



Llywodraeth Cymru
Welsh Government

www.cymru.gov.uk

Together for Health – A Delivery Plan for the Critically Ill

A Delivery Plan up to 2016 for NHS

The highest standard of care for everyone who is critically ill

A Delivery Plan for the Critically ill

Foreword by the Minister for Health and Social Services

Foreword by the Chief Executive of NHS Wales

1.	Overview	5
2.	Strategic context	6
3.	Our Vision	7
4.	Why is this a priority?	7
5.	Our journey so far	8
6.	What do we want to achieve?	8
7.	Working together	9
8.	Measuring success	10
9.	Local plans – local action	11
10.	Delivery themes and actions	
	• Delivery Theme 1: Delivering appropriate, effective ward based care	12
	• Delivery Theme 2: Timely admissions to critical care	15
	• Delivery Theme 3: Effective critical care provision and utilisation	17
	• Delivery Theme 4: Timely discharge from critical care	19
	• Delivery Theme 5: Improving Information and Research	21
	High level actions to support delivery	23
	References	25
	Annex 1 – Tiers of Critical Care	26

Ministerial Foreword – Mark Drakeford AM

Minister for Health and Social Services

The Welsh Government wants to ensure people who are critically ill have timely access to high quality services, irrespective of where they live. This is a national plan, for the National Health Service of Wales. Local Health Boards must own it and, by 2016, must deliver the new commitments to the Welsh population contained in this Delivery Plan.

This document - one of a suite of National Service Delivery Plans – is designed to guide Local Health Boards and Trusts in the organisation and prioritisation of services for people who are critically ill. It requires the NHS to:

- Analyse the gap between current provision and the requirements in this Plan
- Plan and take action to close that gap
- Demonstrate, through regular reporting, improved outcomes for patients

I strongly believe that we can achieve high quality care and improved population outcomes.

I wish to record my thanks to members of the Task and Finish Group on Critical Care for their leadership and work in the preparation of this Plan and together we are committed to ensuring Wales has effective care for the critically ill.

Foreword from David Sissling, Chief Executive of NHS Wales

I commit Local Health Boards and Trusts, working together, to plan, secure and deliver safe, sustainable, high quality care for people who are critically ill. We will support them in this endeavour and will hold Local Health Boards to account for the outcomes they deliver and for their contribution to the overall health of the people of Wales.

This Delivery Plan for the care of the critically ill sets out a compelling vision for success. It challenges organisations to plan and deliver high quality services. I want to see continuous improvement integrated into everyday working. Our measures of success must focus more on the quality of our services and the individual's experience.

Using *Together for Health – A Delivery Plan for the critically ill* as the framework, my challenge to the NHS in Wales is to work effectively to plan, innovate and, most importantly, to deliver really effective care for people who are critically ill.

1. Overview

Sometimes, the health of a patient in hospital may get worse suddenly (this is called becoming critically ill). There are certain times when this is more likely, for example following an emergency admission to hospital, after surgery and after leaving critical care. However, it can happen at any stage of an illness. It increases the patient's risk of needing to stay longer in hospital, not recovering fully or dying. Monitoring patients (checking them and their health) regularly while they are in hospital and taking action if they show signs of becoming worse can help avoid serious problems.

Critical care is a specialty which provides support for patients with acute life-threatening injuries and illnesses. Critically ill patients require organ support and close, constant attention by a team of specially-trained health professionals. Critical care is also often the most appropriate environment for preparation for organ retrieval from organ donors and for support of donor families. A lack of critical care capacity may be a constraint to maximising the retrieval of organs from potential organ donors. Demand for critical care is increasing and, as a result of changing demography, is projected to continue to do so at around 4-5% per year^{1,2,3}.

Capacity however is not just about beds and equipment but about a multi disciplinary workforce providing a flexible approach to a patient's critical care needs. There are clear challenges ahead for health service provision across Wales and critical care is no exception. "*A Strategic Vision for Critical Care Services in Wales*", written by the Critical Care Networks and endorsed by wider critical care professional groups, provides an outcome based framework to maintain and improve the delivery of equitable, effective and efficient critical care services. It includes a modernised tiered approach to critical care units which acknowledges the medical staffing challenges we need to face. This Delivery Plan for the Critically Ill builds on this to deliver that vision.

This Delivery Plan for the Critically ill provides a framework for action by Local Health Boards. It sets out the Welsh Government's expectations of the NHS in Wales in delivering high quality critical care ensuring the right patient has the right care at the right time. It therefore focuses on maximising efficiency and effectiveness, tackling variation in access and reducing inequalities in service provision. The plan is split into five themes:

- Delivery Theme 1: Delivering appropriate, effective ward based care - *The Right Patient*
- Delivery Theme 2: Timely Admissions to Critical Care – *The Right Patient receiving the Right Care at the Right Time.*
- Delivery Theme 3: Effective critical care provision and utilisation – *The Right Care*
- Delivery Theme 4: Timely Discharge from Critical Care - *The Right Patient receiving the Right Care at the Right Time.*
- Delivery Theme 5: Improving information and Research

For each theme it sets out:

- Delivery expectations to ensure the right patient, in the right care and the right time
- Specific priorities for 2013 – 2016
- Responsibility to develop and deliver actions
- Assurance measures that will be used to ensure that this plan is delivered and effective outcomes achieved.

2. Strategic Context

The Welsh Government's *Programme for Government* and its 5 year NHS Plan, *Together for Health*, sets out an ambitious programme for health and well-being in Wales so that:

- Health and well-being will be better for everyone
- Access and patient experience will be better
- Better service safety and quality will improve health and well-being outcomes

Achieving Excellence: The Quality Delivery Plan for the NHS in Wales for 2012-16 describes a journey to bring about excellence in our services. It outlines actions for quality assurance and improvement. We commit to a quality-driven NHS that provides services that are safe, effective, accessible, affordable and sustainable.

3. Our Vision

The *Programme for Government* sets out the overall population outcomes that we want to achieve; better health for all and reduced inequalities in health. For some patients critical care is inappropriate. However, for those patients where it is appropriate, ensuring that the right patient is in the right place, at the right time will contribute significantly to these outcomes.

For our population we want:

- Patients and clinicians to discuss and agree appropriateness of critical care and level of escalation of care in time of need
- Patients to have timely access to (where appropriate for their condition and needs) and discharge from critical care
- Patients to be cared for in the correct facility with highly qualified specialists.
- Patients and carers to be as involved in their care as they feel appropriate.
- Patients to receive care that is clinically effective.

4. Why is this a priority?

There are clear reasons for caring for the critically ill to be a key priority in Wales.

Patients requiring critical care are relatively low volume (around 9000 per annum⁴ for Wales) but, when critical care is required, access needs to be timely and often rapid. By the very nature of the intensive therapy provided, critical care beds are amongst the most costly resource within a secondary care service, for example according to the all Wales Consolidated Welsh Costing Return (WRCN1) 2011/12:

- A ward bed cost an average of £413 per night
- A Level 2 High Dependency bed cost an average £857 per night.
- A Level 3 Intensive Care bed cost an average £1932 per night

Therefore, when a critical care episode is complete, it is important both clinically and financially that patients are moved on to an environment more appropriate for their needs and rehabilitation as soon as possible.

Where admission is required to critical care to facilitate organ donation this needs to be immediate. There is evidence that organ donation is difficult to accommodate with the current capacity and occupancy levels; in the last couple of years evidence from NHS Blood and Transplant suggests six organ donors have been unable to proceed due to lack of critical care facilities.

Critical care units should run at an average occupancy of around 65-70%⁵ in order that emergency admissions and demand can be accommodated. All units in Wales report occupancy rates of greater than 80%⁴, with many often operating at over 100% occupancy at times. Patients are sometimes being cared for in operating recovery departments or extra beds are being used but without the necessary increase in staff to safely manage those extra patients. This represents unmet demand and unknown numbers of patients who should receive critical care being denied access due to capacity shortages.

While patients cared for on general wards are unable to access critical care, many of the patients on critical care units may not require that level of care. National critical care data⁴ shows that 111,377 (7.5%) critical care bed hours were lost due to patients awaiting discharge to ward beds in 2012/13; this equates to almost thirteen years or thirteen beds across Wales in one year. There are several ways in which these delayed discharges impact on patient care throughout the hospital but primarily results in;

- cancelled high risk and or complex operations,
- deferred admissions,
- refused admissions,
- patients being transferred to other hospitals for critical care or
- patients cared for in an environment that is sub-optimal for their needs.

NHS Wales has a limited number of critical care beds with an average of 3.2 (intensive care) beds per 100,000 people^a. This is lower than the number of beds provided for the population in the rest of the UK. Such a low level of beds makes it all the more important that they are used to maximum efficiency and effectiveness by minimising avoidable or unnecessary admissions and ensuring timely discharge. Value for money is expected in all areas of healthcare and we know much can be done to improve the efficiency of critical care. However, efficiencies alone will not be enough to cater for the increasing demand and further investment to increase critical care capacity is necessary.

The extent of this shortfall requires further modelling to fully understand the total unmet demand; this will be required as an integral part of the service reconfigurations, and will need to be aligned to the *Strategic Vision for Critical Care Services in Wales*.

5. Our journey so far

The publication in 2006 of *'Designed for Life: Quality Requirements for Adult Critical Care in Wales'* was a milestone in the development of critical care services in Wales. Whilst improvements have resulted from the ability to measure facilities against these requirements, the major emphasis was on ensuring structures were in place.

This Delivery Plan does not replace but builds on the previous Quality Requirements. These quality requirements have been updated in the *"Strategic Vision"*. We have better information than ever before; all units submit critical care data to both the Welsh Critical Care Minimum Dataset (CCMDS) and the Intensive Care National Audit Research Centre (ICNARC) so we have validated information and patient outcomes enabling us to assess where improvements can be made.

The publication in July 2007 of the NICE Guidelines on Acutely Ill Patients in Hospital (CG50) set out how patients in acute hospitals should be monitored to help identify those whose health becomes worse and how they should be cared for if this happens.

With these foundations in place it is now time to place a greater emphasis on outcomes, on ensuring that patients are cared for in safe, high quality environments by sufficient numbers of qualified and experienced staff and on reducing the inefficiencies which result in poor flow through the critical care units to ensure the appropriate level of critical care is available to those who need it, when they need it.

6. What do we want to achieve?

This Delivery Plan for the Critically Ill sets out actions to improve the critically ill patients experience and outcomes, reducing inequalities and variability in access to services. It seeks to ensure that those who require critical care receive it in an

^a Calculation based on the number of level 3 critical care beds in Wales (96) divided by the Welsh population of 3.06m taken from 2010 Census

appropriate environment, cared for by sufficient numbers of suitably qualified and experienced staff. Critical care is a finite resource so it must be used for those who need it, when they need it. Critical care is not appropriate for all patients, so we must support patients, families and clinicians to have open and honest conversations about escalation of treatment, appropriateness of critical care and death. This Delivery Plan should be read alongside other delivery plans such as the End of Life Delivery Plan.

This Delivery Plan for the Critically Ill is set within the context of current NHS reconfiguration. It is widely recognised that larger units have greater flexibility with capacity than smaller units. Local Health Boards must work with clinicians to prioritise resources and/or re-organise service delivery in order to better meet need.

Improved outcomes will only be seen where there is progress both within critical care and across the whole hospital system; for example improving flow throughout the whole hospital to facilitate timely discharges from critical care. The Welsh Government expects to see clear progress against this Plan - demonstrated through annual reports. Published on Local Health Board websites, these reports will allow scrutiny and the comparison of progress across Wales, facilitating learning and driving progress.

7. Working together

The Welsh Government is responsible for strategic leadership through setting the health outcomes it expects for the people of Wales. It holds the NHS to account on how well it delivers the outcomes we want. The lines of accountability are via the Chairs of the Local Health Boards to the Minister for Health and Social Services. The Chief Executives of the Local Health Boards report to the Chief Executive of NHS Wales who is also the Director General of the Welsh Government's Department for Health and Social Services. There are regular performance reviews and progress against this Delivery Plan will be monitored as set out in sections 8 and 9.

NHS Wales is made up of seven Local Health Boards and three NHS Trusts. Local Health Boards are responsible for planning and delivering local services for patients who are critically ill and also for securing tertiary services. The Local Health Boards work in partnership with the Critical Care Networks to plan and deliver care.

Public Health Wales NHS Trust provides Local Health Boards with information and advice to inform service planning. The Welsh Ambulance Service NHS Trust plays a vital role in responding to critical care transfers and transferring patients. The NHS Wales Informatics Service (NWIS) supports Local Health Boards in the collecting and reporting of information.

The **National Specialist Advisory Group** for critical care provides expert professional advice to the Welsh Government and the NHS.

An **All Wales Critical Care Implementation Group** will be established to provide strong and joined-up strategic leadership and oversight of delivery by 2016 against this Plan. The Group will:

- Ensure a relentless focus on delivering the priorities and outcomes of the Delivery Plan
- Identify constraints and solutions to delivery
- Operate at an all Wales level to focus and support Local Health Boards to deliver in a consistent way across Wales
- Agree how best to measure success, advising on the use of outcome indicators and assurance measures
- Scrutinise local delivery plans and assess progress – providing peer challenge of performance
- Facilitate the sharing and implementation of best practice

The group will include leads from each Local Health Board, Public Health Wales, the Welsh Ambulance Service Trust and the Welsh Health Specialised Services Committee. Expertise may also be accessed from the various professions involved in providing care for the critically ill. The Group's relationship with the National Specialist Advisory Group and Critical Care Networks will also be set out in Terms of Reference. The Chair will be accountable to the Welsh Government; the Group will report annually on progress.

Much work has been undertaken in disease specific areas which have an impact on critical care (Heart Disease, Stroke, End of Life and Cancer for example). This Delivery Plan should not be viewed in isolation and should be read in the broader context in which critical care operates.

8. Measuring success

The Welsh Government's *Quality Delivery Plan (2012-2016)* sets out how we will monitor performance and progress in improving health and social care in Wales. Engagement to develop an initial Outcome Indicator Framework will take place during Summer 2013.

The Quality Delivery Plan places requirements on NHS organisations to monitor a set of nationally specified performance measures and report them to the public and hence to Welsh Government and their Boards at regular intervals. This Delivery Plan for the Critically Ill now places a requirement on each organisation to publish an annual report on critical care services for the public of Wales to demonstrate progress. The year 2013/2014 will therefore be one of transition as we move to this new approach.

This Delivery Plan sets out initial national outcome indicators and NHS assurance measures which will indicate whether progress is being made. These may be amended on advice from the Implementation Group. The Implementation Group and Local Health Boards may wish to adopt additional indicators or measures which they feel will drive progress in delivery against this Plan. We recognise that some datasets and measures may not yet be in place and that others may need refining or developing. The Critical Care Networks will assist in the development of detailed service level measures where required.

The focus of this Plan is on reducing health inequalities and inequitable access to critical care provided by highly trained specialists and discharge to a more appropriate setting; scrutiny will focus on the differences across Wales.

9. Local plans - local action

In response to this Delivery Plan for the Critically Ill, Local Health Boards are required to develop and publish a detailed local delivery plan to identify, monitor and evaluate action needed required. They will report annually on progress.

Delivery Theme 1: Delivering Appropriate, Effective Ward Based Care– The Right Patient.

Patients, for whom critical care is appropriate, are identified in a timely manner so they have the best chance of a good outcome.

Patients for whom critical care is not appropriate are discussed and agreed pre-referral to critical care so they have the best chance of the correct outcome.

Over 9000⁴ patients are treated in critical care in Wales each year. Critical care is not in every patient's best interests, therefore effective planning for critical care will result in more efficient and appropriate care for all.

All acute admissions to the hospital should receive a consultant review within 12 hours of admission as recommended by National Confidential Enquiry into Patient Outcome and Death (NCEPOD) Report *Emergency Admissions: A journey in the right direction?* (2007). Allied to that, clinicians who admit patients with need for unscheduled care, with their patients and families, should plan the level of escalation of treatment on hospital admission (where possible); this will not only improve the referral process to critical care if, and when it is required, but also allows decisions to be informed and considered.

Where appropriate, some patients need prompt access to co-ordinated, effective and compassionate palliative and end of life care. The latest National Confidential Enquiry into Patient Outcome and Death report, *Time to intervene*, demonstrates failings in decision making about end of life care for many patients. Where relevant, care should be provided in line with the *Delivering End of Life Care Plan*. The ethical issues around advanced planning for patients – and critical care patients in particular - are difficult and will require a specific workstream to consider the best way forward. The NHS in Wales should, however, continue its ongoing work to develop a single policy for Do Not Attempt Cardiopulmonary Resuscitation (DNACPR) decisions. These decisions need to be clearly made, documented and audited.

Early identification of patients whose condition is deteriorating can sometimes prevent the need for admission to critical care by offering early intervention. Where patients do require critical care, early identification and intervention can prevent further deterioration and possibly death. This is not only in the patient's best interests but may reduce lengths of stay in critical care:

The high-risk surgical population accounts for a minority of cases but is responsible for the majority of postoperative complications, prolonged hospital admissions and deaths⁶.

- It is now recognised that patients undergoing general surgery, with a greater than 10% risk of death should be admitted to critical care after their surgery to prevent unexpected deaths⁷. Health Boards should not only screen their surgical patients for risk of mortality pre-operatively but should review their Level 2 (High Dependency) capacity to accommodate these patients.

- Patients who become acutely ill whilst on wards benefit from early recognition and intervention with rapid treatment and escalation if needed. National Early Warning Scores (NEWS) are designed to identify such deteriorating patients so should be utilised uniformly by Local Health Boards.
- Sepsis is the leading admission diagnosis to critical care in the UK, with a very high mortality rate of around 30 – 50%⁸. Simple screening tools used alongside the NEWS criteria and early intervention on ward level has a potential to reduce this burden. The Sepsis Six approach as endorsed by the 1000 Lives Plus Campaign and RRAILS should be rolled out in each acute site of the Local Health Boards.
- The NCEPOD Report: Adding Insult to Injury, published June 2009, reviewed the care of patients who died in hospital with a primary diagnosis of acute kidney injury (acute renal failure). It noted that a fifth of post admission acute kidney injury was both predictable and avoidable. It also noted that there were unacceptable delays in recognising post-admission acute kidney injury in 43% patients⁹.

Acute Kidney Injury champions have been identified in each Local Health Board and improved diagnostic tools are currently being developed by biochemists in Wales and England. Their introduction will have the potential to greatly improve the assessment of risk of developing acute kidney injury.

Delivery Expectations

- Acute admissions to hospital receive a consultant review within 12 hours of admission
- Improved communication between clinicians, families and patients regarding escalation of treatment options, appropriateness of critical care and/or end of life options (see also End of Life Delivery Plan). This should be documented clearly.
- Patients with a high risk of becoming critically ill and those who deteriorate are identified early.
- Outcomes for general surgical patients is improved; 'unexpected' deaths are reduced.

Specific Priorities 2013 – 2016 Local Health Boards to:

- Ensure all acute admissions to secondary care are reviewed by a consultant within 12 hours of admission with a clearly documented decision about DNACPR and escalation of care. These should be regularly audited.
- Ensure all patients have National Early Warning Scoring (NEWS) and an agreed protocol for escalating referral where indicated.
- Ensure all acute admissions are assessed for the risk of developing acute kidney injury.

- Ensure all acutely unwell patients are screened for sepsis and appropriate care pathway delivered where indicated.
- Put in place a process to ensure all patients requiring general surgery have their mortality risk calculated - those with a score of predicted mortality greater than 10% will require assessment for post operative critical care admission

Responsibility to develop and deliver actions

Local Health Boards, working with partners from 1000 Lives Plus and Renal Network.

Outcome indicators

- Percentage of general surgical patients with a predicted mortality score of greater than 10% cared for outside critical care.

NHS Assurance Measures

- Hospital mortality measure
- Percentage of patients who have a NEWS completed and documented
- Percentage of acute admissions to hospital where the patient has a documented decision regarding escalation of treatment.
- Percentage of patients who had an assessment for acute kidney injury on admission and the risk of developing acute kidney injury post admission.
- ICNARC reports on LHB and All Wales level

Delivery Theme 2: Timely Admissions to Critical Care – The Right Patient receiving the Right Care at the Right Time.

Patients, for whom critical care is appropriate, are admitted, to an appropriately staffed critical care unit in a timely manner so they have the best chance of a good outcome.

In order to provide safe care, it is not feasible for each health board to meet every patient's need in every critical care unit. Where hospitals are unable to safely provide the level of critical care that a patient requires they must transfer them to a hospital that can. This means that each Local Health Board must assess what level of critical care it can safely provide in each hospital and ensure that it has arrangements in place for quickly and safely transferring all patients whose needs exceed that level of care. The requirements for safely providing each level (tier) of care are set out in Appendix 1.

If immediate access to the critical care unit is delayed for non-clinical reasons it constitutes a delayed admission. This includes any organisational delay beyond the time taken to initially resuscitate and move the patient. Delayed admissions worsen outcomes.^{10,11}

The Intensive Care Society (ICS) state that critical care units should run at an occupancy of 65-70%. Occupancies higher than this are known to lead to cancelled operations, non-clinical transfers and delayed admissions, each of which have their own impact on outcomes for patients.

Patient safety is also compromised where patients are cared for in a setting that is inappropriate for their required level of care. This can include caring for critically ill patients in non-critical care areas such as theatre recovery, Emergency Departments or on wards. It is also known that patients who could benefit from critical care are not referred due to persistent lack of capacity. In addition, there is evidence that patients are frequently given 'different management' plans in order to avoid cancelling their surgery where there is no critical care bed available, potentially increasing risk. This problem is more apparent in the small and medium size hospitals with less than 8 critical care beds, where the existing capacity cannot be used flexibly as demand dictates.

Undertaking a critical care transfer for non-clinical reasons such as lack of a critical care bed puts the patient at risk. Cancelling operations due to lack of critical care beds, often on the day of surgery, is not only counter to the patient's best interest (these patients are usually high risk) but are also costly in terms of surgeon and surgical team time and unused theatre capacity that cannot be filled last minute. Late theatre starts (and therefore finishes) are often also a consequence of lack of critical care beds; the Delivery Support Unit estimate the costs of unused theatre time at £8.33/min.

Inequities in access not only occur between critical care units but are also dependent on demand. There will always be times of high occupancy and increased demand. However, flow through the whole hospital system should enable timely admission.

Delivery Expectations

- Critical care facilities will be utilised for patients requiring intensive (Level 3) care and/or high dependency (Level 2) care only.
- Operations cancelled due to lack of a critical care bed will be reduced.
- Transfers for non-clinical reasons will be reduced (especially when directly correlated with delayed discharges - see Delivery Theme 4)
- Delay in accessing critical care facilities will be reduced (especially when directly correlated with delayed discharges - see Delivery Theme 4)

Specific Priorities 2013 – 2016 Local Health Boards to:

- Allocate critical care units as appropriate, aligning with Service Redesign and using the requirements set out in Appendix 1

Ensure systems are in place to provide prompt access to critical care and, if not available on site, to quickly and safely transfer patients.

- Develop mechanisms to monitor delayed admissions to critical care and the impact of the delay; for example, out of hours discharges.
- Monitor cancelled operations and non-clinical transfers due to lack of critical care beds.

Responsibility to develop and deliver actions

Local Health Boards.

Outcome indicators

- Deaths whilst awaiting critical care admission.

NHS Assurance Measures

- Hospital morality measure
- Bed occupancy levels
- Number of cancelled operations due to lack of a critical care bed

Delivery Theme 3: Effective Critical Care Provision and Utilisation– The Right Care.

Patients in critical care receive care from dedicated critical care medical staff in critical care units which are aligned to the hospital's acute services.

Patients in critical care will receive evidence based care in the form of high compliance with care bundles, national guidance and care pathways etc.

Patients will receive the right level of care in the right environment.

Critical care patients are amongst the sickest in the whole hospital requiring specialist care and frequently multi-organ support. Such patients require the on-call consultant to have daytime sessions on the unit and no other commitments whilst on-call. Likewise the sub-consultant level doctor should have no other responsibilities except for resuscitation within the hospital.

At a time when Service Reviews are being undertaken, Local Health Boards need to consider the most effective and efficient way to deliver critical care. Where hospitals continue to have an unselected intake however, for patient safety Local Health Boards should continue to provide a critical care service but this need not meet the same specifications in every hospital as outlined in appendix 1.

The 1000 Lives Plus Programme (and previous similar programmes) have developed sets of clinical bundles which represent effective care for people critical care patients. Some of these bundles should be implemented in the ward environments for example, the Sepsis Bundle. Local Health Boards must demonstrate high compliance with these bundles.

Many critical care units care for patients with single organ failure (classified as Level 1) such as patients who require long term ventilation (LTV), Non Invasive Ventilation (NIV) for a chronic illness patients and Acute Renal Failure patients (ARF) in areas where access to renal services is limited. In many instances this is neither an efficient nor effective use of limited and costly critical care resources and would be better provided in more appropriate environments.

Similarly, other Level 1 patients are often cared for in critical care such as patients with epidurals where there is a limited or no acute pain team, or patients requiring an insulin infusion because the wards do not have the skills to care for such infusions. Local Health Boards should review the provision of services in these areas to ensure the right care in the right place.

Delivery Expectations

- Within the criteria outlined in appendix 1 all critical care patients are cared for by dedicated critical care consultants and middle tier doctors.
- Critical care will be delivered efficiently and effectively aligning with Service Reviews and in line with the latest evidence and national standards and guidelines.

- Patients requiring single organ care or other forms of enhanced care for people who are not critically ill (Level 1) will be cared for in appropriate ward environments.
- Other Level 1 patients will be cared for in appropriate ward environments.

Specific Priorities 2013 – 2016 Local Health Boards will:

- Ensure that critical care patients are managed by dedicated critical care consultants and middle tier doctors, as outlined in Appendix 1.
- Align critical care delivery with Service Reviews whilst continuing to ensure patient safety of unselected admissions.
- Work with 1000 Lives Plus to implement service improvements whilst monitoring compliance with care bundles, national guidance etc.
- Deliver effective and efficient care of critically ill patients; including increasing provision or enhancing services to care for Level 1 patients outside of critical care where appropriate.
- Where critically ill patients do require transfer, these are done by appropriately trained staff safely and effectively. These transfers will continue to be audited by the Critical Care Networks.

Responsibility to develop and deliver actions

Local Health Boards working with 1000 Lives Plus Programme

NHS Assurance Measures

- Number of units compliant with dedicated critical care consultants and middle tier doctors at all times
- Percent compliance with care bundles (both within and outwith critical care)
- Number of CCMDS critical care admissions for Level 1 care “*episodes where L2 and L3 = 0*”
- All critical care transfers should be graded good or excellent in quality.

Delivery Theme 4: Timely Discharge from Critical Care - The Right Patient receiving the Right Care at the Right Time.

Patients are discharged from critical care in a timely manner so they have the best chance of early rehabilitation.

Patient requiring critical care will have improved access due to improved flow through the units.

Delayed discharges, or DToCs (Delayed Transfers of Care) from critical care are significant and have increased year on year. In 2012/13, a total of 12 years 9 months (111,377 critical care bed hours) were lost to NHS Wales with some 4481 (46.6%) patients waiting more than four hours to be discharged from critical care⁴. This is related to hospital flow as a whole.

DToCs not only prevent patients who are critically ill from accessing the treatment they need, but also have a detrimental effect on the rehabilitation of patients whose transfers are delayed. DToCs are also harmful to patient safety as they result in out of hours discharges, cancelled operations and non-clinical transfers, all of which are known to increase morbidity and mortality. DToCs also have a financial implication, since a critical care bed is the most costly type of bed in the hospital. The critical care networks estimate of the costs of DToCs, in terms of bed days alone, was around £4.6m in 2012/13.

The Annual Operating Framework 2010/11 set a target of 95% critical care discharges to be undertaken within 4 hours. Local Health Boards must prioritise discharges from critical care units to achieve this target. This will result in improved flow through the critical care units, reduce cancelled operations, decrease deferred or refused admissions and non-clinical transfers, all of which are costly to the patient in terms of safety and costly to the Local Health Board in terms of resources.

When patients need to be transferred between hospitals, be it for clinical or non-clinical reasons, these also need to be undertaken in timely manner. *Designed for Life; Welsh Guidelines for the Transfer of the Critically Ill Adult* (2009) refer to the three categories of transfer, immediate, urgent and elective. Local Health Board clinicians need to be realistic about the urgency for transfer and the Welsh Ambulance Service Trust need to provide a service in accordance with the aforementioned guidelines.

Delivery Expectations

- 95% patients will be discharged within 4 hours of being ready for discharge and the bed being requested.
- Reduction in cancelled operations due to lack of a critical care bed
- Reduction in non-clinical transfers
- Timely inter-hospital transfers

Specific Priorities 2013 – 2016 Local Health Boards will:

- Prioritise critical care discharges
- Monitor and report to Board level committees the percentage of discharges achieved within 4 hours
- Develop mechanisms to undertake ongoing assessment of impact of DToCs:
 - to patients whose discharge is delayed and
 - to those who are prevented from accessing critical care due to lack of a critical care bed.
- Monitor cancelled operations and non-clinical transfers due to lack of critical care beds.
- Work with the Welsh Ambulance Service Trust to monitor and ensure timely inter-hospital transfers with agreed Standard Operating Procedures.

Responsibility to develop and deliver actions

Local Health Boards and Welsh Ambulance Service Trust.

Outcome indicators

- Percentage of critical care discharges within 4 hours ready for discharge time.

NHS Assurance Measures

- 95% critical care discharges within 4 hours ready for discharge time.
- Number of cancelled operations

Delivery Theme 5: Improving information and Research

Information systems to support high quality care and performance, clinical audit and review to drive service improvement. Critical Care research in Wales should be supported to drive forward improvements in care and outcomes.

The development of a systems approach to critical care is heavily dependent on the quality of information available – both up-to-date patient information and the data which gives evidence of outcomes and informs the development of best practice. Information on NHS performance is essential to inform policy, drive continuous improvement in service delivery and to provide transparent information to the public on the services which matter to them.

Realising the benefits of this Delivery Plan will require continuous improvement in all these areas and especially in developing robust information on the impact of unavailability of critical care beds.

Using information from service users on their experience of NHS care is a critical tool for improving future patient experience. Local Health Boards must use effective ways of finding out patients' views and using these to plan and deliver better critical care.

Participation in National Clinical Audits relating to critical care is a mandatory requirement which Local Health Boards must ensure is achieved. The national critical care audit, hosted by ICNARC (Intensive Care National Audit Research Centre), is the responsibility of individual Local Health Boards and participation rates will be used as an assurance measure. Participation in the Welsh Critical Care Minimum dataset (CCMDS) is also mandatory. Local Health Boards, working with Critical Care Networks need to provide assurance that data is captured and collated equitably. Full (100%) participation and submission of accurate information is required to effectively monitor progress in the delivery of critical care, to provide comparative outcome data and allow effective benchmarking. It is essential that this data is used for direct service improvement, to look at clinical performance, and for research.

Areas of development will include data/information capture of patients outside of critical care for example in relation to unmet demand, impact of DToCs, compliance with key actions (primarily cited in Delivery Theme 1) etc.

The Welsh Government expects Local Health Boards to make information publicly available on the services that they provide and their effectiveness. This Delivery Plan requires regular public reporting on the quality and delivery of critical care services. These requirements are set out in the final section of this Plan, What needs to happen when.

Research in critical care across Wales should be co-ordinated and supported through participation in the National Institute for Social Care and Health Research (NISCHR) portfolio scheme. This should be seen as a means to improve clinical standards as well as increasing the profile and role of critical care in a modern Welsh Health Service.

Delivery Expectations

- IT and communication links to facilitate critical care data capture
- Infrastructure to ensure availability of patients' records 24/7 to enhance decision making regarding acute admissions.
- Regular audit to assess progress against measures that indicate effectiveness of ward based care and critical care
- Transparently published information on NHS performance for critical care is easily available to the public
- Increase critical care research participation through National Institute for Social Care and Research (NISCHR).

Specific Priorities 2013 – 2016 Local Health Boards will:

- Monitor and record performance against the measures cited in this Delivery Plan; use the results to inform and improve service planning and delivery.
- Develop mechanisms to ensure full case history available electronically.
- Ensure full (100%) participation in mandatory national clinical audits, report key findings to the Local Health Board and ensure that findings are acted on.
- Actively support research participation through Research and Development and NISCHR.

Responsibility to develop and deliver actions

Local Health Boards

NHS Assurance Measures

- 100% participation in ICNARC and CCMDs
- Percent compliance with ICNARC and CCMDs
- Percent compliance with Delivery Plan metrics

What needs to happen when?

Actions to support delivery themes 1-5

	Action	Responsibility	When
1	Establish a National Implementation Group for critical care chaired by an LHB CEO to provide strategic leadership and support the delivery of this Plan.	Local Health Boards and Trusts (Welsh Government will facilitate setting the group up)	September 2013
2	Undertake a needs assessment to review current service provision and to identify where service provision needs to change to meet demand.	Local Health Boards (with support from Public Health Wales)	October 2013
3	Write local delivery plans, demonstrating a systematic approach to progressive implementation of the actions in this Plan	Local Health Boards in collaboration with partners (Critical Care Networks, WAST, 1000 Lives etc)	October 2013
4	Review the role and remit of the Critical Care Networks to support the delivery of this Delivery Plan	Critical Care Networks, Local Health Boards and Welsh Government	December 2013
5	Identify robust methodology to quantify capacity needs from unmet demand etc (this will need to be undertaken following the Service Reviews and aligned to the <i>Strategic Vision for Critical Care in Wales</i>).	Local Health Boards in collaboration with partners (Critical Care Networks).	December 2013
6	Produce consistent (all Wales) admission criteria for critical care units.	National Implementation Group with Local Health Boards	March 2014
7	Consider the ethical issues of advanced planning for all acute hospital admissions.	National Implementation Group	March 2014
8	Report formal progress to Boards and Welsh Government a) Completion and outcomes of actions 2 and 3 b) Progress in delivery the local delivery plans (action 3)	Local Health Boards and National Implementation Group (reporting format to be developed by Welsh Government)	a) March 2014 b) March 2015 and March 2016
9	Publish data on outcome indicators and assurance measures on websites	Local Health Boards	Annually in March 2014. 2015 and

			2016
10	Review and update delivery plans and milestones	Local Health Boards in collaboration with partners (Critical Care Networks, WAST, 1000 Lives etc)	At least annually, with first review by March 2014
11	Publish Annual Report (based on actions 8 and 9)	Welsh Government	Following publication of LHB reports in March 2014 and then annually
12	Produce a report quantifying the capacity shortfall in critical care for Wales	National Implementation Group working with Critical Care Networks and Local Health Board	May 2014
13	Review of progress and implementation and consider report quantifying the capacity shortfall in critical care for Wales	Task and Finish Group on Critical Care with National Implementation Group and Welsh Government	June 2014

References:

- ¹Personal communication from Professor Kathy Rowan, Director ICNARC
- ²Audit Commission (1999). *Critical to Success. The Place of Efficient and Effective Critical Care Services Within the Acute Hospital*. London: Audit Commission.
- ³Parker, A., Wyatt, R. and Ridley, S. (1998). Intensive Care Services; a crisis of increased expressed demand. *Anaesthesia*. 53:113-120.
- ⁴Critical Care Minimum Dataset (CCMDS)
- ⁵ Intensive Care Society. *Standards for intensive care units*. London (1997)
<http://www.ics.ac.uk/icmprof/downloads/ICSstandards4302.pdf>
- ⁶Pearse, R.M., Harrison, D.A., James, P., Watson, D., Hinds, C., Rhodes, A., Grounds, M.R. and Bennett, D.E. (2006) Identification and characterisation of the high-risk surgical population in the United Kingdom. *Critical Care*.10:R81
- ⁷National Confidential Enquiry into Patient Outcome and Death. Peri-operative care: knowing the risk (2011)
<http://www.ncepod.org.uk/2011poc.htm>
- ⁸1000 Lives Plus Campaign How to Guide – Improving Critical Care (2010)
<http://www.1000livesplus.wales.nhs.uk/critical-care>
- ⁹National Confidential Enquiry into Patient Outcome and Death: Adding Insult to Injury, published (2009)
<http://www.ncepod.org.uk/2009aki.htm>
- ¹⁰Cardoso, L.T., Grion, C.M., Matsuo, T., Anami, E.H., Kauss, I.A., Seko, L. and Bonametti, A.M. (2011) Impact of delayed admission to intensive care units on mortality of critically ill patients: a cohort study. *Critical Care*. 15(1)
- ¹¹O'Callaghan, D.J., Jayia, P., Vaughan-Huxley, E., Gribbon M., Templeton, M., Skipworth, J.R. and Gordon, AC. (2012) An observational study to determine the effect of delayed admission to the intensive care unit on patient outcome. *Critical Care*. 16(5)

Appendix 1 – Tiers of Critical Care Unit

This service model recognises that all critical care facilities cannot be provided on all hospital sites. Sicker patients will sometimes have to be moved to larger units for specialist care. Each Critical Care Unit should be designated as one of the following Tiers; this will determine how it functions within the Health Board and regional Network.

Tier 1 Unit

District General Hospitals providing Level 2 care only.

There need to be clear pathways regarding ability to escalate care and the skills to resuscitate, package and transfer all Level 3 patients safely to a higher tier unit.

Medical staffing

Consultants: it is recommended that there is a minimum of 7 sessions/week from a Critical Care Trained Consultant^b for a unit of up to ten beds. The number would need to be increased with higher bed numbers.

The remaining cover may be provided by Medical and Surgical Care with Anaesthetic cover. Staffing need not be dedicated and can attend to other duties in the hospital i.e. cardiac arrest, anaesthesia (e.g. obstetric anaesthesia) or surgery. There does however need to be immediate access to staff with advanced airway training.

If an ACCP tier is put in to replace a junior medical team arrangements would need to be made for advanced airway cover.

Arrangements must be in place for advice to be available from a Critical Care Consultant 24hrs/day, 7 days a week but this need not be on-site.

These may be “open” units but they must supply data through ICNARC case mix programme and other outlined outcome measures.

Tier 2 Unit

District General Hospitals looking to provide Level 2 care and short term (<48hrs) Level 3 Care.

This would include all hospitals with acute unselected medical and surgical on-call (“take”).

Medical Staffing

Consultants: it is recommended that there are 14 sessions/week for up to an eight to ten bedded unit. These Tier 2 Units need 24 hour cover by Anaesthetists with the necessary skills and training to intubate and ventilate patients. Level 2 patients should be reviewed daily by a trained Critical Care Consultant and Level 3 patients twice daily. Arrangements must be in place for advice to be available from a Critical Care Consultant 24hrs/day, 7 days a week if out of hours cover is provided by Anaesthesia.

^b“Critical Care Consultant” = Consultant with a Certified Completion of Training in Critical Care, equivalent training, or current working daytime sessional commitment e.g. existing Critical Care Consultants with day time sessional commitment to Critical Care in their job plan, or recognised critical care training (approved by the Faculty of Intensive Care Medicine) from abroad. Consultants must demonstrate continuing professional development to Critical Care in their annual appraisal.

The middle grade/trainees: There should be a dedicated junior tier of medical staff 24 hours a day for the unit seven days a week without commitments outside of the unit except to acutely critically ill patients. This applies to a unit of up to 8-10 beds; additional staffing is required for larger units.

If an ACCP tier is put in to replace a junior medical team arrangements would need to be made for advanced airway cover.

On call commitments: these units may be covered by anaesthetics out of hours.
Tier 2 units should function as closed units^c.

Tier 3 and Tier 3T

Hospitals providing long term Level 3 Care and specialist level 3 Care.

Some District General Hospitals, and Teaching Hospitals. Tier 3 Units must be able to provide long term Level 3 care to patients with multiple organ failure.

Medical Staffing

Consultants: As with Tier 2 units, all Level 3 patients need review within at least 12 hours of admission by a Critical Care Consultant. In addition Tier 3 units should have a dedicated Critical Care Consultant on-call rota.

The middle grade/trainees: There should be a 24 hour dedicated junior tier of medical staff for the unit without commitments outside of critical care and large units should have a medical team per 8-10 Level 3 patients.

If an ACCP tier is put in to replace a junior medical team arrangements would need to be made for advanced airway cover.

Tier 3T Units

These units are those as above but also with specialist services including Neurocritical Care, Cardiothoracics, Respiratory Centre recognition and Burns. In view of the complexity of patient care these units may wish to extend to resident consultant Intensivist cover.

Tier 3 and Tier 3T should function as closed units^d.

Medical Staffing

"No amount of equipment can compensate for the lack of appropriately trained staff".
Department of Health 'Comprehensive Critical Care 'A review of Adult Critical Care Services.' 2000

Medical staffing has been a challenge and is set to become more of a challenge in terms of numbers of trainees and meeting consultant staff requirements.

Specialist and multi-organ support for Level 3 patients needs specialist critical care input from those with the appropriate recognised training. Cross cover by Anaesthetists is entirely appropriate for the initiation of short term critical care where there is an emphasis on

^c "Closed units" = units where admissions, discharges and care are under the direction of the Critical Care consultant. An open unit may admit patients without critical care involvement.

^d "Closed units" = units where admissions, discharges and care are under the direction of the Critical Care consultant. An open unit may admit patients without critical care involvement.

resuscitation and stabilisation; however it is not appropriate for those with prolonged critical care needs. This emphasis on the patient's requirements needs to be accepted and units need to be staffed by appropriately trained clinicians according to the tier of the unit.

The Strategic Vision acknowledges that those units seeking to resuscitate, stabilise and transfer all Level 2 patients (Tier 1) cannot and need not meet the same staffing requirements of those units seeking to provide prolonged Level 3 care with complex critical care needs (Tier 3).

There are significant factors impinging on how a critical care service is going to be delivered over the short, medium and long term across Wales. These include:

1. A reduction in training hours brought about by the European Working Time Directive (EWTD).
2. A call by the Royal College of Anaesthetists for a reduction in service delivery to critical care. A training commitment in critical care for Anaesthetists remains due to competencies being best met by some competency assessed training in critical care medicine.
3. A deanery recommended increase in the number of trainees per rota from 1:8 to 1:10 (11).
4. The Faculty of Intensive Care Medicine (FICM) has from 2012 dedicated critical care medicine trainees but the numbers are very small (4 posts in Wales 2012).

In view of the above, alternative staffing utilising Advanced Critical Care Practitioners (ACCPs), Staff Grade and Associate specialists (SAS), and post Completion of Certified Training (CCT) doctors need to be further explored and initial investment made in the medium to long term to create a team to provide the necessary service. An ACCP course exists in Cardiff from 2012. The costs of a 2 to 3 year training course, back-filling the nursing posts need addressing. Medical staffing as a whole needs to be jointly addressed by Health Boards, the Welsh Deanery, and the Critical Care professional bodies – Welsh Intensive Care Society (WICS), the Critical Care Networks and the National Specialist Advisory Group (NSAG) for anaesthesia and critical care.

It is generally accepted that a critical care team, led by a consultant, would be able to care for up to 10 critically ill patients. A unit with more than 10 patients would therefore require more than 1 team. A team would traditionally comprise a nurse at the bedside, a junior doctor and a consultant. It is likely in future that ACCPs who have undergone competency-based and assessed training will replace scarce junior doctors provided there is still 24 hour resident advanced airway skills on-site to call on. This advanced airway service would usually be provided by anaesthesia except in large Tier 3 and 3T units which may find it advantageous to have resident intensivists. These may be senior critical care trainees or consultant intensivists. A critical care consultant working *without* a team would be able to safely look after less than 10 patients.

In addition consultant staffing models will need to be flexible taking into account feminisation of the workforce, retirement age, and movement of intensive care consultants out of critical care into other specialities with less onerous out-of-hours commitments during their later working life.

Table 1. Critical Care Tiers.

Unit Tier	Level 3 Care	Critical Care Consultant Staffing	Anaesthesia Consultant	Dedicated Critical Care tier	Level of patient care provided
Tier 1	Ability to intubate /ventilate/transfer Level 3 patients	7 session/week	Yes, in emergencies	0	Level 2 only
Tier 2	Level 3 care <48hrs	14 session weekly commitment by a Critical Care Consultant rota	Overnight out of hours cover acceptable within the 12 hourly review by a Critical Care Consultant	Dedicated	Level 2 and short term level 3
Tier 3	Prolonged level 3 care	Dedicated Critical Care Consultant rota, > 14 sessions/week.	Emergency unpredictable only	Dedicated	Level 2 and prolonged level 3 care
Tier 3T	Prolonged level 3 care and specialist care	Dedicated Critical Care Consultant rota	Emergency unpredictable only	Dedicated	Level 2, 3 and specialist care.

The Medical staffing requirements reflect the minimal level of recommended input.