Intensive Care Safety & Quality Survey: Australia and New Zealand 2007/2008

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Every endeavour is made to represent data and information in this publication accurately but data variations are possible due to differences in scope, completeness of data sources and error resolution processes. The CORE is willing to discuss any aspects of the data.

Table of Contents

Acknowledgments

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Peter Hicks, who re-designed the current CCR database.

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Abbreviations

-	No data/ zero value
ABS	Australian Bureau of Statistics
ACCCN	Australian College of Critical Care Nurses
ACHS	Australian Council on Healthcare Standards
ACT	Australian Capital Territory
ADMC	ANZICS Database Management Committee
AIMS	Australian Incident Monitoring System
ANZICS	Australian & New Zealand Intensive Care Society
ANZPIC	Australian & New Zealand Paediatric Intensive Care Registry
APD	Adult Patient Database
CCR	Critical Care Resource
CCU(s)	Coronary Care Unit(s)
CLAB	Central Line Associated Bacteraemia
CORE	Centre for Outcome and Resource Evaluation
CVC(s)	Central Venous Canulation
DVT	Deep vein thrombosis prophylaxis
FAST-HUG	Feeding; Analgesia; Sedation; Thrombolytic prophylaxis; Head of Bed elevation; Ulcer Prophylaxis; Glucose
FTE/EFT	Full-time equivalent
HDU(s)	High Dependency Unit(s)
ICU(s)	Intensive Care Unit(s)
ICU/CCU/HDU	Intensive Care Unit/Coronary Care Unit/High Dependency Unit
JFICM	Joint Faculty of Intensive Care Medicine
MET	Medical Emergency Team
MOH	Ministry of Health
MRSA	Methicillin Resistant Staphylococcus Aureus
n/a	Not Applicable/Not Available
No.	Number
NSW	New South Wales
NT	Northern Territory
NZ	New Zealand
NZHIS	New Zealand Health Information Service
PICU(s)	Paediatric Intensive Care Unit(s)
QLD	Queensland
SA	South Australia
Tas	Tasmania
VAP	Ventilator-associated pneumonia rate
Vic	Victoria
WA	Western Australia

Introduction

Intensive Care Safety & Quality Survey: Australia and New Zealand 2007/2008 reports findings obtained from the Resource and Activity survey, conducted by the Critical Care Resource (CCR) registry at ANZICS CORE.

Historically, safety and quality data has been presented within the report *Intensive Care Resource & Activity: Australia and New Zealand* reports, which also provides information about the characteristics and activity of Australian and New Zealand intensive care units (ICUs). The Safety and Quality component will now be presented separately. All Intensive Care Resources & Activity Reports can be downloaded from http://www.anzics.com.au/core/reports. The compliment to this report is the *Intensive Care Resources & Activity: Australia and New Zealand 2007/2008.*[1]

The survey tool used to obtain ICU characteristics, activity, and safety and quality activities can be found in the appendix of this report.

189 Australian and New Zealand critical care units in both the public and private sectors were surveyed, of which 181 responded (95.7%). One site was subsequently excluded as it did not fulfil the minimum criteria of invasively ventilating 20 patients per year over 3 years.

Information in this report is intended to be a resource for intensive care staff, public and private health care providers, policy makers and relevant statutory bodies.

To enable effective interpretation of the data, more information is provided in the overview section (Chapter 1).

1 OVERVIEW OF CCR SURVEY

The ANZICS CORE Critical Care Resource (CCR) survey was established in 1993. This is the first specialised safety and quality report. Prior to 2007/08, the safety and quality data was contained within the intensive care reports, of which there are currently 10.[2-11]

The CCR was formerly known as the ANZICS ICU Registry later, the ANZICS Research Centre for Critical Care Resources (ARCCCR), and now its current state, integrated into ANZICS CORE- the Australia New Zealand Intensive Care Society Centre for Outcome and Resource Evaluation.

Dr Peter Hicks in New Zealand is the current CCR director. Previously Associate Professor Graeme Hart has overseen its operation and research activities during his time as the inaugural director.

The Critical Care Resource (CCR) Survey is one of the three affiliated databases/registries administered by the ANZICS Centre for Outcome and Resource Evaluation (CORE). The other two centres are the ANZICS Adult Patient Database (APD) and the Australian and New Zealand Paediatric Intensive Care Registry (ANZPIC). Findings for all 3 registries are presented together in an inaugural Annual Report for 2008.[12]

ANZICS is not-for-profit company located in Melbourne, Australia. The research activities undertaken by the CCR, together with the activities of the APD and ANZPIC are funded bi-nationally by the Ministry of Health (MOH) in New Zealand, and State and Territory Health Departments in a triennial agreement.

The CCR holds a significant collection of data on intensive care resources as a result of its data collection activities. This research is quality-oriented and is directed toward intensive care infrastructure, workforce profiles and processes of care. The annual surveys completed by intensive care unit (ICU) staff assist in monitoring trends in intensive care service delivery.

1.1 Materials and Methods

This section outlines the research project methodology and provides information regarding data items. Not all units respond to each question and hence denominators may not be equivalent in all tables.

Resource and Activity data have been presented separately external of this report.

1.2 Survey Instrument

The 2007/2008 survey instrument was structured on previous surveys conducted by the CCR and can be found in Appendix 8.1. It was designed by Kelly Drennan in conjunction with Dr Peter Hicks and Associate Professor Graeme Hart, and subsequently reviewed by members of the ANZICS CORE Management Committee. External input on the survey design was also received from Dr Tony Burrell and The ANZICS Safety and Quality Committee, as well as the Australian College of Critical Care Nurses (ACCCN).

The 12 page survey instrument was distributed electronically with follow-up conducted by email and telephone. Accompanying the survey was an extract on standards for intensive care by the Joint Faculty of Intensive Care Medicine (JFICM). [13]

The 189 surveys were due for return by the end of December 2008, however the return of surveys was accepted until May 2009. Follow up to non-responders was by letter, telephone, facsimile and e-mail. A large number of survey instruments were redistributed during the follow-up processes. Data was checked, entered and analysed by the principal authors of the report.

1.3 Minimum Criteria

For inclusion in this survey, a critical care unit must possess ventilator capability and have the resources to provide continuous care. ICUs should also invasively ventilate 20 or more patients per annum. A number of smaller ICUs submitted data but some of these have now been excluded. It appears that some of these smaller ICUs function primarily as high dependency units (HDUs) or serve as sites for resuscitation and retrieval of the critically ill. These ICUs will continue to be monitored in forthcoming surveys to capture any changes to their status and to ensure ongoing comprehensive coverage of critical care services across Australia and New Zealand. Continual review of eligible units is undertaken by the CORE and is further discussed in relation to ICU levels.

1.4 Considerations

1.4.1 Confidentiality of Information

The CCR does not release identified unit information without individual unit consent. CCR currently works with other ANZICS entities to ensure contact information for individuals and ICUs is accurate.

1.4.2 Data Quality

The survey was reliant on self-reporting processes which can be viewed as a limitation. Extensive supporting documents were provided to assist contributors with an understanding of key terms and provided the requisite framework.

The number of ICUs reporting information to variables in the report is provided in each table. Data quality was inconsistent, with several surveys incomplete on return. Extensive follow up occurred to obtain missing data and to clarify any data errors. However there were many reasons why data was unable to be provided or retrieved at a given point in time. The CCR endeavours to follow definitions (where applicable) listed in the National Health Data Dictionary.[14]

1.4.3 Data Analyses

Given the scope of the survey and the type of data collected a descriptive analytical approach was viewed as the most suitable method. Data was entered into custom designed Microsoft Office Access database.[15] Data extraction and analyses were undertaken with Microsoft Excel 2003 [16] and Access.

1.5 Critical Care Units- Inclusions

A critical care complex may include general and specialty ICUs such as neurosurgical or Cardio Thoracic, combined intensive care/coronary care/high dependency units (ICU/CCU/HDUs), paediatric intensive care units (PICUs), high dependency unit(s) (HDUs) managed by an ICU, or a combination of these. HDUs under non-ICU management are excluded from the survey.

Detailed data on paediatric services and activity can be found in the Australian and New Zealand Paediatric Intensive Care Registry (ANZPIC) reports.[17-18]

2 Participating ICUs

The survey for the 2007/08 financial year had a participation rate of 95.8% which comprised 154 Australian ICUs and 27 New Zealand ICUs; a total of 181 out of 188 units. One Australian site (QLD; private) was subsequently excluded as it was ineligible based on the minimum criteria of ventilating 20 patients per annum over 3 consecutive years. The participation rate of contributing units is displayed by Region and Sector in Table 1. A list of contributing ICUs is presented in Appendix 8.2.

Table 1: 2007/08 CCR survey response rates

Sector	Region	Surveys Sent	Responses received	Participation rate
Public	ACT	2	2	100.0%
	NSW	39	38	97.4%
	NT	2	2	100.0%
	NZ	25	24	96.0%
	QLD	23	23	96.0%
	SA	7	7	100.0%
	TAS	3	3	100.0%
	VIC	24	23	95.8%
	WA	5	5	100.0%
Public Total		130	127	97.7%
Private	ACT	1	1	100.0%
	NSW	16	16	100.0%
	NT		Nil private ICU	
	NZ	3	3	100.0%
	QLD	16	15	100.0%
	SA	6	5	83.3%
	TAS	1	1	100.0%
	VIC	12	9	75.0%
	WA	4	4	100.0%
Private Total		59	54	91.5%
Australia		189	181	95.8%

There were 46 Rural ICUs submitting data, 36 each of Tertiary and Metropolitan units, 9 paediatric and 53 private ICUs.

This chapter includes the data from 9 PICUs, of which 8 are located in Australia and one in New Zealand.

3 Summary Resource & Activity data for 2007/08

A brief overview of summary activity data collected in the resources and activity survey is presented in Table 2.

There were 2,108 physical beds in Australia and New Zealand respectively, of which 1,821 were available for use in the 180 contributing ICUs. 178 ICUs reported 127,074 admissions. At a unit level, there was a median (IQR) of 722 (441 to 3345) patients in the 2007/08 financial year.

Table 2: Summary Resource and Activity Data

	Australia	New Zealand	Total
Number of contributing units	153	27	180
Population*	22,010,040	4,333,075	26,343,115
Available beds per 100,000 population	7.4	4.6	6.9
Physical beds *(a)*	1,856	252	2,108
Available beds *(b)*	1,622	199	1,821
Ventilator Beds *(c)*	1,313	174	1,487
Total Admission	127074 (n=151)	18,919	145,993 (n=178)
Readmission	5,457 (n=133)	540 (n=21)	5997 (n=154)
Readmission rate (mean)	4.7%	3.5%	4.5%

Notes:

(a) PHSYICAL BEDS refers to a single patient care location fully configured to ICU standards. It is an actual bed (or bed equivalent), not a bed space.

(b) AVAILABLE BED is a bed in use or immediately available, which has advanced life support capability and is fully staffed and funded. The number of available beds cannot exceed physical beds.

(c) VENTILATOR BED refers to a physical ICU bed plus a ventilator.

(n=)Number of contributing hospitals

Population data source:
Australia Bureau of Statistics 'Population Clock' http://www.abs.gov.au; accessed 16/10/09
Statistics New Zealand 'Estimated Resident Population Of New Zealand' http://www.stats.govt.nz, accessed 16/10/09

40.7% of patients had invasive ventilation requirements, while 7.7% of patients received non-invasive ventilation only. Unit occupancy based on available beds was a mean 68% and median 70.2% of capacity level (in 166 contributing ICUs). Occupancy was calculated by dividing available beds by the yearly bed hours provided and 365 (days in a year) to create a percentage of occupied days from total possible bed days. Overall patient length of stay (LoS) was 3.34 days in Australia and 2.36 days in New Zealand.

In Australia and New Zealand, there was 1.2 and 1.7 specialist FTE per 1,000 patient days. Intensivist comprised 82.5% of the total FTE worked in intensive care units. There was 16.1 and 20.7 RN FTE in Australia and New Zealand respectively.

4 Safety & Quality

The CCR resource and activity survey contains safety and quality questions, the results of which are presented in this chapter. Each year these safety and quality questions are revised and approved by the committee. New Zealand will be discussed as a jurisdiction component alongside the Australian States in this chapter. Data is only presented where a unit was able to provide information.

4.1 Clinical Indicators

4.1.1 ACHS data collection and submission

Table 3 details the percentage of Australian units which collected and submitted clinical indicators to the Australian Council on Healthcare Standards (ACHS). This indicator does not apply to New Zealand. 70.9% (73/103) of public ICUs and 82.0% (41/50) of private ICUs submitted, providing an overall total of 74.5% for Australian ICUs.

Table 3: ACHS Clinical indicator data submission 2007/08

Sector	Region	Total no. Units	No. ICUs contributing to ACHS	Percent collecting and submitting ACHS data
Public	ACT	2	2	100.0%
	NSW	38	27	71.1%
	NT	2	2	100.0%
	QLD	23	15	65.2%
	SA	7	5	71.4%
	TAS	3	2	66.7%
	VIC	23	18	78.3%
	WA	5	2	40.0%
Public Total		103	73	70.9%
Private	ACT	1	1	100.0%
	NSW	16	14	87.5%
	QLD	14	12	85.7%
	SA	5	3	60.0%
	TAS	1	1	100.0%
	VIC	9	7	77.8%
	WA	4	3	75.0%
Private Total		50	41	82.0%
Australia		153	114	74.5%

4.1.2 Additional Clinical Indicators

Units were asked to identify clinical indicator which were collected in 2007/2008 including:

- Central Line Associated Bacteraemia (CLAB) rate
- Ventilator-associated pneumonia rate (VAP)
- Deep vein thrombosis (DVT) prophylaxis
- Methicillin Resistant Staphylococcus Aureus (MRSA) rate
- Pressure areas
- Medication errors
- Complications/Adverse events
- Medical Emergency Teams (MET)
- Nutrition indicators
- Australian Incident Monitoring System (AIMS)

Medication errors, pressure areas and CLAB were collected with the greatest frequency. Figure 1 identifies the aggregate percentage of units which report submitting the indicator, while Table 4 presents this distribution numerically by region and sector.

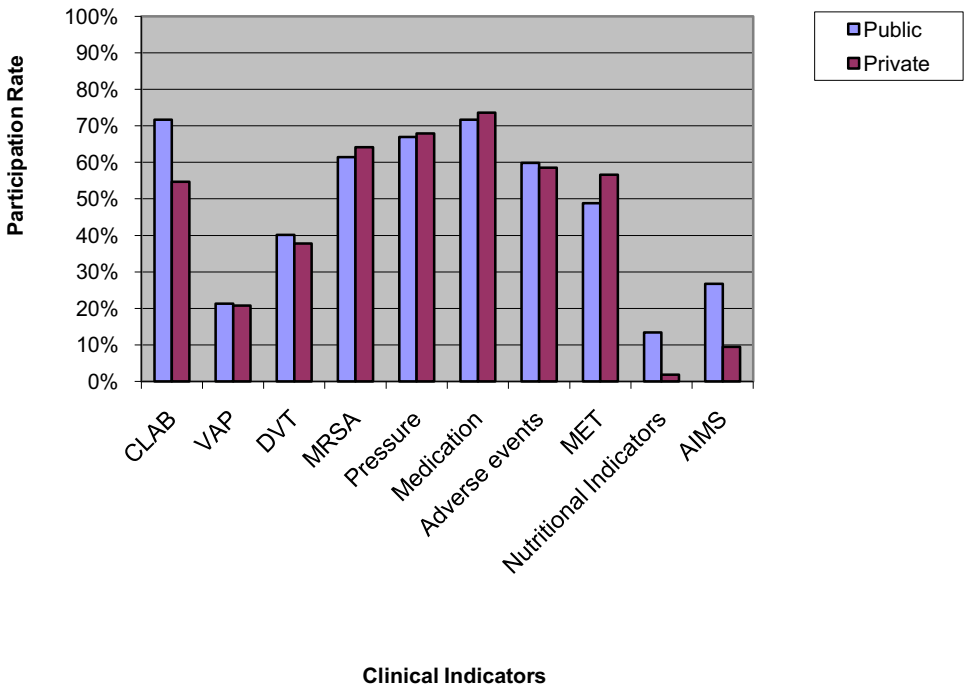

Figure 1: Clinical Indicators Collection Rates – Australia and New Zealand

Table 4: Number of ICUs collecting clinical indicators

Sector	Region	No. ICUs	The number of ICUs collecting the following clinical indicators:										
			CLAB	VAP	DVT	MRSA	Pressure Area	Medication Error	Adverse Events	MET	Nutrition	AIMS	Other
Public	ACT	2	1		1	1	1	1	1	1			1
	NSW	38	35	4	17	29	26	24	20	13	3	19	4
	NT	2		1	1	1	2	2	2	1		1	
	NZ	24	9	2	4	5	11	16	13	3			2
	QLD	23	16	6	13	17	17	19	16	12	7	3	3
	SA	7	5	2	2	7	4	5	5	6	2	6	
	TAS	3	2	1		3	2	3	3	2	1		
	VIC	23	20	11	11	13	19	19	14	21	4	3	4
	WA	5	3		2	2	3	2	2	3		2	
Public Total		127	91	27	51	78	85	91	76	62	17	34	14
Private	ACT	1	1	1	1	1	1	1	1				
	NSW	16	12	3	7	14	11	11	9	6		3	1
	NZ	3	1	1		1	2	2	2				1
	QLD	14	8	4	7	11	9	12	9	12	1	2	2
	SA	5	2	1	1	3	5	5	4	4			1
	TAS	1					1	1					
	VIC	9	5	1	4	3	6	6	5	5			1
	WA	4				1	1	1	1	3			2
Private Total		53	29	11	20	34	36	39	31	30	1	5	8
AU & NZ Total		180	120	38	71	112	121	130	107	92	18	39	22

22 units reported collecting “other” clinical indicators. These included

- Code Blues
- procedural complications
- admission delay
- unplanned extubation
- surgical wound infection surveillance
- unplanned transfers from ward

4.2 ACLS & ADAPT

Data was collected regarding the percentage of staff currently certified in Advanced Cardiac Life Support (ACLS) and Australasian Donor Awareness Program (ADAPT). ADAPT is a one day course relating to brain death and organ and tissue donation, and for medical staff the ACLS recertification can be a hospital or externally provided formal review of practical competence and theory.

There was a significant spread of reporting, and the percentage of staff reported to be currently certified in these two schemes is presented below in Table 5

Table 5: The percentage of staff certified in ACLS & ADAPT

	ACLS		ADAPT	
	% Medical Staff certified	% Nursing Staff certified	% Medical Staff certified	% Nursing Staff certified
No. ICUs	131	160	126	129
Min	0	0	0	0
Max	100.0	100.0	100.0	100.0
Mean	64.7	69.7	35.7	11.5
Median	95.0	80.0	25.0	0.0

4.3 Echocardiography

Echocardiography refers to a group of interrelated ultrasound applications used to diagnose and manage conditions of the heart and great vessels.

74 out of 153 (48%) of Australian ICUs, and 13 out of 27 (50%) of New Zealand ICUs reported their intensive care specialists perform Echocardiography on intensive care patients. This represents 49.6% and 45.3% of public and private in Australia and New Zealand units respectively. Echocardiography by region can be seen in Table 6.

Table 6: Performance of Echocardiography – Australia and New Zealand

Sector	Region	Total No. ICUs	No. ICUs performing Echocardiography	% of total units performing Echocardiography
Public	ACT	2	1	50.0%
	NSW	38	19	50.0%
	NT	2	0	0.0%
	NZ	24	12	50.0%
	QLD	23	10	43.5%
	SA	7	1	14.3%
	TAS	3	3	100.0%
	VIC	23	14	60.9%
	WA	5	3	60.0%
Public Total		127	63	49.6%
Private	ACT	1	1	100.0%
	NSW	16	10	62.5%
	NZ	3	1	33.3%
	QLD	14	5	35.7%
	SA	5	1	20.0%
	TAS	1	1	100.0%
	VIC	9	2	22.2%
	WA	4	3	75.0%
Private Total		53	24	45.3%
AU & NZ Total		180	87	48.3%

77 ICUs possessed an Echocardiography machine within their ICU, comprising 65 units (42.4%) in Australian and 12 (44.4%) in New Zealand. Figure 2 is a flow diagram of Echocardiography as there is variance in practice regarding infrastructure and operation.

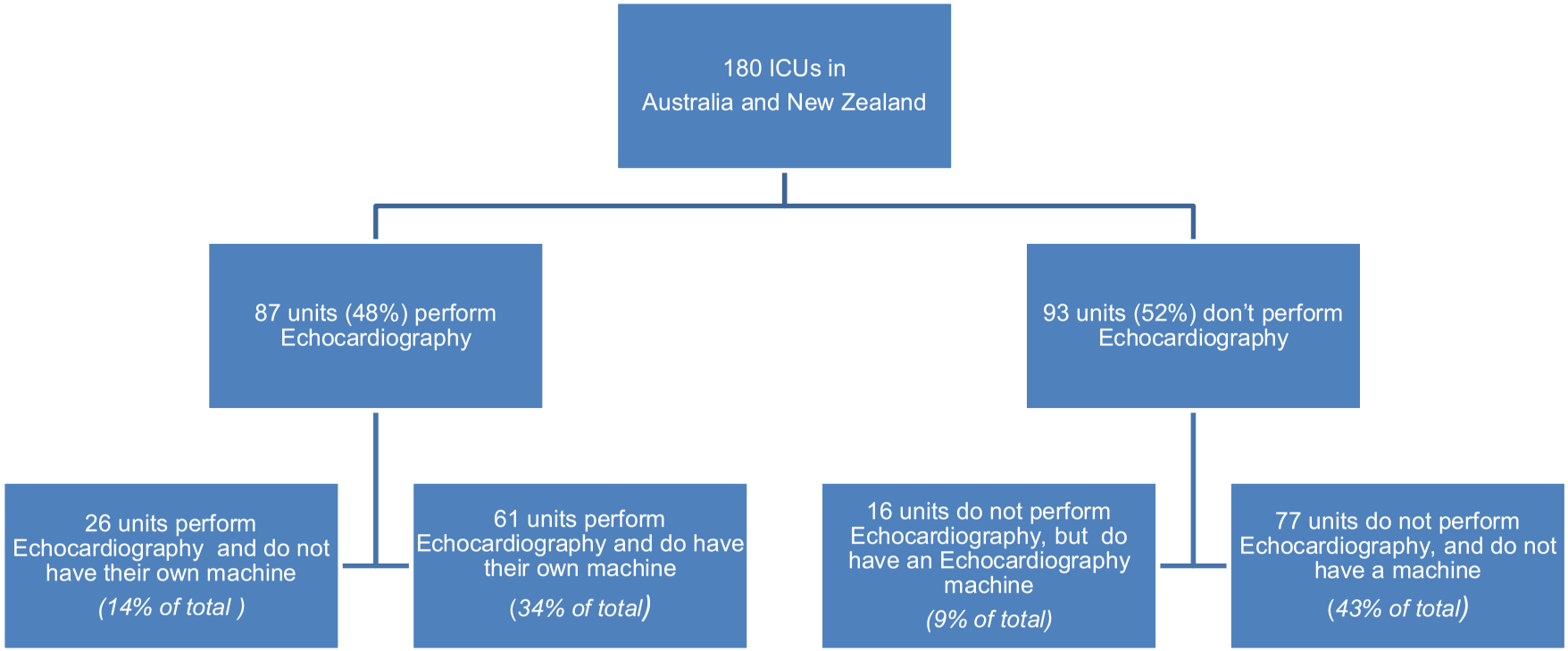

Figure 2: Echocardiography practice and resource

4.4 Quality Activities

A quality activity is one which ensures the ICU is achieving optimal outcome and has a focus on the process of care. Examples include outcomes data (i.e. via ANZICS APD reports), conducting Mortality and Morbidity meetings, monitoring and reviewing incidents and conducting audits on various processes of care in the ICU. Staff members self reported the full time equivalent (FTE) for the coordination of ICU quality activities.

It has been noted that there is some interpretation difficulties with this question, and this has been further refined for future surveys. However, the data received from this reported 66% of all time spent on the coordination of ICU quality activities was done so by nurses (see Table 7).

Table 7: Allocated Staff Members for Co-ordination of ICU Quality Activities – AU & NZ

Sector	Region	MEDICAL				NURSE				OTHER				TOTAL
		No. ICU	No. Staff	FTE	% of State total	No. ICU	No. Staff	FTE	% of State total	No. ICU	No. Staff	FTE	% of State total	
Public	ACT	1	1	0.2	50.0%	1	1	0.2	50.0%					0.4
	NSW	10	22	7.0	25.2%	17	30	19.4	69.8%	2	3	1.4	5.0%	27.8
	NT	1	1	0.2	16.7%	1	1	1.0	83.3%					1.2
	NZ	10	13	2.8	18.2%	12	21	10.1	65.6%	3	6	2.5	16.2%	15.4
	QLD	12	24	5.9	30.2%	15	26	12.5	64.6%	1	1	1.0	5.2%	19.4
	SA	2	5	2.0	39.2%	3	7	3.1	60.8%					5.1
	TAS	3	3	0.5	28.5%	2	6	0.6	38.0%	1	1	0.5	33.5%	1.6
	VIC	10	14	4.7	25.0%	10	17	6.4	34.1%	1	8	7.7	40.9%	18.8
	WA	3	4	0.4	16.9%	4	6	2.0	83.1%					2.4
Public Total		52	87	23.6	25.6%	65	115	55.3	60.1%	8	19	13.1	14.2%	92.0
Private	ACT					1	1	0.2	100.0%					0.2
	NSW	3	3	1.7	13.7%	9	25	10.7	86.3%					12.4
	NZ					1	6	1.2	100.0%					1.2
	QLD	5	8	2.1	28.3%	6	17	5.2	71.7%					7.3
	SA					4	12	10.4	100.0%					10.4
	TAS									1	1	1.0	100.0%	1.0
	VIC	4	7	2.1	29.9%	5	24	4.6	67.2%	1	1	0.2	2.9%	6.9
	WA	1	1	0.1	100.0%									0.1
Private Total		13	19	5.9	15.0%	26	85	32.3	82.0%	2	2	1.2	3.0%	39.4
AU & NZ Total		65	106	29.5	22.4%	91	200	87.6	66.7%	10	21	14.3	10.9%	131.4

4.5 Staffing Performance Review

All sites in Australia and New Zealand were assessed for the regular performance review of staff members. 98.3% (n=177) of all sites had at least one regular performance review of medical and/or nursing staff. Table 8 identifies the distribution of performance review by position and region.

Table 8: Regular Performance Review of Staff

Sector	Region	No. ICUs	No. with medical AND/ OR nursing review		Medical review – no. ICUs		Nursing review – no. ICUs		'Other' review- no. ICUs
			No. ICU's	% of total ICUs	Senior Medical	Medical	Senior Nursing	Nursing	
Public	ACT	2	2	100.0%		1	2	2	
	NSW	38	38	100.0%	24	30	34	37	11
	NT	2	2	100.0%		1	2	2	1
	NZ	24	23	95.8%	12	17	23	23	8
	QLD	23	22	95.7%	17	19	20	20	6
	SA	7	7	100.0%	4	5	7	7	5
	TAS	3	3	100.0%	1	2	3	2	
	VIC	23	22	95.7%	14	17	20	22	11
	WA	5	5	100.0%	5	5	4	4	2
Public Total		127	124	97.6%	77	97	115	119	44
Private	ACT	1	1	100.0%			1	1	
	NSW	16	16	100.0%	5	8	16	16	7
	NZ	3	3	100.0%			3	3	1
	QLD	14	14	100.0%	7	7	13	14	3
	SA	5	5	100.0%	3	5	5	5	2
	TAS	1	1	100.0%			1	1	1
	VIC	9	9	100.0%	2	3	9	9	5
	WA	4	4	100.0%	2	4	3	3	1
Private Total		53	53	100.0%	19	27	51	52	20
AU & NZ Total		180	177	98.3%	96	124	166	171	64

Table 9 provides the per cent of performance review for each subsection of the Senior Medical, Medical, Senior Nurse, Nurse, and Other groups.

Table 9: Performance Review (Per cent)

Sector	No. ICUs	Senior Medical	Medical	Senior Nurse	Nurse`	Other
Public Total	127	60.6%	76.4%	90.6%	93.7%	34.6%
Private Total	53	35.8%	50.9%	96.2%	98.1%	37.7%
AU & NZ Total	180	53.3%	68.9%	92.2%	95.0%	35.6%

4.6 Competency Standards

Competency standards regarding Airway Management and Central Line Insertion were assessed (see Table 10). Overall, 60% of ICUs participated in Airway Management and 61.7% of in Central Line Insertion Management.

17 ICUs (9.4%) reported participating in 'Other' competency standard programs. These other programs included

- Tracheostomy
- Epidural
- IV injection via slow injection assessment
- No lift
- Transport
- Cardioversion

Table 10: Airway and central line competency standards

Sector	Region	No ICUs	Airway		Central Line Insertion		Other
			No. ICUs with standards	% of Total ICUs	No. ICUs with standards	% of Total ICUs	No. ICUs
Public	ACT	2	0	0.0%	1	50.0%	0
	NSW	38	25	65.8%	23	60.5%	2
	NT	2	1	50.0%	1	50.0%	0
	NZ	24	13	54.2%	16	66.7%	1
	QLD	23	16	69.6%	17	73.9%	1
	SA	7	6	85.7%	7	100.0%	1
	TAS	3	0	0.0%	0	0.0%	0
	VIC	23	17	73.9%	15	65.2%	4
	WA	5	4	80.0%	4	80.0%	0
Public Total		127	82	64.6%	84	66.1%	9
Private	ACT	1	0	0.0%	0	0.0%	0
	NSW	16	9	56.3%	9	56.3%	2
	NZ	3	1	33.3%	1	33.3%	1
	QLD	14	6	42.9%	6	42.9%	2
	SA	5	3	60.0%	3	60.0%	0
	TAS	1	1	100.0%	0	0.0%	1
	VIC	9	5	55.6%	7	77.8%	2
	WA	4	1	25.0%	1	25.0%	0
Private Total		53	26	49.1%	27	50.9%	8
AU & NZ Total		180	108	60.0%	111	61.7%	17

4.7 FAST-HUG

FAST-HUG is a mnemonic developed as a simple reminder to improve application of evidence-based preventive measures in the ICU. F = Feeding, A = Analgesia, S = Sedation, T = Thrombolytic prophylaxis, H = Head of bed elevation, U = Ulcer prophylaxis (stress and otherwise), and G = Glucose control.

Only 36.1% of ICUs in Australia and New Zealand used a process orientated checklist of FAST-HUG or a variation of this system. This is displayed by region in Table 11.

Table 11: Participation in FAST-HUG (or variation)

Sector	Region	No. ICUs	No	Yes	%
Public	ACT	2		2	100.0%
	NSW	38	25	13	34.2%
	NT	2	1	1	50.0%
	NZ	24	16	8	33.3%
	QLD	23	12	11	47.8%
	SA	7	6	1	14.3%
	TAS	3	3		0.0%
	VIC	23	11	12	52.2%
	WA	5	3	2	40.0%
Public Total		127	77	50	39.4%
Private	ACT	1	1		0.0%
	NSW	16	12	4	25.0%
	NZ	3	2	1	33.3%
	QLD	14	12	2	14.3%
	SA	5	3	2	40.0%
	TAS	1	1		0.0%
	VIC	9	3	6	66.7%
	WA	4	4		0.0%
Private Total		53	38	15	28.3%
AU & NZ Total		180	115	65	36.1%

4.8 Rounds with Infectious Disease Specialists

Units were questioned regarding the presence of an infectious disease specialist and/or microbiologist. 45.6% (n = 82) of units in Australia and New Zealand conducted rounds within their unit, and of these 84.1% (n = 69) had a frequency of at least weekly. These are displayed in Table 12 below.

Table 12: Rounds with Infectious disease specialists and/ or microbiologist

Sector	Region	No. ICUs	Conducted Rounds	% Total ICUs that conducted rounds	Rounds were at least weekly	% of ICUs which conducted rounds that were at least weekly
Public	Australia	103	59	57.3%	53	89.8%
	New Zealand	24	10	41.7%	9	90.0%
Public Total		127	69	54.3%	62	89.9%
Private	Australia	50	13	26.0%	7	53.8%
	New Zealand	3	0			
Private Total		53	13	24.5%	7	53.8%
AU & NZ Total		180	82	45.6%	69	84.1%

4.9 Antibiotic Stewardship Program

An Antibiotic Stewardship Program seeks to optimize antimicrobial prescribing in order to improve individual patient care as well as slow the spread of antimicrobial resistance. 35% of all ICUs had a program in 2007/08, and these are identified by region in Table 13.

Table 13: Antibiotic Stewardship Program

Sector	Region	No. ICUs	Yes	% with program
Public	ACT	2	1	50.0%
	NSW	38	15	39.5%
	NT	2	1	50.0%
	NZ	24	9	37.5%
	QLD	23	12	52.2%
	SA	7	2	28.6%
	TAS	3	1	33.3%
	VIC	23	8	34.8%
	WA	5	3	60.0%
Public Total		127	52	40.9%
Private	ACT	1		0.0%
	NSW	16	2	12.5%
	NZ	3		0.0%
	QLD	14	3	21.4%
	SA	5	2	40.0%
	TAS	1		0.0%
	VIC	9	2	22.2%
	WA	4	2	50.0%
Private Total		53	11	20.8%
AU & NZ Total		180	63	35.0%

4.10 ICU Antibiograms

An antibiogram is the result of a laboratory testing for the sensitivity of an isolated bacterial strain to different antibiotics.

The number of units regularly obtaining antibiograms specific to the ICU (rather than hospital -wide antibiograms) was assessed. 21% of public units (n = 22), and 26% of private units (n = 11) reported routinely gathering antibiograms (see Table 14)

Table 14: ICU specific antibiograms – Australia and New Zealand

Sector	Region	No. ICU	Yes	% with Antibiograms
Public	ACT	2		0.0%
	NSW	38	4	11.8%
	NT	2		0.0%
	NZ	24	5	26.3%
	QLD	23	6	35.3%
	SA	7		0.0%
	TAS	3		0.0%
	VIC	23	5	27.8%
	WA	5	2	66.7%
Public Total		127	22	21.0%
Private	ACT	1		0.0%
	NSW	16	1	6.7%
	NZ	3		0.0%
	QLD	14	4	40.0%
	SA	5	2	66.7%
	TAS	1		0.0%
	VIC	9	4	80.0%
	WA	4		0.0%
Private Total		53	11	26.2%
AU & NZ Total		180	33	22.4%

4.11 Critical Incident Monitoring Program

Critical incident reporting is a quality assurance programme to monitor incidents and accidents in the ICU, caused by human error, problems inherent in a complex system, or a combination of these factors.

Units were examined for their presence of a critical incident monitoring program. It was found that 86.1% of units in Australia and New Zealand had an incidence program (see Table 15).

Table 15: Critical incident program

Sector	Region	No. ICUs	Yes	No	% with program
Public	ACT	2	1	1	50.0%
	NSW	38	36	2	94.7%
	NT	2	2		100.0%
	NZ	24	18	6	75.0%
	QLD	23	21	2	91.3%
	SA	7	5	2	71.4%
	TAS	3	2	1	66.7%
	VIC	23	19	4	82.6%
	WA	5	4	1	80.0%
Public Total		127	108	19	85.0%
Private	ACT	1	1		100.0%
	NSW	16	15	1	93.8%
	NZ	3	3		100.0%
	QLD	14	11	3	78.6%
	SA	5	5		100.0%
	TAS	1	1		100.0%
	VIC	9	7	2	77.8%
	WA	4	4		100.0%
Private Total		53	47	6	88.7%
AU & NZ Total		180	155	25	86.1%

4.12 Issues in the ICU

Units were asked to rank the main system issues within their ICU on a scale with 9 issues for discussion.

The issue identified as "most important" by the ranking given by units was analyzed individually. 51% of ICUs (n=92) identified lack of staff as the main issue. The remaining 'most important' issue identified by 49% of other ICUs is presented in Table 16 in descending order of occurrence. Several ICUs reported more than one issue as the "most important". Some ICUs did not rank all 9 variables.

Table 16: The most important system issue

Issue	Identified as "most important issue"	
	Total No. ICUs	% of total ICUs
Lack of Staff	92	51%
Exit block	35	19%
Lack of Beds	16	9%
Inability to admit patients	14	8%
Inadequate funding for Education	14	8%
Inadequate Funding for quality activities	6	3%
Implementation of MET	3	2%
Drug errors	2	1%
Ineffective incident monitoring	0	0%

Notes: only lists the 'most important' issue and does not rank various factors.

The **top 3** system most important issues affecting site, in decreasing order are:

(Most important issue)	9.	Lack of staff
	8.	Inability to admit patients
	7.	Exit block
	6.	Lack of Beds
	5.	Implementation of MET
	4.	Inadequate funding for Education
	3.	Inadequate Funding for quality activities
	2.	Ineffective incident monitoring
(Least important issue)	1.	Drug errors

Sites were asked to rank issues on a scale between 1 and 9, with the higher value representing a greater effect of the issue. The mean of these variables are presented below by region (Table 17) and by ICU classification (Table 18).

Zero ICUs noted Ineffective incident monitoring as the most important issue.

Table 17: System Issues – Mean score by Region

Region	No. ICUs	Lack of Staff	Inability to admit patients	Exit block	Lack of Beds	Implementation of MET	Inadequate funding for Education	Inadequate Funding for quality activities	Ineffective incident monitoring	Drug errors
ACT	3	9.0	5.7	5.3	5.7	3.0	3.3	4.3	3.0	5.0
NSW	54	7.0	5.3	6.4	5.8	3.5	5.0	5.2	3.3	3.9
NT	2	8.0	3.0	8.0	4.0	2.5	6.5	5.5	3.5	8.0
NZ	27	7.3	5.7	6.9	5.3	2.6	5.3	4.9	3.7	4.1
QLD	37	8.0	5.1	6.2	4.8	3.0	6.0	5.3	3.7	3.6
SA	12	7.4	4.7	6.8	6.2	3.1	5.6	5.8	3.0	4.3
TAS	4	8.0	8.3	5.0	5.8	4.5	6.3	4.8	3.5	2.5
VIC	32	7.5	6.1	6.9	5.8	2.7	5.0	5.1	3.0	2.8
WA	9	6.6	7.3	6.1	5.9	2.7	5.7	5.0	3.4	3.0
AU & NZ Total	180	7.4	5.6	6.5	5.5	3.1	5.3	5.2	3.4	3.7

Note

- *The mean of the score is presented above. The higher the score, the more important the issue. (Scale- 1 = least important, 9 = most important)*
- *Includes public and private*

Table 18: System Issue – Mean score by ICU Classification

ICU Classification	Tertiary	Metro	PICU	Rural / Regional	Private	AU & NZ total
No. ICUs	36	35	9	45	55	180
Lack of Staff	7.0	7.0	8.2	7.8	7.5	7.4
Inability to admit patients	7.0	6.0	6.8	5.4	4.3	5.6
Exit block	7.0	6.9	6.9	6.9	5.5	6.5
Lack of Beds	5.8	5.9	5.2	5.2	5.4	5.5
Implementation of MET	2.7	2.7	1.8	3.4	3.5	3.1
Inadequate funding for Education	5.6	4.8	5.4	5.4	5.5	5.3
Inadequate Funding for quality activities	4.4	4.7	5.3	5.4	5.7	5.2
Ineffective incident monitoring	3.4	2.8	2.6	3.3	4.0	3.4
Drug errors	3.4	4.0	3.4	3.0	4.3	3.7

Note

- *The mean of the score is presented above. The higher the score, the more important the issue. (Scale- 1 = least important, 9 = most important)*

4.13 CVCs

Central Venous Canulation (CVCs) is indicated for monitoring central venous pressure (CVP) and administrating certain drugs and parenteral nutrition.

4.13.1 Guidance Isolation for CVCs

Units were assessed regarding their policy of mandatory ultrasound guidance for localisation for CVCs. 15.7% of public ICUs and 9.4% of private ICUs in Australian and New Zealand possessed a mandatory policy within their unit, giving a total of 12.2%. Regional descriptions can be found below in Table 19.

Table 19: Policy of mandatory ultrasound guidance for localisation of CVCs

Sector	Region	Total No. ICUs	Yes		No	Not Applicable (No access to ultrasound machine)	Unknown
			No. ICUs	%			
Public	ACT	2	2	100.0%			
	NSW	38	8	21.1%	29	1	
	NT	2		0.0%	2		
	NZ	24	3	12.5%	20	1	
	QLD	23	3	13.0%	19	1	
	SA	7	1	14.3%	5	1	
	TAS	3	1	33.3%	2		
	VIC	23	1	4.3%	19	2	1
	WA	5	1	20.0%	4		
Public Total		127	20	15.7%	100	6	1
Private	ACT	1		0.0%		1	
	NSW	16	1	6.3%	14		1
	NZ	3		0.0%	2	1	
	QLD	14		0.0%	14		
	SA	5		0.0%	5		
	TAS	1		0.0%	1		
	VIC	9		0.0%	6	3	
	WA	4	1	25.0%	3		
Private Total		53	2	3.8%	45	5	1
AU & NZ Total		180	22	12.2%	145	11	2

4.13.2 Routine Replacement of CVCs

Table 20 shows the number of units which routinely replace central venous catheters (CVCs) after a specific length of time in situ by region and sector. Only 36% of ICUs routinely replace CVCs.

Table 20: Routine Replacement of CVCs

Sector	Region	No. ICUs	No. Sites Routinely replacing CVCs	% Sites Routinely replacing CVCs
Public	ACT	2	0	0.0%
	NSW	38	11	28.9%
	NT	2	0	0.0%
	NZ	24	4	16.7%
	QLD	23	9	39.1%
	SA	7	4	57.1%
	TAS	3	0	0.0%
	VIC	23	7	30.4%
	WA	5	1	20.0%
Public Total		127	36	28.3%
Private	ACT	1	1	100.0%
	NSW	16	7	43.8%
	NZ	3	2	66.7%
	QLD	14	6	42.9%
	SA	5	3	60.0%
	TAS	1	1	100.0%
	VIC	9	6	66.7%
	WA	4	2	50.0%
Private Total		53	28	52.8%
AU & NZ Total		180	64	35.6%

4.13.3 CVC Type

The type of CVC inserted in the unit was examined to determine the usage differences between plain, chlorhexidine coated or impregnated, antibiotic coated or impregnated, and other antimicrobial. 98.3% of sites (n=177) were able to provide information relating to the proportion of CVCs. 79.7% of CVCs inserted were either a plain or Chlorhexidine coated/ impregnated CVC. 16.2% of CVCs used were antibiotic coated/impregnated, with only 4.2% using a different antimicrobial CVC to plain, chlorhexidine or antibiotic. This information is presented Table 21 and Figure 3.

Table 21: CVC usage type – by sector and region

Sector	Region	No. ICUs	Plain CVC	Chlorhexidine coated/ impregnated CVC	Antibiotic coated/ impregnated CVC	Other antimicrobial CVC
Public	ACT	2	40.0%	60.0%	0.0%	0.0%
	NSW	38	58.8%	23.9%	14.7%	2.7%
	NT	2	100.0%	0.0%	0.0%	0.0%
	NZ	24	49.7%	32.6%	9.9%	7.8%
	QLD	23	32.6%	46.2%	21.1%	0.0%
	SA	7	75.0%	2.9%	22.1%	0.0%
	TAS	3	70.0%	30.0%	0.0%	0.0%
	VIC	21	45.8%	38.4%	10.6%	5.2%
	WA	5	69.0%	7.0%	4.0%	20.0%
Public Total		125	51.9%	30.7%	13.4%	4.0%
Private	ACT	1	100.0%	0.0%	0.0%	0.0%
	NSW	16	42.7%	24.3%	27.0%	6.0%
	NZ	3	66.7%	0.0%	33.3%	0.0%
	QLD	13	47.8%	48.2%	4.0%	0.0%
	SA	5	53.2%	0.0%	46.0%	0.8%
	TAS	1	80.0%	0.0%	20.0%	0.0%
	VIC	9	28.2%	24.8%	33.7%	13.3%
	WA	4	50.0%	26.7%	23.3%	0.0%
Private Total		52	46.3%	26.3%	23.2%	4.2%
AU & NZ Total		177	50.3%	29.4%	16.2%	4.0%

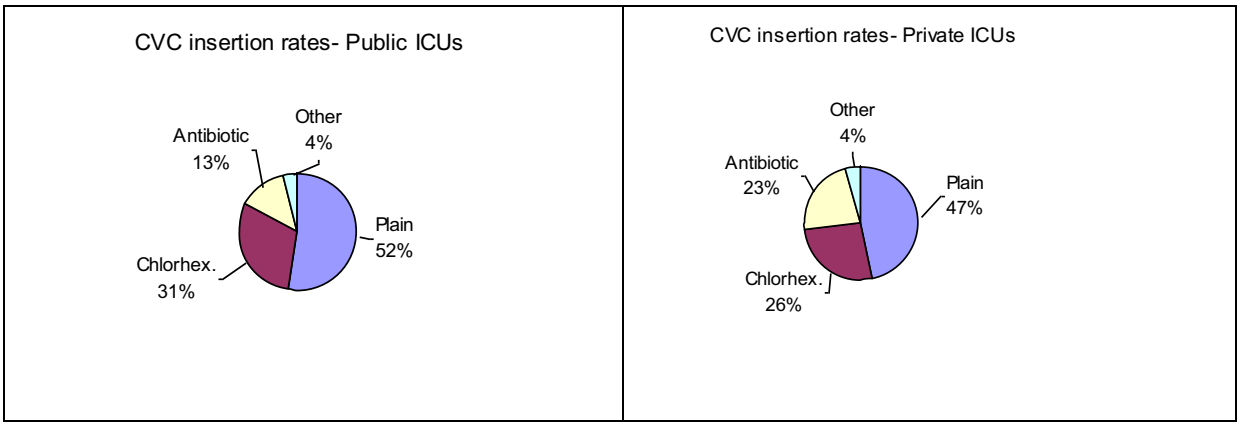

Figure 3: CVC insertion rates by type and sector

4.13.4 Arterial Line and Sepsis

Table 22 examines whether the ICU has a policy to manage the arterial line as they would the CVC in suspected intravascular device related sepsis. 78% of public sites and 90.6% of private followed the same strategies as they would for CVC management. There is wide variation between region and sector.

Table 22: Management of Arterial Line in Sepsis

Sector	Region	Total No ICUS	No. ICUs managing arterial line manages as suspected intravascular device related sepsis	% of ICUs managing arterial line manages as suspected intravascular device related sepsis
Public	ACT	2	1	50.0%
	NSW	38	31	81.6%
	NT	2	2	100.0%
	NZ	24	17	70.8%
	QLD	23	20	87.0%
	SA	7	7	100.0%
	TAS	3	3	100.0%
	VIC	23	17	73.9%
	WA	5	1	20.0%
Public Total		127	99	78.0%
Private	ACT	1	1	100.0%
	NSW	16	16	100.0%
	NZ	3	3	100.0%
	QLD	14	11	78.6%
	SA	5	5	100.0%
	TAS	1	1	100.0%
	VIC	9	9	100.0%
	WA	4	2	50.0%
Private Total		53	48	90.6%
AU & NZ Total		180	147	81.7%

4.14 Central Line Time limits

Table 23 details the 172 out of 180 ICUs (95%) who imposed maximum time limits on the use of intravenous administration sets (tubing) attached to central lines by region. The majority of units imposing time lines (60%) replaced CVCs on day 3-4. Figure 4 presents the number of units imposing time limits

.

Table 23: Time management of intravenous administration sets attached to central lines by Region

Sector	Region	Total No. ICUs	no time limits	1-2 days	3-4 days	5-6 days	7 days
Public	ACT	2		2			
	NSW	38	2	5	30		1
	NT	2	1				1
	NZ	24		7	16		1
	QLD	23	1	4	15		3
	SA	7		1	2	1	3
	TAS	3		2	1		
	VIC	23	2	4	7		10
	WA	5			4		1
Public Total		127	6	25	75	1	20
Private	ACT	1		1			
	NSW	16		3	13		
	NZ	3		1	2		
	QLD	14		3	7		4
	SA	5		1	1	2	1
	TAS	1					1
	VIC	9	1	1	4		3
	WA	4	1	1	2		
Private Total		53	2	11	29	2	9
AU & NZ Total		180	8	36	104	3	29
AU & NZ Total as % of all ICUs			4.4%	20.0%	57.8%	1.7%	16.1%

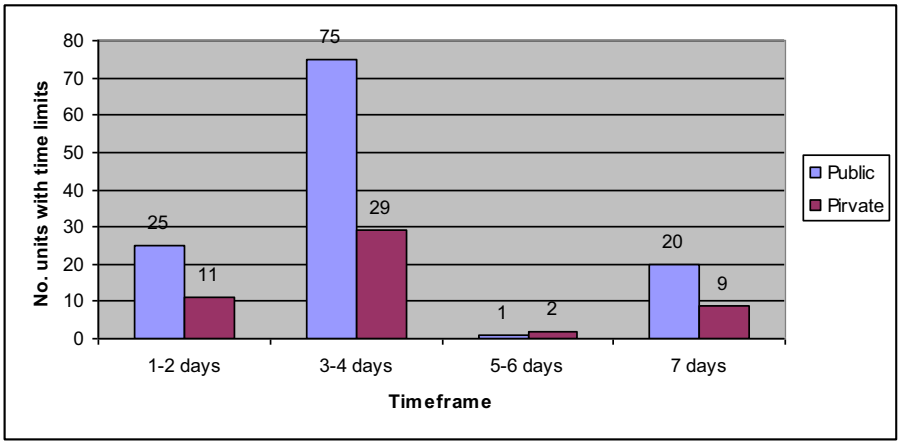

Figure 4: Time management of intravenous administration sets attached to central lines

4.15 Routine culture of Catheters and CVCs

Sites were questioned regarding their practice of routinely culturing tips of intravascular devices (in situ >24 hours) for both peripheral arterial catheters and central venous catheters. Overall 28.9% of units routinely cultured CVCs, and 11.7% routinely cultured arterial line management. This is shown by region and sector in Table 24.

Table 24: Routine culture of Peripheral arterial catheters and CVCs

Sector	Region	Total No. ICUs	Routine Culturing of CVC		Routine Culturing of Arterial Line Management	
			No. ICUs routinely culturing	% ICUs routinely culturing	No. ICUs routinely culturing	% ICUs routinely culturing
Public	ACT	2	1	50.0%	0	0.0%
	NSW	38	14	36.8%	6	15.8%
	NT	2	0	0.0%	0	0.0%
	NZ	24	3	12.5%	2	8.3%
	QLD	23	8	34.8%	5	21.7%
	SA	7	0	0.0%	0	0.0%
	TAS	3	0	0.0%	0	0.0%
	VIC	23	6	26.1%	3	13.0%
	WA	5	2	40.0%	1	20.0%
Public Total		127	34	26.8%	17	13.4%
Private	ACT	1	1	100.0%	0	0.0%
	NSW	16	3	18.8%	0	0.0%
	NZ	3	0	0.0%	0	0.0%
	QLD	14	7	50.0%	2	14.3%
	SA	5	2	40.0%	1	20.0%
	TAS	1	0	0.0%	0	0.0%
	VIC	9	3	33.3%	0	0.0%
	WA	4	2	50.0%	1	25.0%
Private Total		53	18	34.0%	4	7.5%
AU & NZ Total		180	52	28.9%	21	11.7%

4.16 Data entry and collectors in ICUs for APD / ANZPIC

4.16.1 Data collectors and data entry personnel

The presence of data collectors and data entry personnel APD / ANZPIC was also examined in the survey. 69 units reported the presence of 132 data collectors, with a corresponding 48.7 FTE (see Table 25).

96 units had staff allocated to data entry, of which 134 people performed a total of 57 FTE. These are displayed by region in Table 26.

Table 25: Number and FTE of data collectors by Region

Region	Total No. ICUs	Data Collector(s) for APD / ANZPIC			
		No. ICUs	% ICUs with Data Collectors	No.	FTE
ACT	3	2	66.7%	2	1.2
NSW	54	20	37.0%	36	21.6
NT	2	1	50.0%	9	0.1
NZ	27	5	18.5%	8	5.2
QLD	37	18	48.6%	31	9.3
SA	12	6	50.0%	12	2.5
TAS	4		0.0%		
VIC	32	15	46.9%	30	8.4
WA	9	2	22.2%	4	0.4
Total AU and NZ	180	69	38.3%	132	48.7

Table 26: Number and FTE of data entry personnel by Region

Region	Total No. ICUs	Data Entry Person(nel) for APD / ANZPIC			
		No. ICUs	% ICUs with Data Entry	No.	FTE
ACT	3	1	33.3%	1	1.0
NSW	54	26	48.1%	36	16.5
NT	2	2	100.0%	5	4.0
NZ	27	8	29.6%	12	6.2
QLD	37	24	64.9%	33	12.7
SA	12	7	58.3%	7	3.8
TAS	4	2	50.0%	2	1.0
VIC	32	21	65.6%	31	10.7
WA	9	5	55.6%	7	1.2
Total AU and NZ	180	96	53.3%	134	57.1

4.16.2 Staff Background

The differing backgrounds for staff performing data collection and entry are detailed by proportion in Table 27 and Table 28. Nurses comprised the major demographic section with 42.5% collecting. Administrative staff comprised 61.2% of the staff entering data. There is significant variation across region and ICU type.

Table 27: Background of Data Collectors

Region	Senior Medical Officer	Registrar	Resident	Nurse	Administrative	Other
ACT	0.0%	0.0%	0.0%	66.7%	33.3%	0.0%
NSW	10.3%	10.3%	6.9%	37.9%	27.6%	6.9%
NT	33.3%	33.3%	33.3%	0.0%	0.0%	0.0%
NZ	14.3%	0.0%	0.0%	71.4%	14.3%	0.0%
QLD	11.1%	3.7%	3.7%	44.4%	33.3%	3.7%
SA	0.0%	0.0%	16.7%	16.7%	66.7%	0.0%
TAS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
VIC	15.2%	12.1%	12.1%	45.5%	12.1%	3.0%
WA	0.0%	0.0%	0.0%	33.3%	66.7%	0.0%
AU & NZ Total	12.4%	8.0%	8.0%	42.5%	25.7%	3.5%

Table 28: Background of Data Entry Personnel

Region	Senior Medical Officer	Registrar	Resident	Nurse	Administrative	Other
ACT	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
NSW	0.0%	0.0%	0.0%	31.0%	65.5%	3.4%
NT	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
NZ	9.1%	0.0%	0.0%	54.5%	36.4%	0.0%
QLD	0.0%	3.3%	3.3%	20.0%	66.7%	6.7%
SA	0.0%	0.0%	0.0%	14.3%	85.7%	0.0%
TAS	20.0%	0.0%	0.0%	20.0%	60.0%	0.0%
VIC	6.5%	0.0%	3.2%	35.5%	51.6%	3.2%
WA	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
AU & NZ Total	3.3%	0.8%	1.7%	29.8%	61.2%	3.3%

5 References

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6 Index of Tables

7 Index of Figures

8 Appendix

8.1 2007/08 CCR SURVEY

ANZICS Centre for Outcome and Resource Evaluation

Review of ICU Resources and Activity
2007 – 2008 Financial Year
(1/7/2007 – 30/6/2008)

Please complete all details and submit by **19th December 2008.**

Hospital Name: _____

ICU Director: _____

ICU Director email address: _____

ICU Nurse Manager: _____

ICU Nurse Manager email address: _____

ICU Telephone number: _____

ICU Fax number: _____

- Please ensure you keep a copy of this survey until you obtain acknowledgement of its receipt.
- Tick one box only, unless otherwise specified. Please write clearly
- Please use a ZERO only where the total for the question has a zero value. For items where data is not collected, please write u/a (unavailable)
- Please refer to the glossary for a description of all terms used

HOSPITAL & ICU DESCRIPTORS

1. **Hospital type:**
   - ☐ Public Hospital
   - ☐ Private Hospital
   - ☐ Public Hospital under Private Management Contract
   If under private management, please specify contracted company: _____

2. **Number of hospital beds** *average available beds* ☐

3. **Number of hospital separations** *refer to glossary* ☐

4. **ICU type:**
   - ☐ General ICU (integrated medical / surgical including ICU managed HDU)
   - ☐ ICU/CCU/ HDU (integrated intensive care / coronary care / high dependency)
   - ☐ Paediatric ICU
   - ☐ Other ICU (specify type)
   - ☐ High Dependency Unit / Step Down / Special Care Unit

5. **Functional ICU level:** *(refer to attached JFICM guidelines)*
   - ☐ Level 3
   - ☐ Level 2
   - ☐ Level 1 (short term ventilation only)

ICU BED & ADMISSION DATA

6. **Number of critical care beds:**
List usual number of beds in each category; please refer to glossary for advice on completing this section.

	General ICU	Other ICU *	HDU**	CCU ***	Total No. Beds
Physical Beds					
Available Beds					
Ventilator Beds					

** E.g. dedicated cardiac surgery/ neurosurgical ICU*
*** HDU Beds managed by ICU*
**** Collocated in ICU/CCU complex*

7. Critical care admission data:

(AORTIC users refer to enclosed documentation)

- Admissions: all admissions including readmissions.
- Readmissions: all readmissions including multiple readmissions for the same hospital episode of care.
- Do not count patients twice if they are transferred between ICU/HDU for the same ICU/HDU admission.
- If unable to allocate admission numbers to specific locations, allocate them to the total column.

		General ICU	Other ICU *	HDU **	CCU ***	Total
Admissions	Emergency					
	Elective					
Readmissions						
Deaths						

* *E.g. dedicated cardiac surgery/ neurosurgical ICU*
** *HDU Beds managed by ICU*
*** *Collocated in ICU/CCU complex*

8. Paediatric Admissions:

Number of patients ≤16 years of age: *(included in total of all admissions)*	
Number of invasively ventilated patients ≤ 16 years: *(included in total of all invasively ventilated patients)*	
Number of patients ≤ 16 years transferred from your ICU to a paediatric ICU:	
Number of deaths ≤ 16 years of age: *(included in the total for all deaths)*	

VENTILATION DATA

9. Ventilation data: All admissions.

Please note that a, b and c in the table below are mutually exclusive. Do not include patients that receive both invasive and non-invasive ventilation in the totals for a or b.
If there is uncertainty for any of the categories, please only place numbers in the category that is most accurate.

	No.
a. Number of patients receiving **invasive ventilation only**	
b. Number of patients receiving **non-invasive ventilation only**	
c. Number of patients receiving **both invasive and non-invasive ventilation**	
Total number of ventilated patients (a+b+c):	

10. Ventilator hours:

Please give HOURS of care. If data is not available in hours, please give data in DAYS.

INVASIVE VENTILATION		No.	Total
Number of **invasive** ventilator **HOURS:** *(preferred option)*	Elective Admissions		
	Emergency Admissions		
OR			
Number of **invasive** ventilator **DAYS:** *(if number of ventilator hours is not available)*	Elective Admissions		
	Emergency Admissions		

NON-INVASIVE VENTILATION		No.	Total
Number of **non-invasive** ventilator **HOURS:** *(preferred option)*	Elective Admissions		
	Emergency Admissions		
OR			
Number of **non-invasive** ventilator **DAYS:** *(if number of ventilator hours is not available)*	Elective Admissions		
	Emergency Admissions		

BED UTILISATION/ MEDICAL STAFF DATA

11. Utilisation of ICU/HDU beds

Please give HOURS of care. If data is not available in hours, please give data in DAYS. Exclude CCU bed hours/days.

		No.	Total
Number of Bed HOURS *(preferred option)*	Elective Admission		
	Emergency Admission		
OR			
Number of Bed DAYS *(if number of bed hours is not available)*	Elective Admission		
	Emergency Admission		

12. Senior Medical Staff Profile *(Refer to Glossary)*

		Profile at 30/6/08	
		No. Staff	FTE
Intensive Care Specialists	Salaried intensive care specialists on roster		
	Sessional intensive care specialists on roster		
Non-Intensive Care Specialists	Salaried non-intensive care specialists on roster		
	Sessional non-intensive care specialists on roster		
Vacant specialist FTE position(s) funded but unfilled			

13. Qualifications

a) Which qualifications does the ICU Director hold?

☐ JFICM ☐ FRCA Please state any other qualification
☐ FACEM ☐ MRCP
☐ FANZCA ☐ FRACP _____

b) Which qualifications does the ICU Deputy Director hold?

☐ JFICM ☐ FRCA Please state any other qualificatior
☐ FACEM ☐ MRCP
☐ FANZCA ☐ FRACP _____

14. ICU Registrar Staff Profile (Refer to glossary*)

	Profile at 30/6/08	
	No. staff	FTE
Registrars in formal Senior Registrar* position		
Other registrars in JFICM training program		
Other registrars not in JFICM training program		
Total		

15. ICU Resident / House Officer / Career Medical Officer Staff Profile

	Profile at 30/6/08	
	No. staff	FTE
Dedicated ICU staff only – provides "emergency" ward services		
ICU/ general hospital – provides non-emergency services outside ICU		

NURSING DATA

16. Nursing Profile *(Refer to the glossary)*

		Profile at 30/6/0	
		No. staff	FTE
a)	Permanent / rostered RN positions *including clinical educators, unit manager, liaison, graduate students.*		
b)	Permanent / rostered EN positions		
c)	ENs rostered to provide direct patient care		
d)	No. of RNs that have taken maternity leave		
e)	RN vacancies, *i.e. funded but not filled on profile date. Include maternity / paternity, long service, secondments that have not been backfilled.*		
f)	EN vacancies		
g)	RNs in graduate year (1st year as RN)		
h)	Permanently employed RNs with a critical care qualification.		
i)	RNs working full time (full time ≥ 35 hours per week of paid employment).		
j)	Post-registration critical care course students (completed a hospital course with credit towards a university award)		
k)	No. of post-registration critical care course students who graduated with a university award during the 2007/2008 financial year		
l)	Post-registration critical care course students who completed an in-house "introduction" program (no university credit) not including "orientation" etc. for rotating RNs		
m)	Permanently appointed Nurse Educators exclusive to ICU		
n)	Liaison / Outreach RNs		
o)	RNs that have resigned in 2007/2008 financial year		

17. Destination of resigned RNs. Please state the number of resigned RNs (in 2007/2008 financial year) that apply to each option:

Other permanent critical care position _____
Other permanent nursing position _____
Casual nursing work (including in this institution & externally) _____
Non-nursing work _____
Travel _____
Parenting / family _____

18. For which shifts do you roster an ACCESS Nurse? Tick all that apply.

☐ AM ☐ PM ☐ Night Duty ☐ None ☐ Ad Hoc as required

For the 2007/2008 financial year, indicate the average hours per month:

19. Worked by casually employed RNs (include nurse bank/pool/agency) to cover roster shortfalls ___

20. Worked by permanent staff in excess of contracted hours, to cover roster shortfall _____

21. Worked by the Nurse Manager on direct patient care ___

22. Worked by an ACCESS Nurse _____

23. Worked by RNs exclusively allocated to medical emergency team (MET) / rapid response team (RRT) _____

MET/ OUTREACH

Medical Emergency Teams (MET)

24. Do you have a MET service, or rapid response team (RRT) at this site?

No ☐ (Go to Q 27) Yes ☐ Is it- Partially funded....☐ Fully funded....☐

25. If a MET / RRT commenced in 2007 or 2008, please give commencement date- _____

26. If a MET / RRT service is operational, what was the average number of calls per month in 2007 (calendar year)? _____

Outreach / Liaison Service

27. If there is an outreach/liaison service, is it funded?

No ☐ (Go to Q 28) Yes ☐ Is it- Partially funded....☐ Fully funded....☐

What are the Outreach/Liaison current hours of service (e.g. 0800 – 1300)

Monday .....
Tuesday.....
Wednesday.....
Thursday.....
Friday.....
Saturday.....
Sunday.....

CLINICAL INDICATORS

28. Did the ICU collect and submit Australian Council on Healthcare Standards (ACHS) clinical indicator data?

☐ 2007 ☐ 2008 ☐ Did not submit

29.	Number of elective* surgical cases cancelled due to inadequate ICU resources (beds or staff)	
30.	Number of appropriate non-elective patients referred to ICU but refused admission due to inadequate resources (beds or staff). Do not include the cancelled elective* admissions enumerated in Q 29.	
31.	Number of discharges to a ward after 1800 hours and before 0600 hours. Exclude deaths, discharges from hospital and transfers to another hospital.	

** Refer to glossary*

32. Other additional clinical indicators collected:

- ☐ Central Line Associated Bacteraemia (CLAB) rate
- ☐ Ventilator-associated pneumonia rate
- ☐ Deep vein thrombosis (DVT) prophylaxis
- ☐ Methicillin Resistant Staphylococcus Aureus (MRSA) rate
- ☐ Pressure areas
- ☐ Medication errors
- ☐ Complications/Adverse events
- ☐ Medical Emergency Teams (MET)
- ☐ Nutrition indicators
- ☐ Australian Incident Monitoring System (AIMS)
- ☐ Other, please specify

33. Specify the percentage of staff currently:

Certified in ACLS Medical _____% Nursing _____%

Completed ADAPT course Senior Medical _____% All Nursing_____%

34. Echocardiography

a) Do your intensive care specialists perform echocardiography on intensive care patients?

Yes ☐ No ☐

b) Do you have your own echocardiography machine?

Yes ☐ No ☐

SAFETY AND QUALITY

Safety and quality questions (2007/2008 financial year):

35. Allocated staff members for coordination of ICU quality activities?

	Profile at 30/6/08	
	No. Staff	**FTE**
Medical		
Nursing		
Other (please specify)		

36. Is there a regular performance review of all staff?

Senior Medical:	Yes ☐	No ☐
Medical:	Yes ☐	No ☐
Senior Nursing:	Yes ☐	No ☐
Nursing:	Yes ☐	No ☐
Other:	Yes ☐	No ☐

37. Does the unit have competency standards for:

i. Airway management Yes ☐ No ☐
ii. Central line insertion Yes ☐ No ☐
iii. Other (please specify) _____

38. Does the unit use process-oriented checklists for FAST HUG* (or variation)?

Yes ☐ No ☐

39. Does the unit have a policy of mandatory ultrasound guidance for localisation for central venous canulation?

Yes ☐ No ☐

Not applicable (no access to ultrasound machine) ☐

40. Does the unit have rounds with an infectious disease specialist &/or microbiologist?

Yes ☐ No ☐

If yes, do they have rounds at least weekly?

Yes ☐ No ☐

41. Does the unit have an ongoing antibiotic stewardship programme*?

Yes ☐ No ☐

** Refer to glossary*

42. Does the unit regularly obtain antibiograms specific to ICU (rather than hospital-wide antibiograms)?

Yes ☐ No ☐

45. Does the ICU have a critical incident monitoring program?

Yes ☐ No ☐

46. Identify the main system issues in the ICU.

Please rank in order, with 1 = most important, 9 = least important

_____ Lack of staff
_____ Inability to admit patients
_____ Exit block
_____ Lack of beds
_____ Implementation of MET
_____ Inadequate funding for education
_____ Inadequate funding for quality activities
_____ Ineffective incident monitoring (ie incidents not notified)
_____ Drug errors

47. Do you routinely replace central venous catheters (CVCs) after a specific length of time in situ?

Yes ☐ No ☐

48. Do you manage the arterial line as you would the CVC in suspected intravascular device related sepsis?

Yes ☐ No ☐

49. Does your unit impose maximum time limits on the use of intravenous administration sets (tubing) attached to central lines?

Yes ☐ No ☐

If yes, indicate by circling how often are they replaced?

1-2 days 3-4 days 5-6 days 7 days other (list) _____

50. Following intravascular devices (in situ >24 hours), does your unit routinely culture:

a) Peripheral arterial catheters Yes ☐ No ☐

b) CVCs Yes ☐ No ☐

51. Approximately what proportion of CVCs inserted in your unit are:
(total should add to 100%)

CVCs:	Percentage
Plain	
Chlorhexidine coated/impregnated	
Antibiotic coated/impregnated	
Other antimicrobial	
Total	**= 100%**

52. The following refers to data entry & collectors in ICUs:

	Profile at 30/6/08	
	No. Staff	**FTE**
a) Data Collector(s) for APD / ANZPIC		
b) Data Entry Person(nel) for APD / ANZPIC		

c) What was the data collector(s) background? Tick all that apply.
- ☐ Intensivist/Consultant
- ☐ Registrar
- ☐ Resident
- ☐ Nurse
- ☐ Administrative
- ☐ Other (please specify)

d) What was the background of the data entry staff? Tick all that apply.
- ☐ Intensivist/Consultant
- ☐ Registrar
- ☐ Resident
- ☐ Nurse
- ☐ Administrative
- ☐ Other (please specify)

53. This survey was completed by (tick all that applies):

- ☐ ICU Director
- ☐ Medical staff
- ☐ Nursing staff
- ☐ Administrative / Clerical staff
- ☐ Other (please specify) _____

Thank you for completing the survey.
Please retain a copy for your records and return fax to +61 3 9340 3499
by **19th December 2008.**

Please direct any queries to:
Kelly Drennan (Project Officer)
Tel: +61 3 9340 3434
Email: kelly.drennan@anzics.com.au
Postal address: PO Box 164, Carlton South VIC 3053, AUSTRALIA

8.2 CCR Contributing Sites

Australian Capital Territory

Calvary Healthcare
Canberra Hospital
John James Memorial Hospital

New South Wales

Albury Base Hospital
Armidale Rural Referral Hospital
Bankstown Lidcombe Hospital
Bathurst Base Hospital
Blacktown Hospital
Brisbane Waters Private Hospital
Broken Hill Base Hospital & Health Services
Calvary Healthcare - Wagga
Calvary Mater Newcastle
Campbelltown Hospital
Children's Hospital at Westmead
Coffs Harbour & District Hospital
Concord Repatriation Hospital
Dalcross Private Hospital
Dubbo Base Hospital & Health Service
Figtree Private
Gosford Hospital
Griffith Base Hospital
Hawkesbury District Health Service
John Hunter Hospital
Kempsey District Hospital
Lake Macquarie Private Hospital
Lismore Base Hospital
Liverpool Hospital
Manly Hospital & Community Health
Manning Rural Referral Hospital
Mater Misericordiae Private Hospital Sydney
Mona Vale Hospital
Nepean Hospital
Newcastle Private Hospital
North Gosford Private Hospital
North Shore Private Hospital
Norwest Private Hospital
Orange Base Hospital
Port Macquarie Base Hospital
Prince of Wales Hospital-Randwick
Prince of Wales Private Hospital
Royal North Shore Hospital
Royal Prince Alfred Hospital
Shoalhaven District Memorial Hospital
St George Hospital
St George Private Hospital
St Vincent's Hospital (Sydney)
St Vincent's Private Hospital
Strathfield Private Hospital
Sutherland Hospital & Community Health Care
Sydney Adventist Private Hospital
Sydney Children's Hospital
Tamworth Base Hospital & Health Care
Tweed Heads District Hospital
Wagga Wagga Base Hospital & District Health
Westmead Hospital
Westmead Private Hospital
Wollongong Hospital (Illawarra)

Northern Territory

Alice Springs Hospital
Royal Darwin Hospital

New Zealand

Auckland City Hospital - DCCM
Auckland City Hospital (GL)
Christchurch Hospital
Dunedin Hospital
Gisborne Hospital
Grey Hospital
Hawkes Bay Hospital
Health Waikato
Hutt Hospital
Masterton Hospital
Mercy Hospital & Health Services
Middlemore Hospital
North Shore Hospital
Palmerston North Hospital
Rotorua Hospital
Southern Cross Hospital New Zealand

Southland Hospital
Starship Children's Hospital
Taranaki Base Hospital
Tauranga Hospital
Timaru Hospital
Wairau Hospital
Wakefield Hospital NZ
Wanganui Hospital
Wellington Hospital
Whakatane Hospital
Whangarei Hospital Northland Health

Queensland

Allamanda Private Hospital
Brisbane Private Hospital
Bundaberg Base Hospital
Caboolture Hospital
Cairns Base Hospital
Goldcoast Hospital
Greenslopes Private Hospital
Hervey Bay Hospital
Holy Spirit Northside Hospital
Ipswich Hospital
John Flynn Private Hospital
Logan Hospital
Mackay Base Hospital
Mater Adults Hospital in Brisbane
Mater Childrens Hospital Brisbane
Mater Misericordiae Private Hospital-Townsville
Mount Isa Base Hospital
Nambour General Hospital
Nambour Selangor Private Hospital
Noosa Hospital
Pindara Private Hospital
Prince Charles Hospital
Prince Charles Hospital (PICU)
Princess Alexandra Hospital
Queen Elizabeth II Jubilee Hospital
Redcliffe Hospital
Robina Campus Gold Coast Hospital
Rockhampton Hospital
Royal Brisbane Hospital
Royal Children's Hospital Brisbane
St Andrew's Hospital Toowoomba
St Andrew's War Memorial Hospital
St Vincent's Hospital Toowoomba
Top of Form
Sunnybank Hospital
Sunshine Coast Private Hospital
Toowoomba Base Hospital
Townsville General Hospital
Wesley Hospital

South Australia

Ashford Community Hospital
Calvary Wakefield Hospital
Flinders Medical Centre
Flinders Private Hospital
Lyell McEwin Health Service
Memorial Hospital
Modbury Public Hospital
Queen Elizabeth (Adelaide)
Repatriation General Hospital
Royal Adelaide Hospital
St Andrews Hospital
Women's and Children's Hospital

Tasmania

Calvary Hospital
Launceston General Hospital
North West Regional Hospital
Royal Hobart Hospital

Victoria

Alfred Hospital
Austin Hospital
Ballarat Health Services
Bendigo Health Care Group
Box Hill Hospital
Central Gippsland Health Service
Dandenong Hospital
Epworth Eastern Private Hospital
Epworth Freemasons Hospital
Epworth Hospital
Frankston Hospital
Geelong Hospital
Goulburn Valley Health
John Fawkner Hospital

Knox Private Hospital
Latrobe Regional Hospital
Maroondah Hospital
Melbourne Private Hospital
Mildura Base Hospital
Monash Medical Centre-Clayton Campus
Northern Hospital
Peter MacCallum Cancer Institute
Royal Children's Hospital Melbourne
Royal Melbourne Hospital
South West Healthcare - Warrnambool
St John Of God Health Care Ballarat
St Vincent's Hospital Melbourne
Valley Private Hospital
Wangaratta District Base Hospital
Warringal Private Hospital
Western Hospital
Wimmera Health Care Group

Western Australia

Fremantle Hospital
Hollywood Private Hospital
Joondalup Health Campus
Mount Hospital
Princess Margaret Hospital
Royal Perth Hospital
Saint John Of God Hospital Murdoch
Sir Charles Gairdner Hospital
St John of God Health Care Subiaco

Our thanks extent to all sites contributing to the CCR survey. Your efforts are greatly appreciated

ANZICS

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Centre for Outcome
and Resource Evaluation