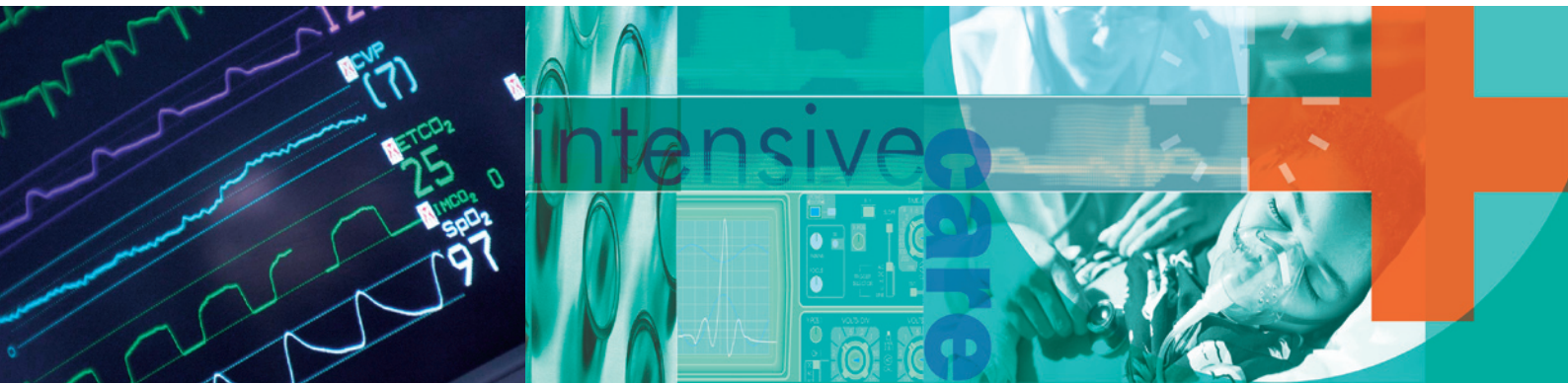


# Victoria's intensive care services Future directions

2009





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## Foreword

The intensive care units (ICUs) in our public hospitals treat Victoria's most critically ill patients and being admitted to an ICU is a challenging time in the lives of both patients and their families. It is acknowledged that ICUs are facing growing service demand and workforce pressures and innovative strategies are required to continue providing equitable access to quality care for the most ill.

In recognition of this, the Government has committed significant additional funding to intensive care services in 2008–09, funding an extra 11 ICU beds plus new capital equipment and providing approximately \$2.5 million for ICU nurse liaison services.

Despite the unquestionable high standard of Victoria's intensive care services, all stakeholders agree that coordinated planning and action is needed to enable the intensive care system to respond to current and future challenges.

*Victoria's intensive care services: future directions* has been developed in consultation with the Intensive Care Advisory Committee (ICAC) and other key stakeholders. It outlines a range of strategies to further improve access and quality of care, and ensure effective management of the high-level resources needed to deliver intensive care services.

In providing the basis for continued enhancement of Victoria's public intensive care services, this document underlines the Government's commitment to quality intensive care services in our public hospitals.



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## 1. Introduction

Intensive care services are an essential part of the hospital service system. They provide care for patients who have life-threatening illnesses, injuries and complications, and require sophisticated technology and medical management and a high level of staffing and other resources. Intensive care services are one element of a complex care pathway for many patients and must be integrated into all health services to provide the best possible patient experience and outcomes.

Across Victoria's metropolitan and rural public hospitals there are variations in the size, capabilities and types of intensive care units (ICUs). The ICUs support a range of specialties including general surgery, neurosurgery, cardiology, renal medicine, infectious diseases, complicated neurological and endocrine diseases, paediatrics, obstetrics, cardiothoracic, burns, organ transplantation and trauma. There are often close links between ICUs, coronary care units (CCUs) and emergency departments (EDs).

As in other Australian states and territories, demand for intensive care services in Victoria's public hospitals has grown strongly over the last decade. Health services have experienced increased pressures in demand for ICU beds, balancing competing emergency and elective surgery demand for ICU beds and ensuring optimal use of intensive care resources.

Building on previous work to identify and outline directions for service improvement, *Victoria's intensive care services: future directions* provides a framework to identify priority areas to inform future activity and investment in intensive care services to ensure they continue to meet the needs of the community.

The agreed priority areas are:

- Building a sustainable system.
- Access: the right level of patient care when required.
- Quality: safe and effective intensive care services.

The paper provides detailed discussion of all the key priority areas and identifies proposed actions.

The Department of Human Services (the department) will lead the development of an implementation plan for the framework in collaboration with key stakeholders.

The role of the department and its key intensive care service advisory groups is outlined below.

### 1.1 The Department of Human Services

The Department of Human Services is responsible for planning and funding a wide range of services including health, community and housing services to diverse client groups across Victoria. The department lays the foundation for governance of health services through its legislative, performance management and funding frameworks.

Improving critical care services in Victoria is consistent with the mission of the department, which is to enhance and protect the health and wellbeing of all Victorians, emphasising vulnerable groups and those in most need.

## 1.2 The Intensive Care Advisory Committee

The department established the Intensive Care Advisory Committee (ICAC) in 2002 in response to the recommendations of the *Planning for intensive care service: project report (2001)*. The committee provides advice to the department on intensive care services in Victoria<sup>1</sup>, addressing the following issues:

- ICU utilisation and capacity.
- Planning ICUs distribution and roles.
- The quality and safety of intensive care.
- Issues escalated from the Victorian Intensive Care Data Review Committee (VICDRC) working group.
- Standards, resources and equipment issues in Victorian intensive care services, including information management processes and systems.
- Workforce issues in Victorian intensive care services.
- Supporting regional critical care services and strengthening links between metropolitan and regional/rural critical care services.

## 1.3 ICAC working groups

The Intensive Care Advisory Committee has a number of working groups that address and investigate specific issues to report back to the committee. The Victorian Intensive Care Data Review Committee (VICDRC) is a long standing committee of ICAC, established shortly after ICAC was first convened. Other working groups are called together on an ad hoc basis to deal with particular issues, such as workforce, funding and access.

### The Victorian Intensive Care Data Review Committee

The Victorian Intensive Care Data Review Committee (VICDRC) is a working group of ICAC established to provide advice to the department, ICAC and the Victorian Quality Council on the safety and quality of intensive care services in Victoria. The role of VICDRC is to<sup>2</sup>:

- Provide interpretation and commentary on Australian and New Zealand Intensive Care Society (ANZICS) reports of ICUs within Victoria.
- Provide an annual report on the performance of adult intensive care services in Victoria.
- Provide recommendations, where required, to ensure that data collection and quality conform to appropriate standards and legislative requirements.
- Provide advice relating to system-wide issues of ICU access, capacity and demand.
- Provide advice on system-wide issues related to the quality of adult intensive care.
- Where data suggests impaired quality performance, investigate and provide recommendations to ICAC and the department.

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<sup>1</sup> ICAC terms of reference, reviewed 2008.

<sup>2</sup> VICDRC terms of reference, reviewed June 2006.

## 2. Development of the future directions framework

Victoria's intensive care services have been reviewed periodically to inform the development of government policy and strategic directions<sup>3</sup>. In 2001, the department released a review, *Planning for intensive care services in Victoria*<sup>4</sup>, that examined the level of intensive care services and provided a framework for future service planning. The report made recommendations addressing service utilisation, service planning, workforce issues, data collection, resource allocation and funding.

In response to the recommendations, the department implemented a range of initiatives including the establishment of the Intensive Care Advisory Committee (ICAC), funded additional ICU beds, and reviewed funding through the mechanical ventilation (MV) co-payment.

The department, in consultation with ICAC, has produced *Victoria's intensive care services: future directions* to inform the further development of intensive care services. As part of the process of developing the framework, a planning workshop was conducted in 2007 for key intensive care stakeholders, including ICAC, ICU medical and nursing staff, health service management and departmental program area staff.

### 2.1 Principles

A set of principles for the delivery of Victoria's intensive care services was developed by ICAC as a shared statement by all stakeholders. The principles are outlined in Box 1 below.

#### Box 1: Key principles for Victoria's intensive care services

##### Victoria's intensive care services should:

- Deliver patient-centred care.
- Deliver timely and accessible care.
- Deliver safe, appropriate and evidenced-based care.
- Ensure a responsive, flexible service system.
- Support the integration of intensive care services with the continuum of care.
- Ensure the supply of an appropriately-trained and flexible workforce.
- Ensure efficient and appropriate utilisation of intensive care resources.
- Utilise information technology and data management solutions.
- Support continuous improvement, collaboration, innovation and research.

<sup>3</sup> *Review of Emergency and Critical Care Services (1994); Review of Intensive Care in Victoria (1997); Planning for intensive care services in Victoria (2001).*

<sup>4</sup> *Planning for intensive care services in Victoria (2001).*

## 2.2 Priority action areas

The vision for critical care services in Victoria is that: intensive care services deliver high-quality, patient-centred care that is timely and accessible across Victoria.

Three priority areas for action to improve intensive care access and the quality of care in Victoria's public hospitals have been identified and provide a basis for this future directions framework. These are:

- 1. Building a sustainable system.**
- 2. Access: the right level of patient care when required.**
- 3. Quality: safe and effective intensive care services.**

## 2.3 Scope

This future directions framework focuses on adult and paediatric intensive care services in metropolitan, regional and rural public hospitals. The scope excludes emergency departments, neonatal intensive care services and stand-alone coronary care units.

The framework also takes into consideration the use of private intensive care services for the delivery of care to public patients.

## 3. Victoria's public intensive care services

### 3.1 Definition of an intensive care unit

Typically, intensive care in Victoria's public hospitals is delivered primarily within a specialist unit of an acute hospital and includes intensive care beds supported by a variable number of high dependency beds. Critical care areas have traditionally been divided into ICUs, where the highest level of care is provided, and high dependency units (HDUs). A HDU may operate independently from the ICU and may be speciality-specific, or it may have a close operational and geographic relationship with the ICU. Victoria's public hospital critical care units are multi-purpose in nature, providing ICU, HDU and coronary care (CCU) or a combination of these functions within a single unit. However, not all ICUs have an HDU or CCU incorporated within their unit.

Victoria uses the *Joint Faculty of Intensive Care Medicine's* definition of an ICU. This is outlined below:

- An ICU is a specially staffed and equipped, separate and self-contained section of a hospital for the management of patients with life-threatening or potentially life-threatening conditions and reversible, or potentially reversible, organ failure<sup>5</sup>.
- A tertiary paediatric ICU (or Paediatric Intensive Care Unit – PICU) should be capable of providing comprehensive care, including complex multi-system life support, for an indefinite period to children under 16 years of age. These units should be committed to academic education and research. All patients admitted to the PICU should be referred for management to the attending intensive care specialist<sup>6</sup>.
- A HDU is a specially staffed and equipped section of an intensive care complex that provides a level of care between intensive care and the general ward. Typically patients admitted to HDUs will have single organ failure and be at risk of developing complications<sup>7</sup>.

### 3.2 Intensive care beds

The multipurpose nature of ICUs presents challenges in quantifying ICU bed capacity across Victoria's public hospitals. The number of ICU beds on any given day is dynamic, as health services determine the number of beds they provide according to demand and available resources.

The following definitions are used in assessing ICU capacity across Victoria's public hospitals to assist in managing demand for intensive care services on a daily basis:

- Physical capacity: the number of single patient care locations within a designated critical care unit that are configured and equipped to ICU or HDU standards. This is unrelated to staffing considerations.
- Open ICU bed: a physical bed space that is occupied or that is immediately available to receive admissions as required. It is a bed space that is staffed for 1:1 nursing and is fully configured to ICU standards.
- Open HDU bed: a physical bed space that is occupied or is immediately available to receive admissions as required. It is a bed space that is staffed for 1:2 nursing care and is fully configured to cater for a HDU patient.
- Available ICU bed: a physical bed space that is, or will be, available to receive admissions of either ICU or HDU patients within the next eight hours. It is a bed space that is staffed for 1:1 nursing and is fully configured to ICU standards. It may be currently occupied but will become available for admissions.

<sup>5</sup> *Joint Faculty of Intensive Care Medicine, 2003. IC-1 Minimum standards for intensive care units.*

<sup>6</sup> *Ibid.*

<sup>7</sup> *Joint Faculty of Intensive Care Medicine, 2008. IC-13 Recommendations on standards for high dependency units seeking accreditation for training in intensive care medicine.*

### 3.3 Service system overview

In Victoria, 23 public hospitals provide adult ICU services. Paediatric intensive care services are provided at the Royal Children's Hospital (RCH) and Monash Medical Centre (MMC). Capacity exists for metropolitan and rural ICU units to manage critically-ill children under 16 years of age for a short time, although most critically-ill children are cared for in the PICU located at the RCH or MMC ICUs. The private healthcare system also provides intensive care services. The 13 private hospitals<sup>8</sup> which include ICUs complement and support the delivery of intensive care services throughout Victoria. Refer to Appendix 2 for the location of intensive care services.

Intensive care units are classified as levels 1–3, broadly reflecting *National Health Data Dictionary* (AIHW 2006) classifications, which define five different types and levels of ICUs according to three main criteria: the nature of the facility; the care process; and, the clinical standards and staffing requirements<sup>9</sup>.

### 3.4 ICUs as part of a broader hospital and health system

There is a close interface and linkage between ICUs and the broader hospital and health system.

#### 3.4.1 ICUs as part of a broader hospital system

Patients are usually admitted to an ICU from other areas of the hospital, such as an operating theatre, emergency department or an inpatient ward.

Demand profiles for access to an ICU can vary, depending on the hospital's location and clinical speciality profile (see Table 1). The percentage of rural/regional ICU patients admitted from the emergency department is 46 per cent, compared with 32 per cent for metropolitan ICUs and 21 per cent for tertiary ICUs. Admission from the operating room or recovery area is 32 per cent for rural/regional ICUs, 37 per cent for metropolitan ICUs and 53 per cent for tertiary ICUs<sup>10</sup>.

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<sup>8</sup> *Private Hospitals Unit, Department of Human Services, May 2008.*

<sup>9</sup> *Registration status BHIG Standard 01/03/2005. Available at <http://meteor.aihw.gov.au/content/index.phtml/itemId/327234>*

<sup>10</sup> *VICDRC Annual Report 2006–07.*

**Table 1: Percentage of admission by source to an ICU<sup>11</sup>**

<b>Rural/regional ICUs</b>	<b>2004–2005</b>	<b>2005–2006</b>	<b>2006–2007</b>	<b>2004–2007</b>
OR/recovery*	37.0 (66.3)	34.7 (63.1)	32.5 (53.3)	34.6 (60.9)
Emergency dept	38.6	44.3	46.4	43.3
Wards	19.0	15.7	16.9	17.2
Other hospitals	4.2	4.2	3.0	3.8
Data missing	0.7	0.9	0.8	0.8
<b>Metropolitan ICUs</b>	<b>2004–2005</b>	<b>2005–2006</b>	<b>2006–2007</b>	<b>2004–2007</b>
OR/recovery*	34.6 (54.6)	37.3 (53.2)	37.2 (53.1)	36.4 (53.6)
Emergency dept	34.1	31.7	32.4	32.7
Wards	22.7	23.0	23.6	23.1
Other hospitals	8.3	7.8	6.5	7.5
Data missing	0.1	0.2	0.3	0.2
<b>Tertiary ICUs</b>	<b>2004–2005</b>	<b>2005–2006</b>	<b>2006–2007</b>	<b>2004–2007</b>
OR/recovery*	56.8 (70.6)	55.2 (70.2)	53.4 (70.3)	55.1 (70.4)
Emergency dept	20.0	20.3	21.4	20.6
Wards	16.1	16.5	16.8	16.5
Other hospitals	7.0	7.9	8.4	7.8
Data missing	0.1	0.0	0.1	0.1

\* Operating room/recovery: The percentage of admissions designated 'elective' are shown in brackets

### **Interface between the ICU and inpatient ward**

Patients are transferred from an inpatient ward to an ICU when they experience an unexpected deterioration in their condition resulting in the need for a higher level of care. In recent years, there has been an increasing trend in admissions from wards to ICUs across each hospital level.

### **Interface between the ICU and emergency department**

Emergency departments in Victoria's public hospitals are designed to deliver short episodes of care to people who are experiencing a medical emergency. Following initial assessment and, if appropriate, resuscitation and stabilisation in the emergency department, critically-ill patients are transferred to an ICU for ongoing care.

<sup>11</sup> VICDRC Annual Report 2006-07.

### **Interface between the ICU and the operating theatre**

Victoria's public health services provide comprehensive emergency and elective surgical services, including more than 15 separate surgical specialities and many more subspecialties.

Postoperative care in an ICU can be planned or unplanned. It may be planned for particular procedures, such as cardiac-bypass surgery or major vascular surgery, or more minor surgery if the patient has a significant co-morbidity that may compromise the patient perioperatively. Occasionally a patient will require unplanned post-operative ICU care as a result of an intra-operative complication.

Since 2003-04, there has been a reduction in admissions to ICU from operating and recovery rooms for rural/regional and tertiary ICUs.

Overall, tertiary ICUs have a significantly higher percentage of admissions from operating theatres and recovery rooms. This may reflect the higher number of patients undergoing cardiac surgery, most of whom require ICU care post operatively.

### **3.4.2 ICUs as part of a broader health system**

The interdependencies between ICUs and the retrieval and trauma service systems highlight the need for seamless linkages between different components of the health system, and communication and coordination with transport services to ensure optimal management of critically-ill patients and ICU resources.

#### **Adult and paediatric retrieval services in Victoria**

In 2007, a new service model was implemented for adult retrieval services under the auspices of Ambulance Victoria. Adult Retrieval Victoria (ARV) provides advice, referral and transport for critically-ill patients where the patient's clinical management needs exceed the resources or clinical capacity of a health service. Where definitive management of a patient's condition is likely to be achieved by urgent transfer to another hospital, ARV will coordinate the transport of critically-ill patients and facilitate access to critical care beds within Victoria.

Paediatric retrieval services are coordinated by the Paediatric Emergency Transport Service (PETS), which provides a statewide coordination role and specialised staffing for the transfer of critically-ill children.

#### **Victorian State Trauma System**

The Victorian State Trauma System triages trauma patients to receive the right care at the right health service in a timely manner, thereby reducing patient mortality and morbidity, particularly as a result of major trauma. Adult major trauma services are located at The Alfred and Royal Melbourne Hospitals. The paediatric major trauma service is located at the Royal Children's Hospital.

St Vincent's Hospital, the Austin Hospital and Monash Medical Centre provide the highest level of trauma care in specialist areas. The Austin Hospital provides specialist care for patients with isolated spinal injuries. St Vincent's Hospital provides specialist care to patients with major hand and upper limb trauma and microsurgery. The Austin Hospital, St Vincent's Hospital and Monash Medical Centre (MMC) provide specialist neurosurgical services.

There were 2,378 major trauma patients admitted to hospital in 2006-07, of which 82 per cent were managed at the major trauma services<sup>12</sup>. Approximately 50 per cent of these major trauma patients required ICU admission.

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<sup>12</sup> Victorian State Trauma Registry Annual Report 2006-07.

## 4. Future directions

To continue to enhance the delivery of intensive care services, this strategic framework identifies three priority areas to further improve access and quality of care. Each of the priority areas is supported by a number of actions. This section outlines the key activities to be undertaken.

The three priority areas are:

- Building a sustainable system.
- Access: the right level of patient care when required.
- Quality: safe and effective intensive care services.

The following section of the report provides detailed discussion of the key priority areas and identifies proposed actions.

### 4.1 Building a sustainable system

#### 4.1.1 The intensive care workforce

Critical care workforce shortages are being experienced across all jurisdictions and remain a major constraint to increasing ICU capacity. It is recognised that there exists an intensive care medical workforce shortage, however the shortage of critical care nurses impacts considerably on ICU supply. Rural and regional health services face their own unique workforce challenges so any consideration of addressing workforce issues in these regions need to take into account their specific requirements.

Paediatric critical care workforce shortages are also expected to escalate due to the highly specialised nature of the work and the increasing difficulties of recruiting nurses into this area of practice.

Supply strategies to date have included activities to ensure that existing staff are retrained, that new staff are recruited to fill vacancies and improving access to education and training. However, supply strategies alone are not the only solution to developing a workforce of the size and skill required to meet the growing demand for critical care services.

As the ongoing challenge of providing high-quality care with fewer nurses escalates, a combination of short, medium and long-term strategies are required for workforce reform. There is an opportunity for skill mix options, flexible work arrangements, development of an improved career path to promote a culture of learning and skill and the ongoing support of a critical care nurse scholarship scheme.

### Intensive care medical workforce

The distribution of intensive care specialists in Victoria is 1.24 per 100,000 head of population; which compares favorably with the national rate of 1.65 per 100,000<sup>13</sup>.

The *Ministerial Review of Victorian Public Health Medical Staff*<sup>14</sup> noted that, with the insufficient supply of local medical graduates since 2000, demand for medical staff will inevitably exceed supply until at least 2017. The report identified a shortage of intensive care specialists and insufficient trainees for intensive care medicine. Recommendations were made, addressing public sector medical workforce issues such as recruitment, retention and training, working conditions and remuneration. A number of initiatives have been launched to support speciality training, rural training and international recruitment. The Victorian Government is developing a comprehensive response to the panel's report<sup>15</sup>, which will be launched following broad sector consultation.

### Intensive care nursing workforce

The Victorian Government is committed to building the capacity and capability of the health workforce, to provide for expanded services and to find innovative ways to better utilise the skills of health professionals in the delivery of health services. Since 1999, the Victorian approach to recruitment and retention has been highly successful in both attracting and retaining nurses in the public sector. In real terms, the net increase in nurses and midwives working in the public sector since 1999 is more than 8,827 full-time equivalent (FTE) nurses.

At 72.9 per cent, Victoria reports the highest percentage of Division 1 nurses with a critical care qualification of all jurisdictions, against the national average 53.1 per cent<sup>16</sup>. Of note is that Victoria has a slightly higher number of casual nursing hours worked compared with other jurisdictions. This suggests changes in the workforce demographics, with more Division 1 nurses employed casually, or on a part-time basis, to cover roster shortfalls, including nurse bank/pool/agency staff.

The department has contributed funding to the Melbourne Institute's<sup>17</sup> work-life balance study of the nursing and medical workforce through 2008-09 to continue to explore ways to sustain the Victorian intensive care workforce.

A number of initiatives have been implemented by the Government to support nursing recruitment, retention and development across Victoria's public hospitals. Funding is provided to support education and clinical practice through the Graduate Nurse Program and Continuing Nurse Education Program. As part of the Postgraduate Scholarship Program, scholarships are currently offered twice yearly to nurses undertaking postgraduate study in targeted specialties of nursing practice, which includes critical care nursing.

Advance practice roles being explored include the Victorian Nurse Practitioner (NP) Project, which supports the development of NPs and provides a focal point for the development of NP policy. This has included funding health services to pilot, and then establish, NP roles, support for potential NPs through scholarships and, more recently, the development of service plans for NP integration.

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<sup>13</sup> ANZICS CORE, *Intensive Care Resources and Activity: Australia and New Zealand 2006/2007*.

<sup>14</sup> *Ministerial Review of Victorian Public Health Medical Staff, Report of Review Panel, November 2007*.

<sup>15</sup> *Initial response to the Review of Victorian Public Health Medical Staff, March 2008*.

<sup>16</sup> ANZICS CORE, *Intensive Care Resources and Activity: Australia and New Zealand 2006/2007*.

<sup>17</sup> *Melbourne Institute of Applied Economic and Social Research. The University of Melbourne. Improving your working life. A survey of nurses and midwives in Victoria.*

### **Skill mix options**

Creative approaches are being explored to maximise the effective use of specialist resources by sharing capabilities across professional and practitioner boundaries and adopting multidisciplinary approaches to expand overall workforce capacity.

Some health services have implemented advanced practice roles with an assigned set of competencies for nurses as an alternative career path choice to the NP role, which requires a rigorous endorsement process.

Enhancing the scope of practice of Division 2 nurses in Victoria's health service is an important element in the department's Integrated Nurse Workforce Policy Framework, which aims to develop the capacity and capability of the nursing workforce in Victoria. In 2005-06, the department's Enhanced Scope of Practice project funded a number of health services to develop local organisational frameworks to support the introduction of new roles for endorsed Division 2 nurses across a range of service settings and clinical environments. Currently, Division 2 nurses make up a small proportion of the critical care workforce, with most in support roles rather than in direct patient care.

The introduction of medicines administration endorsement has been pivotal in developing roles and practice for the Division 2 nurse workforce. Further extending the scope of practice of Division 2 nurses by developing the capability to include administration via the intravenous route is a necessary precursor to increasing their utilisation in the Victorian nursing workforce. This is one component of the solution to projected demand for nurses in Victoria's health system. In April 2008, the Nurse Policy Branch and the Nurses Board of Victoria jointly convened to develop the medicine's capability of Division 2 registered nurses to include intravenous administration as a way forward.

A key task is to actively rethink how the critical care work environment is structured to ensure that there is the right mix of skills for the jobs to be done. This will be led by an approach embracing training, education, open communication and support to foster increased flexibility in the work environment.

A key objective is to ensure that those with the highest levels of skill are able to apply and utilise their training most effectively to best support patient care. These highly-skilled staff, with proper support and training, will also supervise and support other staff undertaking less complex or more routine work. Resistance and reluctance to change will not be uncommon as tasks are relinquished and new roles developed for all staff. This managing change approach will require leadership and communication to usher in new ways of doing things in a structured and challenging environment.

## Actions

- Continue to identify initiatives to support critical care workforce expertise and capability.
- Explore opportunities for workforce innovation and redesign strategies in critical care services.
- Encourage a culture that empowers nurses to utilise the full scope of their clinical skills.
- Scope the practice and capabilities of Division 1 nurses in the ICU environment to inform the development of career pathway options.
- Monitor and evaluate the outcomes of 2008–09 nursing and medical work-life practices surveys to support policy development.
- Convene a critical care statewide workforce forum to share information about medical and nursing critical care staff recruitment and retention.
- Explore and analyse the impacts of flexible work arrangements to inform workforce retention strategies.
- Convene time-limited special interest groups to consider medical workforce and nursing workforce issues.
- Identify opportunities to utilise telemedicine and simulation models to support clinical decision making and patient management.
- Develop a pilot project to scope for increased Division 2 nurses activity in ICUs.
- Investigate the need for universities to promote critical care nursing as a rewarding career path.
- Continue to support post-graduate training scholarships in critical care nursing.
- Investigate the need for the improved promotion of post-graduate scholarship and refresher courses.

### 4.1.2 Funding to support improved service access and quality

Victorian acute hospital services are funded through a casemix system, which includes components that are specifically related to intensive care services. Individual health services are allocated annual Weighted Inlier Equivalent Separation (WIES) targets that reflect patient diagnostic related groups (DRGs), cost and length of patient stay. A WIES copayment is also made based on the number of hours of mechanical ventilation in the ICU for specific DRGs. The mechanical ventilation co-payment is a proxy for high-cost, complex care associated with treating intensive care patients. Derivation of both the DRG and the mechanical ventilation co-payment is based on the analysis of costs supplied annually to the department by health services.

There is a perception by some stakeholders that health service funding does not adequately cover the cost of intensive care services. Of particular concern is that the funding methodology has not kept pace with changes in clinical practice. Fewer patients in intensive care receive mechanical ventilation, and those that do receive it for shorter periods. This decreases the copayment in some groups of patients despite the cost of patient care being the same, or similar, to what it would have been if they had been mechanically ventilated, for example the need for vasopressors and renal replacement therapies.

The management of generally high-cost medical equipment purchases, equipment redundancy and replacement life cycles are coordinated through the department's Targeted Equipment Program. To better inform equipment purchase planning, the department is currently developing a Medical Equipment Asset Management Framework in partnership with the Victorian Public Health Services, to optimise strategic asset management of medical equipment in Victoria's public health services and to support the development of individual health service medical asset management plans.

Advances in health technology have a significant impact as evidenced by the increasing specialisation of hospitals, innovations in patient care and the availability of new treatment options. These advances, however, are a major factor in the growth of health care expenditure. The department is advised by the Victorian Policy Advisory Committee on Clinical Practice and Technology (VPACT), which reviews and makes recommendations on submissions regarding the application of new and existing technologies and clinical practices in Victorian public health services and hospitals.

#### **Actions**

- Review ICU funding policy.
- Review the appropriateness of the mechanical ventilation copayment as a proxy for intensive care activity and identify any possible alternatives.
- Support the development of asset management plans to ensure there are appropriate equipment and facilities to enable the provision of intensive care services.
- Explore opportunities to identify and evaluate new intensive care technology and clinical practice regimes, in accordance with departmental policy and procedures.
- Develop a funding policy for the treatment of public patients in private ICUs.

### **4.1.3 Service planning**

#### **Adult intensive care services**

Service planning needs to ensure the critical care system supports the continuum of care for patients who require critical care during their admission to a health service. This incorporates transfer to an ICU, the patient's care in an ICU and their transfer to lower levels of care to general wards or discharge home. There is significant variation in the organisation and distribution of critical care services across Victoria's metropolitan and rural public hospitals and the models under which they operate. There are opportunities to improve the organisation and distribution of critical care services to support the delivery of high-quality, timely and accessible services. A service planning framework will identify the level, configuration and mix of adult intensive care services across metropolitan and rural Victoria.

In addition to providing a broad range of services to their communities, many health services specialise in providing particular tertiary services based on their staff expertise, technology and equipment. Service delineation will recognise and clarify these variations, which will avoid the duplication of expensive technology and support staff to improve their expertise in procedures in which they specialise, particularly in relation to ICU management of burns, trauma and organ transplantation. This approach will better inform and support interhospital transfers and retrieval activities so that patients receive the right care in the right place.

### **Paediatric Intensive Care services**

A *Review of Victorian Paediatric Services*<sup>18</sup> was conducted as a component of the Metropolitan Health Strategy and the Victorian Rural Human Services Strategy processes. The aims of the review were to identify the health needs of Victorian children and adolescents, examine the level and distribution of paediatric services that would best meet these needs and prepare a planning framework for future provision of paediatric services in Victoria.

The final report included more than 40 recommendations for the development and enhancement of paediatric services in Victoria, including that the Royal Children's Hospital (RCH) be designated the high-complexity tertiary paediatric centre for Victoria and that Monash Medical Centre (MMC) develop a strategic plan for its paediatric services that incorporates the expansion of paediatric beds.

The Paediatric Intensive Care Services Sharing Guidelines<sup>19</sup> were finalised in 2006 to articulate the principles for sharing paediatric intensive care services between RCH and MMC. The aim is to maximise appropriate access to paediatric intensive care resources through addressing issues such as admission criteria, refusals and procedures to be followed when an inter-hospital transfer of a child is being considered due to clinical need or high demand for paediatric resources.

There may be occasion when an adolescent patient requiring intensive care may be suitably cared for in the general (adult) intensive care environment, however it is acknowledged that further work is required to identify under what circumstances this would occur and the level of resources required to safely do so.

### **Actions**

- Develop an intensive care service planning framework for the organisation and the distribution of appropriately accessible intensive care services statewide.
- Review the Paediatric Intensive Care Services Sharing Guidelines.
- Implement the paediatric services review recommendations that are relevant to paediatric intensive care service planning.
- Develop guidelines for the appropriate care of an adolescent patient in an adult intensive care unit.

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<sup>18</sup> LaTrobe University Health Management Group, December 2002.

<sup>19</sup> Department of Human Services 2006, *Paediatric Intensive Care Services Sharing Guidelines*.

## 4.2 Access: the right level of patient care when required

Intensive care services are non discretionary. In recent years Victoria's intensive care system has continued to operate under increasing levels of demand. As part of the statewide system, health services receive requests for patients to access intensive care services from across the state where hospitals do not have an ICU, ICUs are at full capacity or patients require specialist care from a particular health service. Health services also manage local demand for access to ICU services from the emergency department, operating theatres and general wards.

It is not feasible or desirable for all hospitals to provide ICU services. However, all hospitals at some time will treat a patient who requires ICU services. Those patients must be transferred to an available bed at an appropriate hospital. Adult Retrieval Victoria (ARV) is responsible for coordinating and transferring patients to hospitals which are able to provide the appropriate level of care and, according to current guidelines will fund the episode of care for public patients transferred for care in a private ICU.

All stakeholders acknowledge there are many opportunities to better coordinate and manage patients' access to intensive care services. Demand for adult and paediatric intensive care services is unpredictable, although there are periods of peak demand often related to seasonal factors. Managing access to intensive care services is complex and impacted along the continuum of care by many competing factors. The drivers of demand for ICU services need to be better understood with analysed to inform guidelines, protocols and policy development.

There are many different perceptions and interpretations for what is driving the sustained high level of demand for ICU services. These include: inadequate capacity; insufficient funding; clinical advances leading to the treatment of sicker patients and more complex medical issues; an insufficient number of trained and capable staff; workforce stress; and, more informed consumers with heightened expectations of care.

Strategies that have been utilised by Victoria's public hospitals to manage demand during peak periods include transferring patients between public hospitals, transferring patients to private hospital ICUs, managing critically-ill patients in locations other than ICUs, such as emergency departments and recovery rooms, and if necessary, postponement of elective surgery.

There has been increased focus on health services' preparedness to manage a surge in demand for services, including intensive care after a mass casualty incident. Victoria has well-established emergency management procedures, including the *State Health Emergency Response Plan*<sup>20</sup>(SHERP) (DHS, 2006), which sets out roles and responsibilities, processes and procedures to enable an effective, coordinated health and medical response.

The department is currently managing an emergency planning hospital resilience project to develop a framework to ensure Victorian health services have processes to effectively prevent, mitigate, prepare for, respond to, and recover from, an event that can adversely affect their ability to deliver normal services. The plan will be scalable and the intention is to be able to adapt it for all increased demand situations.

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<sup>20</sup> SHERP covers the emergency arrangements from the incident to the hospital doors, but does not encompass hospital response. The health and medical component refers to ambulance services and field emergency medical officers.

## 4.2.1 Managing access to ICU

### ICU system coordination

Metropolitan intensive care units typically have very high utilisation rates that make it difficult to identify true statewide ICU capacity. Discussion of system capacity is often at cross purposes with the notion that the department funds primarily for activity, with ad hoc funding for increased numbers of 'ICU beds'. Currently, the Victorian critical care bedstate website is the only source for identifying the number of ICU beds open in the system. The accuracy of this data source is improving.

There is a need to focus on improving the coordination and placement of patients into ICU beds, as required, across the state. This is primarily the responsibility of Adult Retrieval Victoria (ARV), which was established in 2007 following the transfer of governance from the Victorian Adult Emergency Retrieval Coordination Service (VAERCS). The implementation and monitoring of bed coordination activities by ARV will continue to be supported and reviewed by the department as the new arrangements are bedded down.

In 2008, the department introduced the *Interim Critical Capacity Guidelines*<sup>21</sup> to address critical care transfer guidelines, critical care access restriction and the process of defined transfer. The defined transfer process allows ARV to nominate a hospital to receive a critically-ill patient when the state's capacity is reached. This initiative has been well received, however it is recognised that further work is required on the escalation process including an early warning system that would alert health services of the potential need to implement a defined transfer.

Access to ICU services and the transfer of patients across the system may be compromised as health services quarantine beds for particular purposes. This then increases pressure on other units in the system as there is no objective measure of prioritisation for admission.

The Statement of Priorities (SoP) is the agreement negotiated between the health services and the government that sets out the policy priorities of government, health service-specific priorities and expected levels of performance in key areas. Each metropolitan hospital and the five major regional hospitals negotiate an annual SoP.

Included in the 2008-09 SoP key performance indicators is a minimum operating capacity for intensive care. The minimum operating capacity is the number of ICU equivalent beds that must be occupied before the ICU can refuse to accept appropriate inbound patients requiring ICU care, though health services are permitted to transfer patients out if they reach capacity. A health service is always expected to manage demand for intensive care services from within their own organisation.

At times of high demand, appropriate patients can be placed in private hospital ICU beds. A review of the policy addressing transfer of public patients to private hospital ICU beds will be conducted outlining the principles, protocols, billing procedure, monitoring and report of transfers to ICUs in private hospitals.

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<sup>21</sup> Department of Human Services, 2008, *Critical Capacity Guidelines*.

### Health service ICU coordination

There are opportunities to improve patient flow into, through and out of critical care areas by examining ICU interfaces within health services.

Admission to an ICU may be planned as post operative management. Aspects of a planned admission, or reasonably predictable admissions, can be clarified, such as engagement of the ICU in preoperative assessments, clear communication with patients and their families of any risks associated with admission to an ICU and discussion of the benefits of advance care planning and clarity around the prioritisation of surgery requiring ICU for recovery.

Demand for access to ICU can be unplanned from an emergency department presentation, deterioration of a patient in the ward or as a perioperative adverse event requiring intensive care. There is no systematic or consistent method of prioritising patients and no clear definition of assessing which patients require intensive care services and, therefore, no way of measuring unmet demand of those patients that should be in the ICU.

There is also an opportunity to review any possible impacts of emergency and elective surgery performance expectations on demand for access to ICU services. Another possible policy impact for ICU may result from the Commonwealth Government's four-year reform package to reinvigorate and increase organ and tissue donation activity.

### Actions

- Develop a statewide intensive care access policy.
- Develop a comprehensive set of access indicators.
- Explore changes to the Victorian Admitted Episodes Data (VAED) to better capture ICU utilisation.
- Develop best practice protocols for pre-admission assessment to ICU that include advance care planning.
- Develop an ICU discharge planning policy to reinforce best practice patient-centred care and care pathway management.
- Review ICU data and capacity on an annual basis to inform future growth.
- Continue to monitor and strengthen retrieval services.
- Support the management and further development of the Victorian Critical Care Bedstate website.
- Monitor the impact of the *Interim Critical Care Capacity Guidelines* and review after 12 months implementation.
- Review and update the critical care private hospital transfer policy.
- In consultation with ICAC, contribute to, and monitor development of, the emergency planning hospital resilience project.

## 4.3 Quality: safe and effective intensive care services

Intensive care units operate in an environment of established processes and mechanisms for safety and quality. This includes continuing to promote clinical leadership through research and the delivery of patient care that is evidence based and underpinned by safety and quality principles. The analysis of data, clinical performance and evidence-based medicine drives developments and improvements in patient care and the ICU service system.

### 4.3.1 Information management and performance reporting

Systems to support the generation of high-quality data and information management are integral to the practice, management, research and audit of critical care services. Intensive care is a particularly data-rich environment with a vast amount of information available. Systems are required to manage data at the bedside, support patient care and provide valuable information about critical care resources, utilisation and patient care outcomes.

While encouraging health services to ensure appropriate data is collected for patient care, the department will continue to use its administrative datasets (primarily VAED) and reports from ANZICS to monitor the performance, access and capacity of the ICU system. The department is investigating the addition of data items to departmental datasets, including:

- ICU admission and discharge times.
- Measures for patients delayed getting appropriate ICU care.
- Measures for patients delayed leaving the ICU.
- Measures indicating the surgical load on ICUs.

The department receives advice on ICU performance from the Victorian Intensive Care Data Review Working Group of ICAC.

#### Clinical performance reporting

Improving intensive care performance involves further promoting a culture of accountability that seeks to continually evaluate and improve the delivery of services. ANZICS maintains an extensive amount of ICU data, however there is a significant delay before the ANZICS clinical data is published, which impacts upon the reporting and actioning of clinical performance. The department's Clinical Performance Reporting Program (CPRP) is an overarching quality and safety program that aims to support health services improve clinical outcomes in a timely manner, together with other information management systems.

A component of the CPRP is the ongoing development of performance monitoring processes and protocols to support data collection and analysis that identifies clinical practice that varies significantly from the 'norm'. A key feature of this approach is defining the parameters of accepted clinical practice, which will subsequently reveal areas of concern or outliers. A generic process for dealing with suspected outliers is being developed called the clinical indicator review structure (CIRS). The CIRS can be adapted to fit different clinical services, such as the intensive care environment, while maintaining a respect for the principles of consultation and collaboration, commitment to ensuring correctness of the data analysed and respect for appropriate escalation of issues. This would depend on the certainty of the outlier status and its seriousness.

Another performance monitoring tool currently being developed and piloted is a real-time performance monitoring process based on data from the Victorian Admitted Episode Dataset (VAED). It applies two independently validated risk adjustment tools derived from the VAED – the Critical Care Outcome Prediction Equation (COPE)<sup>23</sup> model for monitoring intensive care performance and the Hospital Outcome Prediction Equation (HOPE)<sup>24</sup>, for monitoring hospital performance.

### **Clinical guidelines and protocols**

Clinical guidelines are a tool to support clinician decision making about the appropriateness of care practices for patients. Based on the best available evidence and expert consensus of approved practices, they contribute to improving the quality and safety of healthcare and streamline patient management activities.

The government's *Health Options Review (2006)* recommended strengthening clinical and service networking by endorsing a health reform program with Clinical Service Networks as a key deliverable. Clinical networks are an enabler for the knowledge, wisdom and experience of clinicians to be used to better plan and deliver more responsive, effective and efficient services. Five statewide clinical networks have been established to respond to current serious demand pressures in the areas of cancer, emergency, maternity, renal and stroke. There is merit in considering this model for the intensive care sector.

The development of robust, reliable evidence-based protocols that reflect best practice is an important method of improving the quality and safety of health care.

Barwon Health has developed a Protocol Management and Production Tool (PROMPT) that is specifically designed to allow the sharing of policies, protocols and guidelines between agencies with the view of promoting the adoption of standardised processes. This approach allows for agencies to work collaboratively in the development of documentation and promotes agency ownership of the process and outcomes.

The department is proposing to sponsor a pilot of PROMPT in intensive care units and emergency departments across five health services' sites, commencing January 2009 for a period of 12 months.

### **Actions**

- Support the development of clinical information systems to support patient care.
- Convene a critical care system data management forum to investigate the best use of data for monitoring performance.
- Continue to review and assess the data sets to support service planning and policy development.
- Support the 12-month trial and evaluation of the COPE model.
- Support the proposed pilot project and assess the benefits of PROMPT to the critical care sector.

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<sup>23</sup> *Care and Resuscitation, 2008:10:35-41. Critical Care Outcome Prediction Equation (COPE) for Adult Intensive Care*

<sup>24</sup> *Ann Int Med 2009:39 (March; in press). Validation of the Hospital Outcome Prediction Equation (HOPE) Model for Monitoring Clinical Performance*

### 4.3.2 Planning and promoting new models of care

Critical care system improvement requires continued building of effective partnerships within hospital settings, across broader care systems and with other key stakeholders, such as the community, professional associations, academic institutions and the department. Improvements in service delivery and patient care outcomes will be achieved through applying redesign principles and innovative thinking to the intensive care setting and ICU interfaces with other areas of the health system.

#### Redesign projects and alternate models of care

To improve patient care, new methodologies are being developed to analyse processes to reduce non-value adding activity and improve efficiency and quality of care. The Redesigning Hospital Care Program is a four-year statewide initiative that aims to deliver significant health system improvements through applying process redesign methodologies. The first wave of pilot redesign projects commenced in 2008 with redesign project leaders employed to design and manage projects based on individual health service needs.

Alternate models of care seek to creatively re-engineer clinical practices and their supporting processes to improve efficiency and patient care. In recent years new models of care such as the ICU Liaison Nurse (LN) and Medical Emergency Teams (MET) have been piloted, reviewed and are now in the process of being extended or mainstreamed across Victoria's public hospital ICUs.

Work is underway to better understand the role of an ICU LN from the perspective of the health service to encourage best practice and inform future service planning.

New models of care initiatives currently being developed include revising the post operative management of patients by enhancing recovery room capability. This is designed to improve patient care and divert patients from the ICU who may have been routinely admitted under previous post operative care plans.

Through the Better Skills Best Care program, health services have identified the need to focus on the safety and quality of patient care outside of daytime work hours. Issues include the unwillingness of senior staff to work at night; de-skilling of staff that work on night duty for extended periods and clinical risk management issues. The Hospital at Night (HAN) concept consists of providing a service at night by a multidisciplinary night team that encompasses the competencies to cover a wide range of interventions and has the capacity to call on specialist expertise as necessary.

To support rural and regional communities accessing high-level clinical expertise, the Commonwealth Government has funded the Virtual Trauma and Critical Care Unit project to pilot telemedicine in four metropolitan and four rural hospitals to collaborate 'virtually' between specialist centres in trauma and critical care medicine. Benefits are expected to be realised through a reduction in ambulance transfers of potentially unstable critical care patients, with the added value of keeping the patient in their local community when possible. This level of professional support for rural clinicians may assist staff recruitment and retention in regional and rural areas.

Other new models of care to be further explored that support the use of telemedicine are video conferencing, digital image transfer and remote monitoring programs.

### **Actions**

- Convene an ICU LN forum to explore best practice and role advancement.
- Support mainstreaming of external ICU services, such as LN and medical emergency teams (MET) models of care, which are informed by the best available evidence.
- Continue to explore innovative and flexible critical care service models that fully utilise critical care expertise.
- Ensure rigour in the evaluation of new models of care pilot projects, including identifying the full costs associated with the model.
- Support the establishment of redesign projects in health services that interface with intensive care services.
- Provide health services with the necessary tools, techniques and support to plan, deliver and measure improvements in priority areas.
- Develop collaborative relationships between health services to share ideas and innovation so that the benefits of redesign activities are realised at a system level.
- Monitor the progress of the outcomes of the HAN project and assess the implications of its impact on critical care services.
- Support telemedicine and other new models of care to promote clinical professional development.

### **4.3.3 Research**

Intensive care clinicians in Victoria continue to provide excellent clinical and research leadership through their participation in a broad range of research activity that keeps Victoria at the forefront of intensive care medical research and clinical practice.

The department maintains an involvement in a range of programs that relate to medical research, such as funding health research, capability development and targeted projects in priority areas.

There is an opportunity for the development of an intensive care research strategy to consider all aspect of ICU research across the care continuum. This would seek to identify strategic gaps and opportunities for research activities and promote the translation of research outcomes to improve clinical practice and inform policy development.

#### **Action**

- To develop an intensive care research strategy in consultation with ICAC.

#### 4.3.4 Clinical governance

The Intensive Care Advisory Committee (ICAC) was established in 2002 in response to the recommendations of the *Planning for intensive care service: project report (2001)*.

With the next term of member appointments commencing 2009, there is an opportunity to enhance the structure and operations of ICAC and its working groups. In consultation with ICAC, the department will develop a clear workplan reflecting active oversight of the implementation of this strategy. Improved utilisation of the working groups will drive the achievement of strategy goals.

##### **Actions**

- In consultation with ICAC, revise the ICAC working groups and develop terms of reference and workplans.
- Scope the concept of an 'intensive care clinical network', including a proposed structure, membership, roles and responsibilities.

## 5. Next steps

*Victoria's intensive care services: future directions* was developed in consultation with the Intensive Care Advisory Committee and key stakeholders. It is an agreed statement outlining the priorities to be addressed to continue to improve and develop the intensive care service system.

The department will now undertake further consultations with ICAC and key stakeholders to develop an implementation plan, which will describe in more detail the work to be done, roles and responsibilities of the parties responsible for implementation, and timelines for the completion of the identified tasks.

## Appendix 1: Planning for intensive care service: project report (2001) Implementation report

Recommendation	Response
<p>4.1 That the Department of Human Services constitute a sub-committee of the Ministerial Emergency and Critical Care Committee (MECCC) to progress and review the recommendations of the <i>Planning for intensive care services in Victoria</i> Project. In conjunction with the Critical Care Inter-Hospital Transfer (CCIHT) Monitoring Group, the Intensive Care Working Group should:</p> <ul style="list-style-type: none"> <li>• Monitor trends in ICU utilisation, service capacity and demand management.</li> <li>• Advise the department about key issues impacting on systemic capacity to meet demand and appropriate systemic responses to these issues.</li> <li>• Advocate and implement information management processes and systems that improve the quality, timeliness and relevance of information relating to ICU services.</li> <li>• Link with, and advise on, issues and initiatives evolving out of departmental and commonwealth strategies, projects and programs.</li> <li>• Advise on the distribution and commissioning of new ICUs and ICU beds.</li> <li>• Develop a framework for future planning for ICU services in Victoria.</li> <li>• Provide input to strategic planning for Victorian health services overall, including the Metropolitan Health Strategy and the Victorian Rural Human Services Strategy.</li> </ul> <p>Consideration should be given to a multi-disciplinary membership, including:</p> <ul style="list-style-type: none"> <li>• ICU Directors and Nurse Unit managers from metropolitan, regional and rural units.</li> <li>• Director, Acute Services.</li> <li>• Coordinator OCECCS.</li> <li>• Project Manager, Emergency Demand Management Group.</li> <li>• Hospital/health service CEOs.</li> </ul>	<p><b>Implemented</b></p> <ul style="list-style-type: none"> <li>• Ministerial Emergency and Critical Care Committee (MECCC) reconfigured to better address sector consultation across the critical care specialities.</li> <li>• Intensive Care Advisory Committee (ICAC) established in 2002.</li> </ul>

Recommendation		Response
4.2	<p>That individual units liaise with service information managers and the department to:</p> <ul style="list-style-type: none"> <li>Identify differences between activity reported via the survey and that indicated by the VIMD and VAED.</li> <li>Identify actions to improve data quality and reconcile differences between data sets.</li> </ul>	<p><b>Implemented</b></p> <ul style="list-style-type: none"> <li>VIMD replaced by VAED as the principle inpatient minimum data set.</li> <li>Data audits conducted comparing VICDRC and VAED data reveal a three per cent difference, partly explained by definitional differences.</li> <li>VAED managed by the Finance and Health Information Policy Branch of the department with regular consultation mechanisms established with health service information managers.</li> </ul>
4.3	<p>It is further recommended that a circular be prepared by the department to all facility data managers highlighting the need for an improvement in the quality of data overall and specifically identifying:</p> <ul style="list-style-type: none"> <li>That ICU, CCU and HDU admissions be flagged for identified units.</li> <li>That assisted or mechanical ventilation does not necessarily imply admission to an ICU and that care should be taken to ensure that this is not used as a proxy flag for an ICU event.</li> </ul>	<p><b>Implemented in part</b></p> <ul style="list-style-type: none"> <li>The department consults regularly with health service information managers.</li> <li>HDU is not a specific admission status.</li> <li>The annual Department of Human Services funding and policy guidelines are specific about the requirements for recognition and funding of mechanical ventilation episodes.</li> </ul>
4.4	<p>It is suggested that:</p> <ul style="list-style-type: none"> <li>All public units be equipped with the appropriate systems to collect the core ANZICS data and that there is a local interface between the ANZICS system and VAED so that common data elements can simply be downloaded from one system to another.</li> <li>That contribution to the ANZICS dataset be considered essential for all units, public and private, as a condition of designation as a recognised unit.</li> <li>The current arrangement under which individual units send their data directly to ARCCCR may need to be modified so that a state collection can be aggregated prior to this data being sent to ARCCCR.</li> </ul>	<p><b>Implemented</b></p> <ul style="list-style-type: none"> <li>Policy and guidelines require the provision of data to ANZICS as a condition of funding.</li> <li>VAED is a stand alone system as it includes patient identifying data elements. There is no intention for it to interface with other data systems</li> </ul>
5.1	<p>That the Department of Human Services increases the total number of available ventilated ICU beds in Victoria to meet the national average for ventilated beds in the first instance, a minimum increase of 25 beds.</p>	<p><b>Implemented in part</b></p> <ul style="list-style-type: none"> <li>2001/02 12 ICU beds funded.</li> <li>2001 four ICU beds specifically commissioned at Sunshine Hospital.</li> <li>2006/07 five ICU beds opened.</li> <li>2007/08 five ICU beds opened.</li> <li>2008/09 11 ICU beds to be opened.</li> </ul>

Recommendation	Response
<p>5.2 That the following logic should be considered when the Intensive Care Working Group (MECCC-ICU Group) is determining where to open ICU beds:</p> <ul style="list-style-type: none"> <li>• Hospitals with high rate of inter-hospital transfer.</li> <li>• Hospitals with increased rates of cancelled elective surgery.</li> <li>• Hospitals routinely experiencing access block in the emergency department.</li> <li>• Appropriate role delineation and support systems of the host hospital.</li> <li>• Strategic and capital directions provided by the Metropolitan Health Strategy and Victorian Rural Human Services Strategy.</li> </ul> <p>Further factors include:</p> <ul style="list-style-type: none"> <li>• Equipped space that is not being used.</li> <li>• Available physical space.</li> <li>• Physical capacity for expansion or impending capital works that may incorporate the ICU.</li> <li>• Transport accessibility by rotary wing and road transport.</li> </ul>	<p><b>Implemented in part</b></p> <ul style="list-style-type: none"> <li>• ICAC established as an advisory body to the department. The department is responsible for service planning in consultation with ICAC and other relevant stakeholders.</li> <li>• The department supports these criteria for service planning.</li> </ul>
<p>5.3 That the outer Melbourne metropolitan area is the most suitable location for the additional available beds and priority should be given to those units where no increase in medical staff will be required in the short term. However, the planned commissioning of the Sunshine Hospital Critical Care Unit should proceed, regardless of the potential need to recruit appropriately-qualified medical staff.</p>	<p><b>Implemented</b></p> <ul style="list-style-type: none"> <li>• Four beds allocated to Sunshine Hospital in 2001/02. Subsequently Western Health relocated the beds to the Western Hospital.</li> </ul>
<p>5.4 That the opening or commissioning of additional beds in the large tertiary units of Royal Melbourne Hospital and The Alfred consider:</p> <ul style="list-style-type: none"> <li>• The most efficient organisation and configuration of beds.</li> <li>• The impact of the reorganisation of trauma services and retrieval networks.</li> </ul>	<p><b>Implemented</b></p> <ul style="list-style-type: none"> <li>• Since 2001, both the RMH and The Alfred ICUs have undergone significant redevelopment with significant increases in beds.</li> <li>• These redevelopments have been conducted in the context of broader planning for the statewide trauma and retrieval services.</li> </ul>

Recommendation		Response
5.5	<p>All public metropolitan ICU/CCUs contribute to a web-based system to capture time-series data in relation to beds open and bed-availability and any events or incidents that are impacting on the ability of the unit to provide services at that time. Essentially this system will assist with the capture of information and allow interrogation by all units and the department, but will not replace the clinical intelligence and guidance offered by OCECCS in advising on the best retrieval and transfer options, where assistance is requested.</p> <p>The data definitions, system architecture and implementation of such a system should be managed by the Intensive Care Working Group (MECCC-ICU Group).</p>	<p><b>Implemented</b></p> <ul style="list-style-type: none"> <li>• The Critical Care Bedstate website was established in 2001 and is managed by the department in consultation with ICAC. Management of the website will transfer to Adult Retrieval Victoria by 2009.</li> <li>• Data collection for the website has been expanded to include larger regional hospitals.</li> <li>• The department is currently reviewing issues associated with the website's accuracy and timeliness.</li> </ul>
6.1	<p>That Victoria adopt the AMWAC recommendations for intensive care medical staff, in conjunction with ongoing workforce planning specific to the Victorian medical workforce.</p>	<p><b>Implemented</b></p> <ul style="list-style-type: none"> <li>• This has been subsumed in changes to national workforce structures and committees.</li> <li>• The department has dedicated resources to medical workforce planning and research.</li> <li>• Nationally all jurisdictions have agreed to a whole-of-government approach to recruitment and retention of health workforce (see 6.4).</li> </ul>
6.2	<p>That nurses from all specialty areas, including intensive care, have appropriate representation on all departmental workforce forums and committees.</p>	<p><b>Implemented</b></p>
6.3	<p>That formalised links or networks be developed between metropolitan, large rural, small rural and remote ICUs. This would assist in addressing some of the issues associated with professional isolation in rural areas, which is one reason identified for the attrition of rural critical care nurses, and promote improved system communication and understanding.</p>	<p><b>Supported</b></p>
6.4	<p>That the department develop a formal mechanism for liaising with AHWAC to provide feedback and responses to initiatives developed in this forum.</p>	<p><b>Supported</b></p> <ul style="list-style-type: none"> <li>• Victoria is a member of the Health Workforce Principle Committee, which is AHMAC's principal advisor on national health workforce policy and strategic priorities.</li> <li>• In 2006, COAG established the National Health Workforce Taskforce (NHWT) to 'undertake projects which inform development of practical solutions on workforce innovation and reform'. NHWT is hosted by the department.</li> </ul>

Recommendation		Response
6.5	That the major professions involved in ICU services have representation on the proposed Intensive Care Working Group (MECCC-ICU Group).	<p><b>Implemented</b></p> <ul style="list-style-type: none"> <li>All major professional groups invited.</li> <li>ANZICS and ACCCN are represented. Additional members are co-opted to working groups to provide expert advice as required.</li> <li>There is a need to consider representation from other major professions, such as health management.</li> </ul>
6.6	That appropriate data capture and data management systems be developed to collect information relating to key workforce indicators across public ICUs to monitor changes in workforce characteristics and to evaluate the impact of workforce policies and strategies.	<p><b>Implemented</b></p> <ul style="list-style-type: none"> <li>The department funds ANZICS to collect ICU workforce data, for example, ANZICS CORE.</li> <li>Some information about ICU nursing and medical workforce is contained in the following departmental publications: <ul style="list-style-type: none"> <li>The Medical Labour Force Survey (MLFS)</li> <li>Nurses in Workforce: Supply and Demand analysis 2003–04 to 2011–12</li> </ul> </li> </ul>
6.7	A strategy is formulated to foster clinical leadership and career path options for staff working in ICUs. Pilot exchange programs for rural and metropolitan nurses could be considered. This is one possible mechanism for nurses to explore the scope and breadth of critical care nursing in rural and metropolitan areas, in addition to the roles they may choose to develop in their base unit.	<p><b>Supported</b></p> <ul style="list-style-type: none"> <li>To be referred to the ICAC workforce working group.</li> </ul>
6.8	Undergraduate students should have the option of undertaking a clinical placement to intensive care units in their third year in either metropolitan or rural centres.	<p><b>Supported</b></p> <ul style="list-style-type: none"> <li>Undergraduate nursing training provides for a clinical placement in ICU/critical care setting.</li> <li>There is no similar requirement for undergraduate medical training, and arrangements vary across the three schools of medicine.</li> </ul>
6.9	Promotion of intensive care nursing as a career choice should be integrated with broader promotional strategies targeting school leavers and undergraduate nursing students.	<p><b>Implemented</b></p> <ul style="list-style-type: none"> <li>Nurse Policy Branch has developed a multi-pronged approach to workforce recruitment, including undergraduate support, graduate and post-graduate support. All information contains reference to ICU nursing.</li> </ul>

Recommendation		Response
6.10	<p>That a range of initiatives be implemented to improve the work environment and conditions for clinicians working in Victorian ICUs:</p> <ul style="list-style-type: none"> <li>• Consideration is given to strategies that support night duty staff working primarily in public sector units. This may include shift changes, alterations in night duty staffing practices and resourcing support staff to undertake non-clinical duties overnight, for example clerical staff and patient care assistants. This latter strategy may not decrease the amount of night duty staff who are working, but may improve the quality of work.</li> <li>• The stressors that critical care or intensive care nurses experience should be the subject of further examination and appropriate strategies to address these should be evaluated. Health services should ensure all unit staff have access to critical incident debriefing and confidential third-party counselling.</li> <li>• The vulnerability of the ICU workforce to workplace injury should be assessed and managed in the context of providing a safe working environment, appropriate equipment and access to preventative programs, for example healthy back programs.</li> </ul>	<p><b>Health service responsibilities</b></p> <ul style="list-style-type: none"> <li>• The Victorian Nurse Back Injury Prevention Project (VNBIPP) was established in October 1998. Several subsequent evaluations have highlighted the success of this program.</li> </ul>
6.11	<p>A critical review is conducted into the efficiency, cost effectiveness and articulation of hospital/unit-based orientation programs with tertiary education programs.</p>	<p><b>Supported</b></p>
6.12	<p>ACCCN Victoria give consideration to the formation of sub branches in Victoria. This model is used in other states and could be supported via access to regional departmental information and telecommunications infrastructure.</p>	<p><b>ACCCN responsibility</b></p>
7.1	<p>That rural ICUs develop links with the major metropolitan ICUs specifically to examine options and develop practical initiatives to address:</p> <ul style="list-style-type: none"> <li>• telemedicine links</li> <li>• staff rotation and exchange</li> <li>• joint training initiatives.</li> </ul> <p>The development or extension of these networks should be documented by the Intensive Care Working Group (MECCC-ICU Group) with a view to explore how such networks can be supported by additional resourcing through departmental or commonwealth program support.</p>	<p><b>Supported</b></p>
7.2	<p>That the proposed Intensive Care Working Party monitor self-sufficiency levels and clinical viability of rural ICU services. In particular, the impact of the changes to trauma triage and the Victorian Trauma Management Service be documented, with significant findings reported to the Director, Acute Health.</p>	<p><b>Supported</b></p> <ul style="list-style-type: none"> <li>• Through the changed governance arrangements for statewide retrieval, Adult Retrieval Victoria will be well placed to better understand rural demand and capability.</li> <li>• This is in addition to ongoing service monitoring by the department, ICAC and ANZICS.</li> </ul>

Recommendation		Response
8.1	Private sector ICUs should have representation in the Intensive Care Working Group (MECCC-ICU Group) by a member who can genuinely reflect the views and concerns of private sector intensive care services.	<b>Implemented</b>
8.2	It is recommended that the Nurse Policy Unit continue to seek input from private sector employers, employees and peak bodies representing private sector nurses in relation to: <ul style="list-style-type: none"> <li>• nurse workforce planning</li> <li>• specific recruitment strategies</li> <li>• working conditions</li> <li>• joint training and education initiatives.</li> </ul>	<b>Implemented</b> <ul style="list-style-type: none"> <li>• The main focus of the Department of Human Service's work is public health services but, wherever possible, the private sector is included or considered.</li> <li>• The report <i>Nurses in Victoria</i> covered both the public and private sector.</li> </ul>
8.3	It is recommended that the Intensive Care Working Group (MECCC-ICU Group) monitor the impact of changes to health fund payment systems and levels and the relationship of these to private sector unit viability and service levels. Specific input should be sought from the Health Benefits Council of Victoria.	<b>Further investigation required.</b> <ul style="list-style-type: none"> <li>• The department monitors health funding policy and implications.</li> </ul>
9.1	That the funding for the opening/commissioning of additional ICU beds or additional activity be made available through targeted funding from the Department of Human Services, for which health services/hospitals are accountable. Reporting requirements and service agreements should take cognisance of: <ul style="list-style-type: none"> <li>• baseline levels of activity</li> <li>• baseline bed availability</li> <li>• agreed activity targets, based on level of funding provided.</li> </ul> It is a clear expectation that any future funding strategy for ICU services be identified and reported against agreed performance standards negotiated with each health service and the department.	<b>Implemented</b> <ul style="list-style-type: none"> <li>• The department is currently implementing a more targeted approach with respect to system-wide capacity management, which will continue to be monitored and reviewed.</li> </ul>
9.2	That annual health service revenue and health service expenditure for ICU services be identified and reported as a sub-item within aggregated service revenue and expenditure reporting.	<b>Health service responsibility</b> <ul style="list-style-type: none"> <li>• The governance of health services in Victoria clearly identifies Health Service Boards of Management as responsible for the development of financial and business plans and budgets, which are then to be implemented by the Chief Executive Officer.</li> <li>• The department monitors and reviews the outcome /outputs of health service performance in accordance with the Annual Statement of Priorities.</li> <li>• Health service budgets are not reviewed or monitored at a cost centre level as this recommendation would require.</li> </ul>

Recommendation		Response
9.3	<p>That future funding models for ICU beds consider purchasing capacity and marginal activity taking cognisance of:</p> <ul style="list-style-type: none"> <li>• The need to resource many metropolitan and some regional ICUs for maintaining capacity in excess of their local demand for the purpose of meeting their referred caseloads. This concept logically extends to the core services required to support a tertiary ICU (for instance, emergency, surgical services, diagnostic services).</li> <li>• The integration of other broad purchasing or policy strategies relating to acute care access, such that impact on ICU services be considered as a limiting factor in policy directions that increase base activity in acute services that have a component of ICU care. For example, a policy initiative aiming to increase the volume of elective surgery must consider the availability of ICU services, or purchase of additional ICU capacity, prior to implementation. Care should be taken that policy initiatives requiring increased volumes of services to be provided do not inadvertently exceed the available ICU capacity on a systemic basis.</li> <li>• The development of system benchmarks, in conjunction with unit benchmarks, in relation to the probability thresholds and frequency with which ICU demand will approach or exceed system capacity, and what responses will be implemented on a system-wide basis.</li> </ul>	<p><b>Supported</b></p> <ul style="list-style-type: none"> <li>• The proposed ICU funding review will address these issues.</li> </ul>
9.4	<p>That the review of the funding elements and technical assumptions within the Victorian Hospital Funding Model, with direct relevance to ICU funding, continue. Specific issues for ongoing investigation include:</p> <ul style="list-style-type: none"> <li>• Ventilation co-payments.</li> <li>• Variance and range of units modelled costs versus actual costs.</li> <li>• Impact of changes to DRG weightings, outlier definitions or coding shifts in subsequent funding models.</li> </ul>	<p><b>Implemented in part</b></p> <ul style="list-style-type: none"> <li>• A 2002 review of funding via the mechanical ventilation (MV) co-payment proxy for ICU services resulted in the addition of an availability payment.</li> <li>• These issues are addressed annually through the review of cost weights, a process managed by the Department of Human Services with health services' costs considered together with system-wide costs to determine price.</li> <li>• The proposed ICU funding review (2008-09) will address these issues.</li> </ul>

## Appendix 2: Intensive care services

### Public hospital intensive care units

Hospital	Unit status	Level
<b>Metropolitan</b>		
Austin Hospital	Adult ICU	3
Box Hill Hospital	Adult ICU	3
Dandenong Hospital	Adult ICU	2
Frankston Hospital	Adult ICU	2
Maroondah Hospital	Adult ICU/CCU	2
Monash Medical Centre	Adult and paediatric ICU	3
Peter MacCallum	Adult ICU	2
Royal Melbourne Hospital	Adult ICU	3
Royal Children's Hospital	Paediatric ICU	3
St Vincent's Hospital	Adult ICU	3
The Alfred	Adult ICU	3
The Northern Hospital	Adult ICU	2
Western Hospital	Adult ICU	3
<b>Regional</b>		
Ballarat Health Service	Adult ICU/CCU	3
Barwon Health	Adult ICU	3
Bendigo Health	Adult ICU/CCU	2
Central Gippsland Health Service	Adult ICU/CCU	2
Goulburn Valley Health	Adult ICU/CCU	2
Latrobe Regional Hospital	Adult ICU/CCU	2
Mildura Base Hospital	Adult ICU/CCU	2
Northeast Health Wangaratta	Adult ICU/CCU	2
South West Healthcare	Adult ICU/CCU	2
Western District Health Service	Adult ICU/CCU	2
Wimmera Health Care Group	Adult ICU/CCU	1

## Registered private hospital intensive care units

<b>Metropolitan</b>
Jessie McPherson Private Hospital
Epworth Hospital
Cabrini Hospital, Malvern
Knox Private Hospital
Melbourne Private Hospital
St Vincent's Private Hospital
Epworth Freemasons
Epworth Eastern Hospital
Warringal Private Hospital
John Fawkner Private Hospital
The Valley Private Hospital
<b>Regional</b>
St John of God Hospital (Geelong)
St John of God Health Care (Ballarat)

## Appendix 3

### Membership of Intensive Care Advisory Committee February 2006–December 2008

#### Chair

Title	Name	Hospital	Representing
A/Prof	David Ernest	ANZICS (Box Hill)	Chair/ ANZICS

#### Membership

Title	Name	Hospital	Representing
A/Prof	Graeme Hart	Austin	ADMC
Dr	Craig French	Western	ICU Metro
Dr	Howard Connor	Sale	ICU Regional
Dr	Graeme Duke	Northern	ICU Metro
A/Prof	Chris Wright	Monash	ICU Tertiary
Dr	John Botha	Frankston	ICU Metro
Dr	John Edington	Bendigo	ICU Regional
Dr	Marcus Kennedy	MAS	Director ARV
A/Prof	Ged Williams	Maroondah	Executive
Mr	Andrew Stripp	Alfred	Executive
Dr	Megan Robertson	JFICM (RMH)	JFICM
Dr	Felicity Hawker	Cabrini	Private
A/Prof	John Santamaria	St Vincent's	VicDRC chair
Dr	Lara Shekerdemian	Royal Children's	PICU
Mr	Greg Spiers	Bendigo	ICU
Ms	Gabrielle Hanlon	St Vincent's	ACCCN
Dr	Martin Lum	DHS	SMA AMP
Mr	Steve McConchie	DHS	DHS-Q&S
Dr	Margaret Grigg	DHS	DHS-AMP
Mr	David Gardner	DHS	DHS-CCS



