Document describes features of a high quality, patient-focused service and suggests ways this can be achieved.

- Describe indicators of quality that should underpin the service that potential or actual critically ill patients should receive throughout the hospital.

2. It will be relevant to commissioners and all those involved in the delivery of acute and emergency care.

3. It provides examples of best practice but does not set out to describe who should deliver this care or how the service should be configured locally or nationally.

The Critical Care Stakeholder Forum

4. The Adult Critical Care Stakeholder Forum was established in April 2004 to mobilise stakeholder involvement in the strategic development and delivery of critical care services and to provide a communications link between a wide variety of professional, operational and managerial groups

delivering critical care. It evolved from the National Expert Group that produced, in May 2000, the policy document *'Comprehensive Critical Care'*[1] . This guided the NHS Modernisation Critical Care Programme that ended in September 2004. The Forum is not led by the Department of Health but the Department is a stakeholder alongside the others.
(See Appendix 1– Membership list).

Critical Care

5. Critical care is the care provided to patients who require intensive monitoring and / or the support of failing organs. These patients are found throughout the hospital, many in general wards, but with the sickest in dedicated areas. This can arise as a result of trauma, disease, adverse events or surgery. Critical care is classified into three Levels (Level 1, 2 and 3 - *see Annex 1 for the definitions of these levels of care*).

6. Critical care services are an essential part of the care pathway of many hospital patients and need to be fully integrated within the whole hospital planning and delivery system to ensure best patient outcome. The Stakeholder Forum has considered the future development of adult critical care services five years after *Comprehensive Critical Care* in the light of anticipated changes in healthcare delivery and the need to ensure high quality patient care.

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[1]Department of Health (May 2000) - Comprehensive Critical Care - Review of Adult Critical Care Services

7. Critical care is a relatively small but very expensive service that costs from about £600 to about £1,700 per patient per day and supports the delivery of emergency and elective care. The Modernisation Programme was successful in delivering significant service improvements, reducing the number of patients moved inappropriately between hospitals and increasing capacity. In July 2005 (the latest figures available), there were 3,193 critical care beds open in England - 35% more than in January 2000.

8. However, most of these benefits were achieved between 2000 and 2003 and there are signs that further development is still required. For example, the number of critically ill patients transferred between hospitals because of the lack of a bed has not improved much since 2002 and urgent operations continue to be regularly cancelled due to insufficient critical care capacity. Between January 2005 and July 2005, 12% of the total number of urgent operations cancelled was cancelled, due to the lack of critical care capacity. This compared with 11.4% in 2004.

Patient and Relatives' perspective

9. From the patients' perspective, care must be provided in a safe environment by sufficient numbers of staff who are trained, experienced, competent and caring and supported by equipment in good working order. Patients and their families appreciate good communication with the clinical team

including an explanation of the short and long-term implications of their critical illness. They need to be involved in decisions about their care. Continuity of care and appropriate facilities are important throughout the patient's care period but especially when stepping down to lower levels of care in general wards or at home.

10. Continuing input from the critical care service is important throughout the patient journey e.g. from the outreach team. However, the existence of an outreach service must not diminish the requirement for sufficient critical care capacity to meet demand. Nor must it detract from the hospital's responsibility to have sufficient numbers of trained and experienced staff on wards that accept transfers from critical care areas.

Quality in Critical Care

11. Patients requiring critical care are amongst the sickest in the hospital and require extensive facilities and equipment and - most importantly - dedicated, highly skilled multidisciplinary teams. Patients' and relatives' assessment of the spell in critical care is that the commitment, skill and devoted care given by staff are the key factors that they remember.

12. The NHS Improvement Plan[2], states that *'in every care setting the quality of care will continue to improve… patient safety being a top priority.'* The NHS in future will be characterised by features that include:

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[2]Department of Health (June 2004) NHS Improvement Plan"Putting People at the Heart of Public Services

- Equity of care with an emphasis on quality.

- A continuing reduction in waiting lists and times for treatment along with a reduction of emergency admissions.

- Strategies to tackle the big killer diseases e.g. heart disease, stroke, cancer as well as improvements in the care of patients with Long Term Conditions - including the need to provide specialist critical care.

Adequate critical care capacity is essential to help deliver these objectives.

13. The Stakeholder Forum has identified a number of key features that together will describe a high quality critical care service. These are:

Patient-centred care.

- The need to keep the patient at the centre of care by treating all patients as individuals and, wherever possible, respect their choices about their own care. This will mean that care may have to be organised across a number of boundaries

Evidence-based care, monitoring & evaluation

- The use of best evidence, in tandem with continuous monitoring and evaluation, to inform clinical and non-clinical decisions and activities. This includes the systematic audit of packages of interventions that are based upon high level evidence ('Care bundles') proved to enhance patient care and outcomes.

Early warning systems & outreach systems

- The use of track and trigger systems on general wards and appropriate intervention tools and systems to assist clinical teams refer to critical care as necessary.

An appropriately trained and competent workforce.

- This will include the staff working in the critical care area as well as those working elsewhere within the hospital whose clinical practice will require them to be competent in the recognition of critical illness.

To have access to effective multi-disciplinary teams available 24/7

- To have effective multidisciplinary teams in which members have clear individual roles and share knowledge, skills and best practice. To demonstrate a culture of shared learning and respect in which all disciplines recognise and work within the boundaries of their knowledge and experience and take full responsibility for their actions. To create an effective workplace culture of openness, mutual challenge and support to ensure the delivery of effective patient-centred care.

Staff empowerment, support & development

- The continuing support and development of all staff so that they possess the competencies, knowledge, skills and experience - necessary for the delivery of a safe, effective and patient-centred service.

Flexible service planning

- To have in place mechanisms that enable flexible and collaborative service planning which is informed through the continuous evaluation and monitoring of service outcomes and feedback from all Stakeholders involved in the patient's journey.

Effective communication systems

- To have effective communication systems within the critical care team, with patients and relatives and within the hospital or trust. This should include an effective Critical Care Delivery Group in each hospital with the remit to oversee the development and performance of their critical care services. Critical care teams are encouraged to contribute to their local clinical networks

Using resources effectively

- To manage resources (staff, equipment, technology) effectively and in accordance with public accountability.

Data & Information

- The collection and use of robust critical care data is essential to support operational and clinical decisions including the future commissioning of services, evaluation of clinical care and benchmarking against other providers, both locally and nationally.

Delivering a Quality Critical Care Service

14. The Stakeholder Forum has looked at the existing critical care service, at current health care developments and is suggesting ways in which the service can be improved to deliver an equitable, quality service.

"Care Bundles"

15. The Stakeholder Forum recognises the benefits for improving patient outcomes and experience that flow from the systematic application of proven, evidence based clinical interventions and procedures to patient care. However, the value of such interventions is enhanced if this is accompanied by rigorous audit and examination to ensure consistent and diligent use. This is the basis of the "care bundle" approach - the agreement and application of a package of evidence based clinical interventions accompanied by systematic audit. It helps to ensure the equitable provision of high quality care. For more details of "care bundles", see Appendix 3.

Recommendation

16. **The Stakeholder Forum recommends that all providers of critical care services should adopt appropriate care bundles and other standards of care as guides and measures of service quality.**

Critical Care Networks

17. *"Comprehensive Critical Care"* recommended the development of clinical networks. Their purpose is to help providers (NHS and Independent) and Commissioners work together to ensure an integrated approach to the planning and delivery of Critical Care Services for a local population.

18. The benefits of such an approach are:

- They provide support to Acute Trusts' Critical Care Delivery Groups in their role of overseeing the development, integration and performance of their critical care services.

- They support the implementation of common evidence-based standards of care across different professional groups and organisations to improve equity of care and enhance patient experience.

- They assist with the effective utilisation of Critical Care Services across an agreed geographical area.

- They permit a greater understanding of the current provision of critical care services across a geographical area that will inform the development and design of critical care services in the future.

- They can monitor the performance of Critical Care Services, benchmarking against national indicators and supporting organisations to constantly improve the delivery of these services.

19. Currently Networks are at various stages of development and some are experiencing difficulties in securing management support and funding. The more developed Networks have achieved many of these benefits and are progressing, with their providers, towards the delivery of standardised care. Many Networks are working towards identifying and addressing workforce issues. See Annex 2 for case studies involving networks.

Recommendation

20. **The Stakeholder Forum recommends that critical care networks are retained, strengthened and fully developed in line with local priorities and needs.**

Critical Care Delivery Group

21. *Comprehensive Critical Care* recommended a hospital wide approach to critical care services within a networked system by establishing Critical Care Delivery Groups (CCDGs) in each Trust with a critical care service. CCDGs aim to oversee the development, integration and performance of their critical care services and the delivery of safe evidence based services that meet the critical care needs of all patients in the hospital.

22. Experience suggests that CCDGs work best when they have senior management and clinical support and work closely with their local Network. The Stakeholder Forum is of the opinion that CCDG development is variable and could be strengthened in many locations.

Recommendation

23. **The Stakeholder Forum recommends that effective Critical Care Delivery Groups be established within each provider organisation.**

Capacity

24. Critical care capacity is not just the number of physical beds in designated critical care areas. It also includes the resources devoted to supporting actual or potentially critically ill patients away from traditional critical care units. This includes essential services such as outreach, physiotherapy, dietetics, speech and language therapy, occupational therapy, pharmacy, imaging and laboratory services and clerical staff.

Level 1

25. There is a crucial lack of information about the numbers and nature of patients on general wards that need Level 1 care and above. Not all such patients are known to the critical care service because, in most hospitals, this information is not systematically collected. In addition, the definitions of Levels of Care - especially of Level 1 patients - need further refinement. However, local snapshot studies give an impression of the number of patients requiring critical care on general wards in acute hospitals. A review of 1,873 ward patients in four Trusts in Kent identified 12.2% needing care above that normally provided on a general ward (Chellel et al 2002), while during one period at the Manchester Royal Infirmary in 2004, 29.3% of ward patients were Level 1. In addition, a further 27 patients were found on general wards who needed Level 2 or 3 care - when all 36 designated critical care beds in that hospital were already occupied. Furthermore, it is predicted that the relative and absolute numbers of in-patients requiring some level of critical care during their hospital stay will increase over time (Sparkes et al 2004).

26. The processes of identifying and managing all potential and actual critically ill patients in the hospital are the responsibility of the whole organisation as such patients may present in any clinical area. Although critical care clinicians may have most expertise in this field, they cannot take primary responsibility for general ward patients. Level 1 patients on wards should be managed by the responsible ward team with support and advice as required from critical care staff, e.g. through an outreach service.

Levels 2 and 3

27. On 13 January 2005, the total number of adult critical care beds (Levels 2 and 3) in England was 3,213, compared with 2,362 on 15 January 2000. This is an increase of 36% (851) beds. However, most of this increase has been in Level 2 (high dependency) capacity **(see Fig. A)**. This was largely a response to a lack of Level 2 beds identified by several reports including the National Confidential Enquiry into Perioperative Deaths that drew attention to the lack of Level 2 beds for post-operative patients.

The lastest census - published on 30 September 2005 - shows that on 14 July 2005, there were 3,193 critical care beds in England of which 1,772 were Level 3 and 1,421 were level 2.

Fig. A.

KH03a data (bed census)

Open and Staffed Adult Critical Care Beds NHS Organisations, England
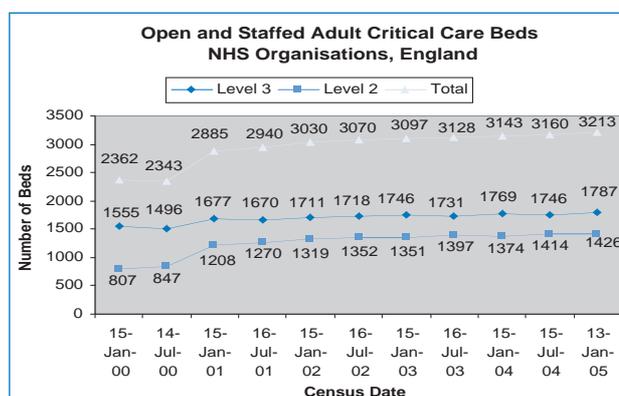
28. The increase in Level 2 beds has improved access rates for complex surgery and assisted with the availability of critical care beds for non-elective medical and surgical patients. Disappointedly, the number of reported Level 3 non-clinical critical care transfers has failed to reduce significantly since 2001 (see Fig. B). This suggests insufficient Level 3 capacity or an inappropriate use of existing resources.

29. The flexible use of critical care beds for either Level 2 or Level 3 patients as needed, along with flexible working practices and the optimum use of evidence-based care can facilitate the better use of resources. For example, the recent report 'Modernising Care for Patients Undergoing Major Surgery'[3] suggests hospitals could improve survival, reduce length of stay and save up to £2 million each by implementing a package of key recommendations. These include use of critical care facilities for haemodynamic optimisation and overnight intensive recovery areas for the first 24 hours after major surgery.

Capacity Management

30. The effective management of capacity requires an understanding of the flow of patients through the system and of the potential and actual demands placed upon it. The Stakeholder Forum has recently commissioned a project to identify models of how patient flows affect capacity. This Project is being led by the Intensive Care Society and is looking at how to improve the mapping and flow of patients through critical care

(Levels 2 and 3). It is due to report in the summer of 2006. This work should make it possible to identify the peaks and troughs in demand, not just of activity, and as a result optimise capacity to meet demand.

Recommendation

31. ***The Stakeholder Forum recommends that the need for critical care capacity in both designated critical care areas and on general wards is evaluated at a local level. Capacity should be expanded if required to ensure adequate provision for all critically ill patients wherever they present.***

Critical Care Transfers

32. The transfer of a critically ill patient between or within hospitals may put the patient at risk. It is therefore essential that such transfers are minimised and undertaken to the highest standard. In 2002, the Intensive Care Society published Guidelines for the Transportation of Critically Ill Adult Patients[4]. These remain the gold standard for the care of patients requiring transfer. The majority of Critical Care Networks have adopted these standards and have in place standardised training programmes and protocols for the transportation of Level 3 patients.[5]

33. Transfers can be classified as clinical or non-clinical. Clinical transfers are those undertaken to provide the patient with specialist care that is not available locally. Non-clinical transfers occur because of insufficient critical care capacity locally.

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[3]Modernising Care for Patients Undergoing Major Surgery, A report by the Improving Surgical Outcomes Group, London 2005
[4]The Intensive Care Society (2002). Guidelines for the Transportation of the Critically I11 Adult-Standards and Guidelines.
[5]E.G. Anglia, Cambridgeshire, Central Southern, Cheshire Mersey, Manchester, North East & Cumbria, Surrey Wide, Trent.

34. In the period October 2004 to January 2005 there were 722 Level 3 non-clinical transfers in England. This is a significant decrease when compared with 2000 but has disappointingly remained constant since then. (See Fig. B).

Fig. B

Reported non-clinical level 3 transfers October to January in England.	
Year	**Number**
2000-2001	1304
2001-2002	787
2002-2003	788
2003-2004	907
2004-2005	722

Source: sitrep unvalidated management information.

35. The number of non-clinical transfers is unlikely to reduce further unless there is an expansion of critical care capacity across the country.

Recommendation

36. *The Stakeholder Forum recommends that the "Guidelines for the transportation of the Critically Ill Adult Patient" are implemented across Networks, including the independent sector and Treatment Centres. The Forum fully supports the development of network wide standardised training programmes, equipment, documentation, standard setting and subsequent audit of practice.*

Critical Care Outreach Services

37. Outreach services facilitate the delivery of critical care practice to the patient outside designated critical care areas. Outreach helps to provide equity of access to critical care, involving multi-professional clinical teams and multi-skilled working based on patient need. Outreach services were advocated in *Comprehensive Critical Care* but were not precisely defined. Subsequently, some hospitals have developed effective outreach teams[6], but many have just a partial service or none at all.

38. Early detection of critical illness in general wards and the timely institution of appropriate care can reduce morbidity, mortality and length of stay of both surgical[7] and medical patients.[8] However, identification of at-risk patients and referral to relevant senior specialists or the critical care service is often delayed, reducing opportunities to prevent further deterioration and improve outcomes[9].

39. Delayed identification and referral is attributable to:

- Low standards of observation and documentation on the general wards;

- Inadequate understanding of critical illness and it's presentation;

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[6]Ball C. et al (2003) BMJ 327(7422): 1014-6; Garcea G, et al (2004) Acta Anaesthesiologica Scandinavica 48(9): 1096-100.
[7]Bellomo R. Goldsmith D, Uchino S, et al (2004) Prospective controlled trial of the effect of the emergency team on post-operative morbidity and mortality rates. Critical Care Medicine 2004, 32(4) : 916-921
[8]Priestley G, et al (2004). Intensive Care Medicine 30(7): 1398-404.
[9] McGloin H, et al (1998) J R Coll Physicians Lond 33(3): 255-9; McQuillan P, et al (1998) BMJ 316(7148): 1853-8; Parkhe M, et al (2003) Clinical Medicine 3(5): 425-34; Young M P, et al (2003) Journal of General Internal Medicine 18(2): 77-83.

- Sub-optimal treatment of at-risk and deteriorating patients due to a lack of knowledge and skills and to organisational failings.

- These deficiencies were recently confirmed by the National Confidential Enquiry into Patient Outcome and Death (NCEPOD)[10].

40. All ward staff need to develop knowledge and skills in recognition and basic management of at-risk and critically ill patients. Systems that ensure early identification of critical illness, prompt referral to expert clinicians and the use of evidence-based management plans should be agreed and standardised throughout the hospital.

41. The care process should then follow seamlessly and, when necessary, be integrated with critical care services to ensure appropriate, timely admission to critical care areas when required.

42. Physiological "Track and Trigger" warning systems have been developed for the early identification of the 'at risk' patient, provide a common starting point for the initiation of key treatments or the referral process.[11]

43. Educational programmes are essential to underpin the competency of ward staff. Some networks have standardised

programmes. Outreach services can support such programmes through the sharing of critical care skills. The outreach team can help monitor and audit the safety and management of at-risk patients on general wards and work with ward staff to improve care processes.[12]

44. Outreach teams can also provide expert care to critically ill patients on wards before - or sometimes instead of - admission to a critical care unit. They can support safe transfers to the critical care unit when required and support patients discharged back to the wards from critical care.

45. Outreach services have been advocated by the Secretary of State for Health[13], the Department of Health / NHS Modernisation Agency[14] and in the NCEPOD report of 2005. However, investment in outreach remains variable and the service is poorly developed in some areas. Even in Trusts with a service, half only offer clinical support to wards during weekday working hours.

46. Patients discharged from a critical care area often feel a great step down when moved to general wards. Planning for rehabilitation should begin at admission, continue throughout the hospital stay and be integrated with acute care and longer-term rehabilitation in primary care.

[10]NCEPOD - National Confidential Enquiry into Patient Outcome and Death (2005). "An Acute Problem?" London.
[11]Goldhill D McNarry A (2004) Physiological abnormalities in early warning scores are related to mortality in adult inpatients. *British Journal of Anaesthesia 92(6): 882-884*
[12]Braithwaite R S, et al (2004) Quality & Safety in Health Care 13(4): 255-9.
[13] Letter from Alan Milburn, Secretary of State for Health to the Chief Executives of NHS Trusts, PCTs and SHAs dated 12 March 2003
[14] NHS Modernisation Agency (2003) Critical Care Outreach 2003 - Progress in Developing Services.

47. Patients who have been critically ill present distinct and under-appreciated rehabilitation challenges. Often their length of stay in hospital is unduly prolonged by inadequate support during the recovery process, while new complications are associated with high mortality. These patients also suffer increased morbidity and risk of death after hospital discharge and consume considerable primary care resources[15] but if addressed, significant benefits are evident to patients that are still apparent six months after discharge.[16] Organised rehabilitation programmes can improve physical recovery and reduce psychological problems after critical illness.[17]

48. Outreach services can play a significant role in caring for patients recovering from critical illness in the hospital and afterwards in follow-up outpatient clinics.

49. Several examples of the work of outreach services are described in Annex 2 and in the "Framework for Benchmarking Critical Care Outreach Services" in Appendix 2.

Recommendation

50. *The Stakeholder Forum recommends that hospitals develop a standardised approach to the detection and treatment of critical illness on general wards. This should include standards describing processes of reporting signs of critical illness, the multi-professional management of at-risk and deteriorating patients and the timely referral of*

patients needing specialist support on the ward or Level 2 / Level 3 care. Such systems should be developed in partnership between ward and critical care teams though the hospital's critical care delivery group. They should function 24 hours a day. Regular multidisciplinary audits of such systems should be undertaken.

51. *The Stakeholder Forum supports the development of outreach services and would like to see them developing in every acute hospital on a 24-hour, seven days per week basis.*

52. *Hospitals should develop patient centred rehabilitation services to optimise the recovery of patients discharged from critical care units, integrating with primary care services after discharge from hospital.*

Therapeutic and Diagnostic Support

53. The provision of therapeutic and diagnostic support is fundamental to the care pathway of critically ill patients. However, the roles of health professionals who work in this field are often overlooked, underestimated and under resourced. Key professions in the critical care setting include dietetics, occupational therapy, clinical pharmacy, physiotherapy, diagnostic radiography, speech and language therapy and the professions in Health Care Sciences providing services in laboratory medicine (pathology) medical physics and engineering,

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[15]Department of Health / Modernisation Agency (2003) Critical Care Outreach 2003 - Progress in Developing Services London.

[16]Jones C, Skirrow P, Griffiths R, Humphris G, Ingleby S, Eddleston J, Waldmann C, Gager M (2003) Rehabilitation after critical illness: a randomised, controlled trail. *Critical Care Medicine 31(10): 2456-61*

[17]Eddleston J M, White P, Guthrie E (2000) Survival, morbidity and quality of life after discharge from intensive care. Critical Care Medicine 2000, 28(7) : 2293-9

clinical physiology and critical care technology. Their role is described in *The Role of Professions in Healthcare Science (HCS) within Critical Care Services*[18].

54. Many of these professions are not employed directly in critical care but their input is essential to the management of all critical ill patients. Their contribution must be resourced appropriately and taken into account during the planning and development of critical care services. Any plans to expand existing services should include the input from the diagnostic and therapeutic professionals. Commissioners will need to take account of SHA Diagnostic Strategies when new critical care services are commissioned to ensure that appropriate diagnostic and therapeutic support will be available and resourced from the whole range of scientific and therapeutic professions.

Recommendation

55. *The Stakeholder Forum recommends that the diagnostic, therapeutic and clerical infrastructure for Critical Care is developed and expanded to support a 24/7 critical care service. All staff should be involved in planning and commissioning of critical care services.*

The Independent Sector

56. There are about 385 Level 2 and Level 3 critical care beds in 125 hospitals in the United Kingdom that are members of the Independent Healthcare Forum (IHF). The independent healthcare sector is playing an increasingly prominent role in providing care for patients including NHS patients. The IHF has been instrumental in promoting principles of care that reflect closely those developed for NHS hospitals in England. For example, the majority of independent sector hospitals have early warning systems, many have outreach services and - increasingly - care is audited using the concept of 'care bundles'. All IHF hospitals that provide Level 3 cover participate in the Intensive Care National Audit and Research Centre (ICNARC) clinical audit and data collection system.[19]

57. At a local level, many independent sector hospitals participate in their local critical care networks. A number of imaginative schemes are being developed jointly between public and independent sector providers that promote the delivery of high quality critical care services (see Annex 2).

Recommendation

58. *The Stakeholder Forum recommends that all independent sector providers should participate in their local critical care networks and that the development of service improvements jointly between the NHS and independent sectors should be encouraged.*

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[18]Department of Health / Modernisation Agency (2003) The Role of Professions in Healthcare Science within critical care services. London 2003.
[19]Independent Healthcare Association (2002) - Guidance on Comprehensive Critical Care for Adults in Independent Sector Acute Hospitals.

Commissioning of Critical Care Services

Implementing Payment by Results

59. A consultation document produced in 2003 (Payment by Results: Technical Papers July 2003) introduced the move to a national tariff for critical care services. From 2005-06 Primary Care Trusts (PCTs) should be commissioning critical care services through a cost and volume service level agreement (SLA) using locally agreed tariffs for each unit of activity either on an occupied bed days or per case basis. It is crucial that stability is maintained during the transition to full Payment by Results (PbR) expect to be in 2007/08. It was therefore suggested that commissioners guarantee 80% of the agreed SLA and attach the remaining 20% to actual activity. For the future, Health Resource Groups (HRGs) are being developed that will be specific to critical care.

60. A new Critical Care Minimum Data Set (CCMDS) has also been developed. A data-subset from the CCMDS is intended to replace the Augmented Care Period (ACP) dataset from April 2006 and is currently going through the approval process to be mandated as an information requirement for the NHS. This data is necessary to deliver critical care HRGs. Critical care HRGs will be specific to critical care and it is hoped they will be more sensitive than the current methods used to determine payment. For the HRGs to accurately reflect cost and case mix, it is essential that data is robustly collated in a timely fashion within provider Trusts. Critical Care HRGs will cover adult Level 2 and Level 3 units but not Level 1 care. Children treated in adult units will be included.

61. *Comprehensive Critical Care* promoted the notion of critical care as a concept as opposed to a physical place. The move to PbR could be viewed as divisive as it is unlikely that commissioners will agree a critical care tariff for care delivered outside of a designated critical care area. Effective Level 1 care may reduce the demand for Level 2 and Level 3 beds. Currently the majority of Level 1 care is delivered within a general ward environment with little or no enhancements in staffing and equipment.

Recommendation

62. *The Stakeholder Forum supports the move to PbR for Critical Care Services. We recommend that the CCMDS is fully implemented in all units. Local strategies should be developed that identify critically ill patients across the whole hospital, including all those that require Level 1 care.*

The Forum should be consulted whenever the national tariff is being reviewed so that the views of the critical care community are appropriately represented.

Workforce

63. Care of the critically ill patient has been shown to fall below required standards at certain times, with adverse effect on patient outcome ([20] [21] [22]). Changes in the delivery of acute and ward based care are required.

64. These concerns, along with demands placed upon critical care services by an aging population, the increasing number of patients requiring Level 1 care in general wards and the availability of increasingly complex clinical procedures highlights the need for a changing workforce . The impact of the European Working Time Directive for trainee and junior doctors, the new consultant contract, Agenda for Change and the shortage of skilled staff in many critical care areas all present challenges to the way that staff working in critical care work or are trained. Staff working in acute medicine and on general wards, as well as critical care staff will need to work in new and innovative ways and new roles developed. These changes will also require a review of staff numbers, skill-mix, and education needs analyses to determine training requirements for the whole organisation.

65. Regulatory bodies, central government, the Royal Colleges have recognised the nature, extent and severity of the problem in several ways:

• Acute medicine is now a recognised

subspecialty and the way in which clinicians working within the field interact with others delivering acute care has been examined in a number of reports ([23] [24])

• The Joint Committee for Higher Medical Training (JCHMT) has established a working group, with representation from other relevant bodies, to examine the role of acute physicians, acknowledging thereby the importance of meeting the service needs of patients who present in hospital as emergencies. Amongst other tasks, the Working Group will indicate how to effect change from current training structures to those most appropriate to the future practice of medicine in the UK. The Group will examine the means through which doctors training initially in a number of acute specialities (e.g. anaesthetics, A&E or intensive care) can obtain common and complementary competencies that will facilitate the delivery of acute medicine. The Group is due to report in late 2005.

Competency Development: Education and training

66. Education and Training are fundamental to support the workforce and should be multi-professional and matched to competencies. Agreed standard competencies will enable providers and commissioners to identify whether their staff are skilled, trained and equipped to provide care in increasingly

[20]McQuillan P, Pillington S, Allan A et al Confidential inquiry into quality of care before ICU admission. BMJ 1998; 316: 1853-1958

[21]McGloin H, Adam S K, Singer M. Unexpected deaths and referrals to intensive care of patients on general wards. Are some cases potentially avoidable? J R Coll Physicians 1999; 33: 244-259

[22]National Confidential Enquiry into Patient Outcome and Death (NCEPOD). An Acute Problem? 2006

[23]Federation of Royal Colleges of Physicians of the UK. The Interface of Acute General Medicine and Intensive Care. A Working Party of the Federation of Royal Colleges of the Medical Royal Colleges. London: RCP, 2002

demanding situations. They will also enable practitioners from a variety of professions to identify at an early stage the specialist knowledge and experience that they will need to acquire should they wish to specialise in critical care. 'Skills for Health' is the sector skills council for health. It is developing a competency framework for urgent, emergency and scheduled care that will include a number of modules specifically for critical care. This framework will include links to existing, locally developed frameworks. It is expected that this Framework will be available early in 2006.

New roles

67. The New Practitioner Programme, developed from the Modernisation Agency *"Changing Workforce Programme"* is supporting a number of sites that are piloting new practitioner roles in critical care. Two basic roles are being developed are the Assistant Critical Care and Advanced Critical Care Practitioner. This Programme is exploring ways for staff to become equipped with the unique skills and competencies required to provide quality critical care to patients irrespective of any prior professional background. From the trials, it is hoped that a national educational framework can be developed that will lead to nationally recognised modules of training and qualifications for critical care.

Role Development

68. This involves the development of existing professional roles into areas beyond traditional boundaries. This enables those professionals who want to develop their skills

and experience and work in ways that are more imaginative as well as gaining maximum satisfaction from taking increased responsibility and being able to use to the full the knowledge that they have acquired. An example of role development includes the prescribing of medication by professionals other than doctors. Delays in treatment of critical illness are frequent, and can be crucial (Seward et al 2004) so there either needs to be medical staff immediately available to prescribe and ensure administration of treatments, or appropriately trained nurses and allied health professionals should be enabled to give life-saving therapies. Independent nurse prescribers and, in future, appropriately qualified pharmacists, can take responsibility for the prescribing of medications in emergency care situations and in the support of outreach services but, at present, such initiatives are limited to a few sites.

Recommendation

69. *The Stakeholder Forum recommends the continuing development of new roles, role redesign and non-medical prescribing to optimise patient care.*

Improving Data Collection

70. Effective clinical care and operational practice are underpinned by sound information on activity, clinical need and outcome. The Intensive Care National Audit and Research Centre (ICNARC) has, for over 10 years, collected high quality comparative clinical data that supports local, regional

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[24]Acute Medicine: Making it work for patients. Report of a Working Party of the Royal College of Physicians, London, 2004

and national information initiatives to compare activity and case mix adjusted outcome. In addition, the Centre has promoted the culture of collecting high quality validated data.

71. An example at national level where comparative audit has highlighted significant benefit to patients and has led to a nationwide change in practice is the effect on ultimate hospital mortality if patients are discharged from critical care Level 3 (ICU) after 10pm.[25]

72. Furthermore, the provision of a national case-mix adjustment database will permit assessment of the implications of new technologies within the speciality of Intensive Care Medicine.

73. The collection of consistent, reliable information has been given added emphasis by the implementation of 'Payment by Results' and the development of critical care HRGs. This will be supported by the collection of the new Critical Care HRG data subset that is expected to replace the mandated Augmented Care Period dataset. It should, however, be recognised that there may be a need for additional resources to support such data collection. The investment should include the participation of medical and nursing input to data collection as well as pay for clerical time to collect data.

74. It has also been recognised that information on Level 1 patients is not well developed. Systems to reliably identify and count patients requiring critical care on general wards need to be developed. Regular hospital and network-wide point prevalence studies should be performed to clarify the nature and numbers of critically ill patients in general wards.

75. There is also a pressing need to review and revise the definitions of Levels of Care that can inform data-collection and funding of services to properly support the critically ill throughout an organisation.

Recommendation

76. **The Stakeholder Forum recommends the collection of critical care data using standardised data systems such as ICNARC's Case Mix Programme dataset and regular hospital and network-wide point prevalence studies. The definitions of Levels of Care need to be reviewed and revised to inform data-collection and funding of services.**

The Future Provision of a Quality Service

Summary of Recommendations from the Adult Critical Care Stakeholder Forum

The Stakeholder Forum recommends:

◆ That all providers of critical care services should adopt appropriate care bundles and other standards of care as guides and measures of service quality. **(Paragraph 16)**

◆ That critical care networks are retained, strengthened and fully developed in line with local priorities and needs. **(Paragraph 20)**

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[25] Goldfrad C, Rowan K. Consequences of discharges from intensive care at night. Lancet 2000; 355: 1138-1142

◆ That effective Critical Care Delivery Groups be established within each provider organisation. **(Paragraph 23)**

◆ That the need for critical care capacity in both designated critical care areas and on general wards is evaluated at a local level. Capacity should be expanded as required to provide appropriate care of all critically ill patients wherever they present. **(Paragraph 31)**

◆ That the "Guidelines for the transportation of the Critically Ill Adult Patient" are implemented across Networks, including the independent sector and Treatment Centres. The Forum fully supports the development of network wide standardised training programmes, equipment, documentation, standard setting and subsequent audit of practice. **(Paragraph 36)**

◆ That outreach services be developed in all acute hospitals 24/7. The service should ensure use of Track and Trigger warning systems to identify at-risk patients, initiate rapid referral to appropriately equipped experts or the timely transfer to a critical care unit when needed and facilitation of discharge and rehabilitation of patients from critical care along with the development of effective arrangements to manage Level 1 patients on general wards. **(Paragraphs 50 and 51)**

◆ That rehabilitation services be further developed for patients discharged from critical care. Discharge planning should start as soon as the patient is admitted and rehabilitation provided as an essential part of the treatment plan throughout the patient journey during the hospital stay and into primary care. **(Paragraph 52)**

◆ That the diagnostic, therapeutic and clerical infrastructure is developed to support a 24/7 critical care service. All staff should be involved in planning and commissioning of critical care services. **(Paragraph 55)**

◆ That all independent sector providers should participate in their local critical care networks. The development of service improvements jointly between the NHS and independent sector is encouraged. **(Paragraph 58)**

◆ That the CCMDS is fully implemented in all units. Local strategies should be developed that identify critically ill patients across the whole hospital, including those requiring Level 1 care. The Forum should be consulted whenever the national tariff is being reviewed so that the views of the critical care community are appropriately represented. **(Paragraphs 62)**

◆ The continuing development of new roles, role redesign and non-medical prescribing to optimise patient care. **(Paragraph 69)**

◆ The collection of critical care data using standardised data systems such as ICNARC's Case Mix Programme dataset and regular hospital and network-wide point prevalence studies. The definitions of Levels of Care need to be reviewed and revised to inform data-collection and funding of services. **(Paragraph 76)**

Annex 1

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 postoperative care, and those stepping down from higher levels of care.

Level 3

Patients needing monitoring and support for two or more organ systems **one** of which may be basic **or** advanced respiratory support.

Intensive Care Society - Levels of Care 2002

Annex 2 - Case Studies
Collaborative Working with the Independent Sector

i. Flexible use of Staff between the Independent Sector and the Public Sector:

Central South Critical Care Network

In the Central Southern Critical Care Network, a system allowing the flexible use of staff capacity across the independent and public sectors has been developed using an honorary contract system. The advantages are:

> During periods of limited clinical activity, senior nursing staff at the independent hospital maintain their skills base by rotating into NHS hospitals.

> Independent hospital nurses are now skilled to accompany patients being transferred to the NHS hospital for specialist treatment

> NHS hospitals have the (temporary) benefit of additional qualified critical care nurses

> NHS critical care nurses have the opportunity to rotate into the independent hospital and acquire valuable management training

> Collaboration and improved relationships between the independent and public sector has increased.

Commissioning Partnerships – The Contribution of Critical Care Networks (Dec. 2003). A report prepared by Sue Hayward, BUPA Hospital, Southampton

ii. Collaborative Forum - policy for the emergency transfer of critically ill patients between independent to NHS care.

Lancashire and South Cumbria Critical Care Network

In Lancashire and South Cumbria, there are currently 8 Independent Hospitals, which fall within the boundaries of the Network. None of these hospitals caters for Level 3 patients and as such, all work with NHS Hospitals to provide facilities for planned surgery requiring this level of care.

The Care Standards Act stated that it was necessary for all Independent Hospitals to have in place an agreed process and resources for the Emergency Transfer of patients from Independent to NHS Care, however rarely this would be needed.

The Network established relationships via the Hospital Matrons of these hospitals and formed a collaborative forum. Through the Forum a policy was agreed that was relevant and applicable to all those involved. The Policy for Emergency Transfer of Critically Ill Patients from Independent to NHS Care was formalised and signed up to by the Network Chairman on behalf of its Acute Trust Stakeholders and representatives from each of the Independent Hospitals.

Despite the purpose of the Forum being to create this policy the group has continued to meet regularly for the last 2 years because of the continuing benefits of working together. Integrating members of the independent sector into the Network has allowed sharing of resources particularly around education and training. Also co-working in the delivery of 'Choice at the point of referral.

For further information contact Sarah.Brookfield@lthtr.nhs.uk

Improving the Transfer of Critically Ill Patients.

Cheshire and Mersey Critical Care Network.

A significant number of transfers takes place each year in the Cheshire and Mersey Critical Care Network area and this number is increasing.

To ensure that all transfers are carried out to a minimum standard each transfer is audited by a team of auditors (critical care consultants). Transfers are scored on a scale from A-D with an 'unclassified' score as 'U' for no information received on a transfer, 'A' being the best score possible.

In 2003, Jan-June 48% of transfers scored 'B' and in 2004 for the same time period those scored increased to 67%. Trusts critical care leaders are sent the results from the audit and are encouraged to investigate and address any transfer that scores below 'C' grade in their trust.

The number of transfers and reason for transfer is critically monitored by a comprehensive database on a daily and monthly basis by the network and this information is reported to the network board. Specific individual trust analysis can be produced and global transfer information is reported to chief executives throughout the year.

C&M have a network forum that monitors the above along with any other transfer issues such as training and equipment. The forum has members from each trust / ambulance service and links into the emergency services action team.

Contact: Collett Parr-Owens. Network Manager, Cheshire and Merseyside Critical Care Network. Email: collette.parr-owens@warrington-pct.nhs.uk

Case Study - Role of Allied Health Professionals and Professions in Healthcare Science

Development of Ward Based Intracranial Pressure Monitoring: Critical Care Physics Group, Regional Medical Physics Department, Newcastle General Hospital

Intracranial pressure (ICP) monitoring is mainly used in cases of severe brain injury. A significant number of patients with neurological conditions develop hydrocephalus and the symptoms can occur at random times during the day or night. It can be difficult to manage these and to determine whether they are pressure related and would benefit from the implantation of a CSF shunt.

A computerised trolley system to monitor and record physiological parameters has been developed, helping management of this condition. The equipment is modular, allowing the use of different monitors that are connected to a laptop computer for data recording. This is an improvement on previous paper based methods, providing semi-automated graphical report production and retrospective analysis. The design was conceived with the advice of nursing staff, and patients have been closely involved in development, ensuring that it is easy for nurses to use and comfortable for patients. The system is being extended to include the automatic recording of the patient's posture.

Contact: Dr Iain Chambers, Consultant Physicist

Critical Care and Biochemistry - Proposed Standards (developed by North Thames Clinical Chemistry Audit Group; questionnaire responses from Directors of ITUs and Heads of Clinical Biochemistry Services)

1. Close liaison between Biochemistry Departments and Critical Care Units should ensure that a well-integrated and effective service is provided. Chemical Pathologists and / or Clinical Scientists should regularly visit Critical Care Units or attend ward rounds.

2. Point of Care Testing (POCT) for U and Es, glucose, ionised calcium, blood gases, lactate and glucose (by a method not affected by oxygen tension) should be provided.

3. POCT should be co-ordinated by the Pathology Department and supervised by a dedicated POCT officer. Critical Care should be represented on the Trust Point of Care Committee.

4. Appropriate Internal and External Quality Assurance should be performed on all POCT equipment by staff analysing patient samples, and feedback on EQA performance provided.

5. Service level agreements between Critical Care and Clinical Biochemistry are recommended.

6. Results generated by POCT in Critical Care should be recorded in patient notes or electronic patient record and ideally entered into the hospital or laboratory computer system stating that they were produced at Point of Care.

7. There should be regular audits of the laboratory services provided to Critical Care Units.

Contact: Pauline Ridgwell, Consultant Clinical Biochemist, Luton & Dunstable Hospital

Case Study - Current Commissioning Arrangements.
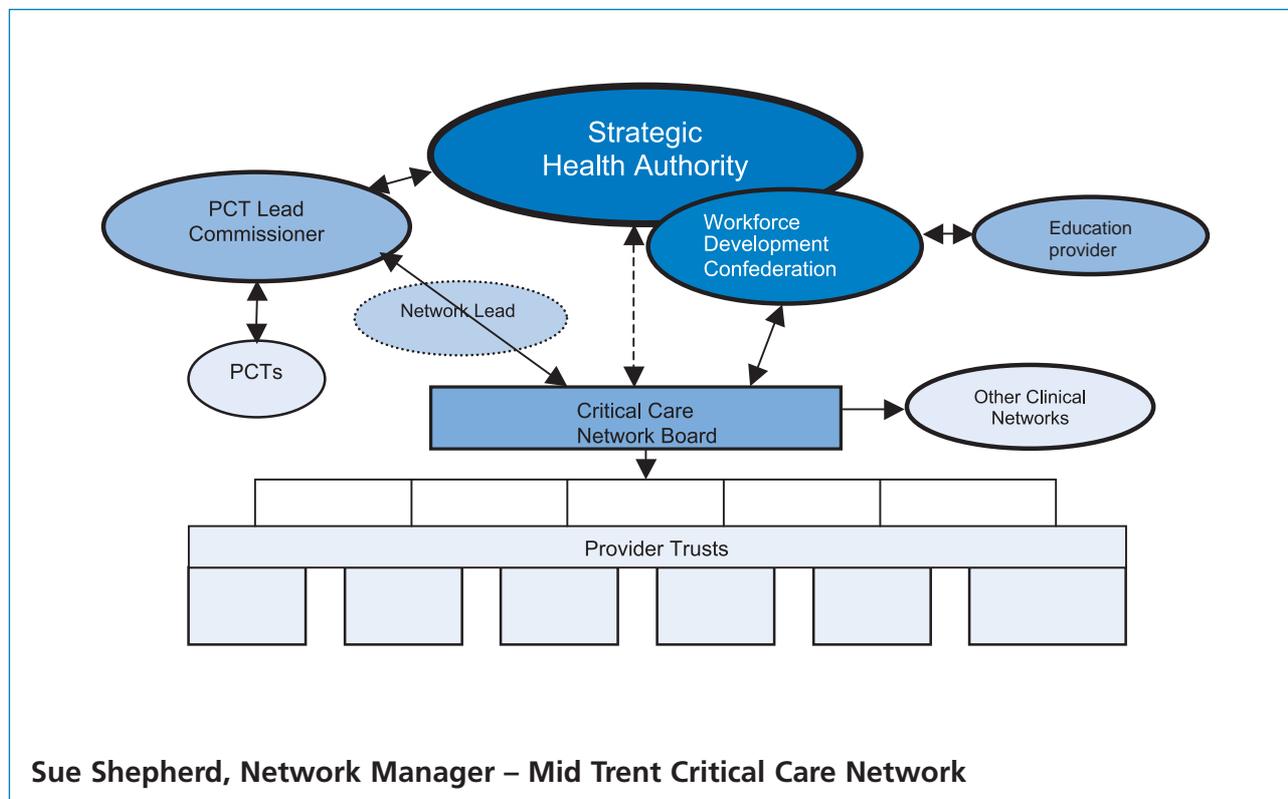
Mid-Trent Critical Care Network.

Commissioning

The Mid Trent Critical Care Network is a collaborative partnership between service providers and Primary Care Trust (PCT) commissioners who jointly review, plan, commission and oversee the clinical development of the service.

Each of the five Health Communities within the region is represented on the Network Board by either a Director of Commissioning, Planning and Modernisation or a Senior Commissioning Manager, one of whom acts as the Lead Commissioner for the Network. Through the Board, the Network reviews and agrees critical care capacity and service development proposals and monitors the performance of the critical care services within the Network both clinically and financially.

Sue Shepherd, Network Manager – Mid Trent Critical Care Network

Commissioning Model Based on the Mid-Trent critical care network

Strategic Health Authority

PCT Lead Commissioner

Workforce Development Confederation

Education provider

Network Lead

PCTs

Critical Care Network Board

Other Clinical Networks

Provider Trusts

Sue Shepherd, Network Manager – Mid Trent Critical Care Network

Case Studies - Outreach Services

Outreach in Operation: Kingston -upon - Thames Hospital, Surrey.

Attention to detail for high-risk patients The Kingston Hospital Acute & Critical Care Outreach Team reviews all ICU discharges to wards at least once daily. A small proportion deteriorate again after discharge requiring prompt management of airway, breathing and circulation, and sometimes readmission to ICU: timeliness of readmissions has improved and mortality reduced from 70% to 21.4% for these patients. However, most cases involve lower-level but fundamental review and modification of fluid and electrolyte balance, nutrition, infection and microbiology, invasive devices, medications, pain control, mobilisation, etc. These issues are now addressed significantly more often and more quickly. There has been a 1/3 reduction in hospital mortality after ICU discharge since the Outreach service began.

Contact Acute & Critical Care Outreach Team, Kingston Hospital, Surrey 020 8546 7711 bleep 869, e-mail John.Welch@kingstonhospital.nhs.uk.

Supporting Hospital at Night arrangements with the critical care outreach service. University College Hospital London

At University College London Hospitals (UCH), it was decided to meet EWTD regulations by setting up a Hospital at Night (HaN) team on UCH, Middlesex and Heart Hospital sites. A Trust steering group including the Nurse Consultant for Critical Care Outreach endorsed the importance of linking Critical Care Outreach nurses into the HaN team. Consequently, when HaN went live in September 2004, a 24-hour Critical Care Outreach service (known as PERT) was also put in place on both Middlesex and UCH sites. Since the service commenced, cardiac arrest calls at night in the first 3 months have fallen at the Middlesex and remained static at UCH. This is in spite of a reduction in the number of medical staff covering the ward areas; and meeting new emergency access targets that have increased the need for medical presence in A&E, but taken them away from ward areas.

Contact Sheila Adam (Nurse Consultant, Critical Care Outreach) UCLH Foundation Trust, sheila.adam@uclh.nhs.uk]

Supporting Level 1 patients in general wards:

Derriford Hospital, Plymouth, Torbay Hospital, Torquay and the Royal Devon and Exeter Hospital, Exeter.

Derriford Hospital devised its own audit tool from Level 1 criteria described by the Intensive Care Society (2002). It was discovered that certain wards and departments consistently have a high occupancy and consistently have a high number of patients requiring Level 1 care. This information has enabled the establishment of four-bedded 'Level 1 bays' in three areas of the hospital to date. All Level 1 beds have cardiac, non-invasive blood pressure, and central venous pressure monitoring facilities, plus pulse oximetry. One registered nurse and one health care assistant provide care per 4 Level 1 patients, 24 hours a day, 7 days a week. Medical Support is provided by a 'Consultant of the day' in each of the three areas.

Staff working in the bays receive support from the Critical Care Outreach team in the form of frequent visits and contact. All staff working in the Level 1 areas enjoy educational support that includes access to the ALERT course. In addition, the three hospitals involved have, jointly with Plymouth University, developed the 'Care of the Critically ill Adult in Non Critical Care settings' course.

Audit of the effectiveness of the Level 1 areas is ongoing, and includes monitoring for a reduction in the number of emergency admissions to critical care from the wards which have Level 1 areas, a reduction in cardiac arrest calls to these areas, a decrease in serious clinical incidents, and a reduction in length of hospital stay for patients undergoing certain surgical procedures.

References
Intensive Care Society (2002) Levels of critical care for adult patients: Standards and Guidelines Intensive Care Society, London

Contact: Christina Quinn, Associate Director of Nursing and Quality, Derriford Hospital

Improving observation and assessment of ward patients:

Yeovil District Hospital, Yeovil, Somerset.

The Amber Project at Yeovil Hospital sets a standard for assessment and observation for any patient considered to be at risk of deterioration on acute general wards. The project was devised by ward sisters and the critical care outreach team: patients are classified 'amber' for the duration of the time they are considered 'at-risk'. The system has assisted ward nurses in prioritising care and early identification of patients at-risk to the multidisciplinary and outreach team (Ryan et al 2004).

Contact Yeovil Hospital Critical Care Outreach team 01935 384483/Helen Ryan (Nurse Consultant, Critical Care) 01935 384945 bleep 2483, ryanh@est.nhs.uk.

Self-directed rehabilitation post critical illness.

Whiston Hospital, Prescot, Merseyside

Whiston Hospital Intensive Care Unit, in conjunction with the University of Liverpool, developed and tested with the help of the Critical Care teams in Manchester Royal Infirmary and the Royal Berkshire Hospital a self-directed rehabilitation package - "The ICU Recovery Manual". Patients start to use the package about 1 week after discharge from intensive care and covers the next 6 weeks. The Programme contains advice on common psychological problems, smoking cessation etc and has a graded exercise programme. The package has been shown to increase smoking cessation, reduce depression and accelerate physical recovery.

Contact Christina Jones, Nurse Consultant Critical Care Follow-up, ICU, Whiston Hospital.

Workforce Developments

The Critical Care New Practitioner Programme is piloting the development of the critical care practitioner and the advanced critical care practitioner. There are eight pilot sites at present including:

Royal Devon and Exeter Healthcare NHS Foundation Trust:
The Trust plans to develop and train a cohort of critical care practitioners to ensure continuity and a high standard of care for critically ill patients across the Trust. Work will build on other initiatives already implemented through the Critical Care Network such as ALERT (Acute Life Threatening Events Recognition and Treatment) and Early Warning Scoring. A further development would be to extend the scope of critical care skills and knowledge across the primary and secondary care boundaries. Two Advanced Practitioners are currently in post and are undertaking internally developed competencies with links to higher education providers for Masters Modules. One Assistant Practitioner is in post following internally developed competencies with further recruitment to this role ongoing.

Shrewsbury and Telford Hospitals NHS Trust:
This is a recently merged Trust with two critical care teams but no outreach team. Work will build on other initiatives already implemented through the Critical Care Networks (CCN) to provide care to Level 2/3 patients. A modernisation nurse process mapped, analyse and helped redesign the provision of critical care services across the Trust and assisted with devising care pathways. One Advanced Practitioner is currently in post, following a set of internally developed competencies, with links to a higher education provider and commenced Masters Modules in September 2004. Two Assistant Practitioners commenced in September 2004 and are currently completing their NVQ 3 to enable access to the foundation degree next year.

Contact: Carol Woods, Project manager critical care New Practitioner role programme.

Appendix 1 Membership of the Adult Critical Care Stakeholder Forum

Chair	Peter Royle
Acute Trust Chief Executive	Douglas Pattisson
British Association of Critical Care Nurses	Chris Smith,
Critical Care Information Advisory Group	John Morris,
Department of Health Emergency Care Team	Keith Young / Paulette Clarke
Healthcare Scientists Forum and Network Allied Health Profession / Healthcare Scientist / Pharmacy representative.	Joan Pearson / Mark Tomlin / Catherine McKenzie
Higher Education Representative *University of the West of England, Bristol*	John Albarran
Intensive Care National Audit & Research Centre (ICNARC)	Lucy Scott
Independent Healthcare Forum	Sally Taber
Intensive Care Society Patient Liaison Committee	Barry Williams
Intensive Care Society	Saxon Ridley
Intercollegiate Board for Training in Intensive Care Medicine	Chris Heneghan
Modernisation Agency	Ginny Edwards (to July 2005)
National Outreach Forum - Chair	John Welch
Network Managers - Chair	Lisa Dawson (to June 2005) Sarah Brookfield (from June 2005)
Network Medical Leads – Chair	Jane Eddleston
Network Nurses Forum - Chair	Sarah Clarke
Network Service Improvement Leads - Chair	Sally Brown / Sue Shepherd
Neurosciences Group	Martin Smith
New Ways of Working Programme – Chair	Julie Pearce / Carol Woods
Patients Association - Chair	Michael Summers
PCT Lead Commissioner	
Royal College of Anaesthetists	Peter Nightingale
Royal College of Nursing - Critical Care Forum	Maura McElligott,
Royal College of Physicians	Tim Evans
Royal College of Surgeons	Linda de Cossart
Strategic Health Authority Lead	Madeleine Johnson

Appendix 2: North East & Cumbria Critical Care Network (NE &CCN) Outreach Group (2004): Framework for Benchmarking Critical Care Outreach Services

Critical Care Outreach Services	Category 1 (0 point)	Category 2 (1 point)	Category 3 (2 points)	Category 4 (3 points)	Category 5 (4 points)
Critical Care Education & Training for ward staff	No critical care skills teaching for ward staff	Ad hoc one to one teaching of ward staff	Regular teaching sessions available to ward staff on key areas ,e.g. tracheostomy care (plus category 2)	Alert type courses available to ward staff (plus categories 2&3)	Specific critical care skills training programme targeted at all ward staff (plus categories 2&4)
Audit & evaluation of key issues in individual organisations	No audit of Outreach services	Infrequent audit of limited outreach dataset	Regular audit of limited outreach dataset	Regular audit and evaluation of services using comprehensive outreach dataset	Continuous audit and evaluation of outreach services using ICS recommended dataset
Use of physiological track & trigger systems	No 'Track & Trigger' systems in use	'Track & Trigger' used on selected surgical wards only	'Track & Trigger' used on selected medical & surgical wards only	'Track & Trigger' used on all medical & surgical patients	'Track & Trigger' used Trust wide
Direct support at the bedside	No bedside support available	Bedside support available Monday to Friday 9-5	Bedside support available 7 days per week 9 -5	Bedside support available 7 days per week 12 hours per day	24 hour service/ 7 days per week
Multi disciplinary team membership	No outreach team at all available	Outreach nursing team, no designated medical staff	Outreach nursing team with access to medical advice	Outreach nursing/AHP team with designated medical sessions	Fully funded multi disciplinary Outreach team

15 Networks have identified the use of Track and Trigger systems across some, or all of their hospitals. (Thames Valley, Manchester, North East & Cumbria, Sussex, North Trent, Black Country & Birmingham, Surrey wide, Trent, Central Southern, Anglia Mersey & Cheshire, Cambridgeshire, North West London, South West London and Lancashire). 12 Networks have standardised education packages for the recognition of critical illness on the wards. Some use the ALERT course, or a home grown version e.g. GMAIM. (Manchester, North East & Cumbria, Sussex, North Trent, Black Country & Birmingham, Surrey wide, Trent, Central Southern, Anglia, Mersey & Cheshire, Cambridgeshire and Lancashire). Five have managed to make their programme compulsory in all, or some of the hospitals for groups of staff e.g. FY, Hospital at Night team (Sussex, Black Country, Mersey & Cheshire, Manchester, South West London). 15 Networks report universal follow-up, but not active rehabilitation and 11 Networks have evidence of at least 1 outpatient follow-up clinic service within the Network. (Data from Dr Jane Eddleston, Chair, Network Medical Leads, 05/07/2005).

Appendix 3

Patient Safety / Improving the Quality of Care

Care Bundles

Around 200 critical care units in England are presently using a 'Care Bundle' technique to look at and improve the reliability of administering therapies. The principles they are using are potentially applicable to all specialities.

The term Care Bundle refers to a collection of processes used to care effectively for patients and involves putting together several evidence-based elements of care (approximately three to five practices) that are essential to improving clinical outcomes. This concept has been adopted as one of the 10 High Impact Changes for Service Improvement and Delivery (NHS Modernisation Agency, 2004)

A series of five articles were published in March 2004 focusing on 'Inpatient Safety' (Bion & Heffner, 2004; Pronovost et al, 2004; Lilford et al, 2004; Cook et al, 2004; Angus & Black,2004) which, although do not refer to Care Bundles by name, provide evidence that the concept is a valid way of improving outcomes. Bion & Hefner (2004) refer to errors of omission and errors of commission. Errors of commission are easily identified and addressed, leading to improvements in practice aimed at reducing the risk of further, similar occurrences. Errors of omission are, however, not as easily identifiable and are rarely detected but can be as harmful to a patient as an error of commission. The Care Bundle approach equips us with a tool to identify errors of omission to inform education for improving practice.

The care bundle approach has been a great success within critical care, with 90% of critical care networks having a care bundle in at least one unit. This is because it reduces unwarranted variation in the provision of care whilst at the same time improving equality of care, thus ensuring that patients with the same clinical condition are managed consistently. This approach encourages clinical teams to examine the way they deliver therapeutic interventions in order to improve the delivery of care to patients and achieve better clinical and organisational outcomes. ***(See table E below)***

The Stakeholder Forum recognises care bundles as part of the quality and safety agenda. The benefits of utilising this approach are shown in the table below followed by examples of its effectiveness in critical care.

Care bundles - those currently in use and in development are as follows:

Central Venous Catheter	Nutrition	TPN
End of Life	Renal	Tracheostomy
Mobilisation	Sepsis	Ventilation
Neuro	Spinal	

Possible benefits that can be obtained by improving the reliability of performing therapeutic interventions through a care bundle approach include:

Table E

Service Delivery	Patient Experience
Evidence indicates: • improved clinical governance procedures • improved equity of care between patients • faster delivery of care because of explicit agreement on therapies • possibility of decreased length of stay • possibility of decreased cost • lower sedation costs • small changes in length of stay in specialties under pressure may have significant cumulative effect.	Evidence indicates: • fewer complications • fewer complaints • fewer omissions of indicated therapy • reduction in unnecessary length of stay and other risks of hospitalisation.
Clinical Outcomes	**Benefits for Staff**
Evidence indicates: • reduced morbidity • improved outcomes if therapy is given more regularly • this treatment is based on agreed evidence based guidelines • fewer adverse events • fewer complications as prophylaxis regimens are administered more regularly • that it draws attention to the link between outcomes and processes.	Evidence indicates: • clinical and managerial staff aligned to provide the best care for patients • a systematic approach to improve the delivery of healthcare is encouraged • creative discussion between staff leads to new insights on care processes • improved relationships between staff by stimulating dialogue.

(Source: 10 High Impact Changes for Service Improvement and Delivery – NHS Modernisation Agency, September 2004)

Case Study   Patient Safety and Tracheostomy Care Bundle

In North West London, the Critical Care Network with The Hillingdon Hospital NHS Trust has developed a tracheostomy care bundle. This was a project to improve the safety of and quality of care delivered to patients with a tracheostomy, both on general wards and in critical care.

Prior to implementing the bundle, the hospital had documented evidence of clinical incidents on general wards relating to tracheostomy care, blocked tubes and a high percentage of calls to the outreach sister for tracheostomy care related issues. Following implementation of the bundle supported by a ward based education and training programme, compliance improved from 19% to 66% and the Trust saw a marked reduction in the number of blocked tubes, tracheostomy related clinical incidents and calls to outreach. With the encouraging results, the bundle was quickly implemented in critical care and achieved similar compliance (18% to 75%). Work is ongoing to improve this further.

The benefits to patients, staff, and organisations include:

Significant reduction in incidents

Improved care and expertise at ward level

Continuity of care - looked after by same team in familiar environment

Earlier access to rehabilitation and all multidisciplinary team members

Empowering staff to deliver 'total' patient care - feeling a better job is being done

Improved communication and relationships between staff groups and departments

Enabling earlier discharge from critical care units

Improved access to critical care beds

This work has been presented locally within the Trust and across the Network, at national meetings and at the Institute for Healthcare Improvement conference in Copenhagen in 2004. With adoption of the bundle at other Network hospitals, further work is underway to spread the bundle into the community setting to address similar issues with community staff, and patients with long-term tracheostomies. This is starting as a joint initiative between the Network, Ealing Hospital Trust and Ealing PCT. The recent news release from the National Patient Safety Agency relating to emergency care for patients having had laryngectomies must drive further work in this area.

Sample Care Bundle:
Tracheostomy Care Bundle Elements

1. Humidification
Each patient with a tracheostomy insitu should receive adequate humidification by the means stated in the tracheostomy care status sheet. *This should be checked and documented 2 hourly.*

2. Suctioning:
Patients to have secretion checks at *least 2 hourly* and be suctioned as required.

3. Inner Tube Care:
Inner tube to be removed, checked for secretion build up, cleaned as per Trust policy and replaced. *This should be done 2 - 4 hourly.*

4. Safety Equipment
All bedside emergency equipment relating to tracheostomy care to be checked against Trust policy *at the beginning of each shift.*

5. Tracheostomy Dressing / Tapes
Each patient with a tracheostomy to have dressing and tapes changed *at least every 24 hours.*

6. Cuff
Cuff status to be checked against patient tracheostomy status sheet *each cuff.*

For further information, please contact NW London Critical Care Network
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