

Assessment of the College of Intensive Care Medicine's capacity to train: a survey of trainees and directors

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Over the past 40 years, there have been major changes to intensive care practice in Australasia. Intensive care has extended beyond the major tertiary centres to metropolitan and more regional centres, and the domain of the intensive care specialists in individual hospitals has extended well beyond the walls of intensive care units (ICUs).¹ The steady expansion in the scope and practice of intensive care medicine in Australasia² has resulted in an increase in demand for trainees and specialists, that was perhaps first identified in an Australian Medical Workforce Advisory Committee report published in 1999.³

The increased demand for ICU doctors, coupled with changes in the intensive care medicine training program, has contributed to a significant increase in trainee numbers. Between 2001 and 2011, the number of advanced trainee positions in intensive care increased by 120%.⁴ The corresponding figures for anaesthesia, adult medicine, emergency medicine, obstetrics and gynaecology, and surgery were 25%, 234%, 112%, 52% and 64%, respectively.⁵ The evolution of intensive care as an independent specialty with a dedicated training program led to the formation of the College of Intensive Care Medicine of Australia and New Zealand (CICM) in 2008, which is now the body responsible for training and certifying intensive care specialists.⁶

High trainee numbers has implications for delivery of quality training in several domains — supervision, clinical experience, procedural experience, availability of specialty rotations, and assessment capacity. The CICM introduced major changes to its curriculum in 2014 to ensure it delivers a high quality program for the training of intensive care specialists.⁷ This resulted in an extended curriculum (all training domains were expanded and new requirements were introduced) and a need for more regular and rigorous assessments. However, the number of units accredited for training has remained largely unchanged, raising the possibility of a mismatch between the limited resources available for training and the increasing trainee numbers. Concerns have therefore been raised by fellows and trainees at various national and regional committee meetings of the CICM

ABSTRACT

Background: In Australia and New Zealand, the numbers of intensive care medicine trainees have increased significantly over the past 15 years. This has implications for supervision, clinical and procedural experience, and availability of rotations. The College of Intensive Care Medicine of Australia and New Zealand (CICM) decided to estimate the current training resources using several domains.

Methods: An online survey was sent to all CICM trainees ($n = 528$) and all directors of intensive care units (ICUs) ($n = 106$), using the SurveyMonkey tool.

Results: The overall response rate for the survey was 44% (trainees, 38%; directors, 72%). Most trainees had a 1:1 day–night roster system. Experience among trainees with common ICU procedures appeared limited. Fifty-six per cent of trainees reported spending more than 20% of their time attending medical emergency team calls. Difficulty accessing anaesthesia, medicine, paediatric and rural terms were reported by 35%, 26% 46% and 40% of trainees, respectively. Thirty-seven percent of trainees reported having to wait at least 1 year and 10% waited up to 2 years over and above their required training time to secure an anaesthesia term. Owing to gaps in experience in certain modules, one-third of final-year trainees felt underprepared to take on a role as a specialist, an observation shared by 15% of directors.

Conclusion: This report has provided an assessment of the available resources within Australia and New Zealand for training doctors in intensive care medicine, and has identified significant limitations and concerns among trainees and ICU directors regarding the capacity to train. The findings call for a review of the training program, including a determination of optimal numbers of training positions.

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as to whether we are reaching saturation capacity for training.

Determining capacity to train is a challenge because no specific models or formulae are available to guide medical colleges. No data have been published (internationally or within Australia and New Zealand) on the capacity of training bodies to conduct training for any specialty. Broadly, capacity to train can be conceptualised as the combined ability of health care and education systems to equip specialist medical trainees to become competent independent practitioners. A position article published in 2017 outlined the importance of this issue.⁸ The CICM formed a working party to explore further and attempt to quantify the capacity to train. One of the key recommendations of the working party was a survey of all CICM trainees and directors of ICUs to quantify trainee experience, exposure and capacity.

The survey had two aims. First, it aimed to determine the current training resources using several domains — casemix, rosters, supervision, rotation availability, procedural exposure. Second, it aimed to identify potential limitations to future training capacity, taking into account:

- expanding numbers of trainees from other colleges filling external rotations for CICM trainees (eg, anaesthesia and medicine);
- availability of novel elements to the training program — paediatrics exposure, rural rotations, and the transition year as the new curriculum trainees progress;
- diluted training experience for trainees with increased expectation from employers of safe and limited working hours, and increased service commitments outside of the ICU; and
- reduced exposure to procedures due to increased trainee numbers, changes in numbers of procedures performed, and decreased community and management acceptance of trainees performing high risk procedures.

Methods

The Capacity to Train Working Party designed two surveys: a survey of trainees and a survey of directors. These were reviewed and tested by members of the CICM Board and the CICM Trainee Committee, and modified according to feedback provided. The final version was approved by the Board.

Over an 8-week period (October 2017 – December 2017 for Directors; January 2018 – March 2018 for trainees), all trainees and directors of ICUs were invited to participate in an online survey on their training exposure and experience in the preceding 12-month period using the SurveyMonkey tool. The survey questions are shown in the online Appendix (available at cicm.org.au/Resources/Publications/Journal). To obtain maximal participation, all directors and trainees were notified of the survey in a cover letter sent out by

the president of the CICM. Weekly reminders about the survey were sent to all directors and trainees throughout the respective survey periods.

The domains explored in the trainees' survey were:

- demographic characteristics;
- training status, before versus after curriculum change, and dual trainees;
- examination status and rotation;
- rostering arrangements, including shift systems and responsibilities outside the ICU (eg, rapid response teams), and extent of supervision;
- challenges in accessing rotations and impact on training time;
- procedural experience;
- trainees' perceptions of their readiness for consultant practice; and
- trainees' perceptions of the impact of limiting trainee numbers.

The domains explored in the directors' survey were:

- demographics and unit staffing;
- shifts and rostering;
- clinical responsibilities for trainees outside the ICU;
- procedural exposure available for trainees;
- availability of positions which will meet the requirements for transition year practice; and
- directors' assessments of trainees' preparedness for consultant practice.

Survey of the supervisors of training

Following a review of the results of the trainees' and directors' surveys, a survey of the supervisors of training was commissioned to gather precise information on availability of anaesthesia and medicine positions in their respective hospitals, which were specifically earmarked for CICM trainees. This survey also aimed to determine the number of transition year positions available in the respective hospitals that meet the CICM criteria.⁹

Statistical analysis

Statistical analysis was performed using SAS version 9.4 for Windows by an independent statistician at the George Institute for Global Health. A descriptive analysis of the responses was performed.

Results

The respective surveys were sent to all registered trainees and directors of ICUs accredited by the CICM.

Table 1. Demographic characteristics of trainees who were surveyed

	Proportion of trainees
CICM accreditation of units where trainees were working or last worked	
C24/general training	75%
C12/general training	19%
C6/limited general training	4%
Foundation/basic training	2%
Year of graduation	
1990–2000	11%
2001–2010	68%
2011–2014	21%
Country of graduation	
Australia	54%
New Zealand	5%
Other	41%
Training status	
Active training	68%
Deferred training	29%
Interrupted training	3%
Curriculum training	
After 2014 curriculum change	73%
Before 2014 curriculum change	27%
Dual training	
No	72%
Yes	28%
Current clinical rotation of respondents	
Intensive care unit	71%
Anaesthesia	14%
Medicine	4%
Emergency and acute medicine	4%
Other	7%

CICM = College of Intensive Care Medicine of Australia and New Zealand.

Trainees' survey

Demographics

At the time of the survey, 528 trainees were registered with the CICM, of whom 201 responded to the trainees' survey (38% response rate). Most of the respondents (60%) had graduated in the preceding 10 years (after 2007) — 58% of them had graduated from Australian or New Zealand medical schools and 42% were international medical graduates. Seventy-five per cent of surveyed trainees were working in C24 general training units at the time of the survey. Ninety

per cent of the respondents had successfully completed the CICM First Part examination and 20% had successfully completed the CICM Second Part examination. Nearly three-quarters of the respondents (73%) had commenced training before the launch of the 2014 changes to the curriculum. Twenty-six per cent of the trainees were dual trainees (trainees concurrently undertaking other specialist training programs). The trainees' demographic characteristics are outlined in Table 1.

Rostering arrangements and supervision during night shifts

Thirty-seven percent of the respondents reported being rostered for equal numbers of day and night shifts. Preponderant day rostering of 2:1 and 3:1 day–night ratios was reported by only 14% and 8% of respondents, respectively.

Forty-one per cent of respondents had an on-call component of rostering and 18% reported having rostered non-clinical time. A large proportion of respondents (56%) estimated that they spent more than 20% of their time attending medical emergency team and rapid response team (RRT) calls.

Most respondents reported having a consultant and a senior registrar on call during night shifts. An onsite consultant or senior registrar was reported by 7% and 28% of respondents, respectively. Most trainees (93%) reported easy and regular access to their supervisors of training.

Specific training modules

When asked about specific training modules, training in communication was reported by 25% of respondents, end-of-life care was reported by 33%, simulation-based training was reported by 78%, transthoracic echocardiography was reported by 54% and transoesophageal echocardiography was reported by 10%.

Access to various training terms

Difficulty with access to non-ICU components of training was reported by 35% of respondents for an anaesthesia term, 26% for medicine, 46% for paediatrics and 40% for the rural rotation. Thirty-seven per cent of trainees reported having to wait an additional year and 10% reported having to wait an additional 2 years over and above their required training time to secure an anaesthesia term.

Procedural experience

Trainees were asked to provide an estimate of the number of procedures they had performed over the previous 12-month ICU rotation. Their responses are summarised in Table 2.

Perception of preparedness for consultant practice

Most trainees (62%) were satisfied with the quality of training they had received during the program. Those in

Table 2. Percentages of respondents reporting experience with common intensive care unit procedures

Procedure	Number of procedures in the preceding 12 months		
	0	1–10	> 10
Central venous line	0	8%	92%
Endotracheal intubation	2%	45%	53%
Intercostal/pleural drains	15%	74%	11%
Percutaneous tracheostomy	32%	64%	4%
Renal replacement therapy	1%	9%	90%

Table 3. Factors that may limit future training capacity according to responses from ICU directors

Factor	Percentage who responded "yes"
Availability of infrequent but important procedures (eg, percutaneous tracheostomy, bronchoscopy, prone positioning, ECMO)	71%
Availability of compulsory non-ICU rotations	64%
Reduction in quality training time due to after-hours and unit external rostering, and safe working hours requirements	58%
Availability of transition year positions	55%
Unit's capacity to undertake the educational and work-based assessment requirements of the CICM	37%
Availability of echocardiography and other subspecialty training	34%
Exposure to adequate casemix and ICU subspecialty patients	31%
Unit's capacity to provide expected level of supervision	26%

CICM = College of Intensive Care Medicine of Australia and New Zealand. ECMO = extracorporeal membrane oxygenation. ICU = intensive care unit.

Perceived impact of additional trainees, career medical officers and additional ICU time

More than 50% of trainees felt that any additional increase in trainee numbers or appointment of non-training career medical officers would dilute the procedural exposure and the ICU clinical experience. Nearly 70% of trainees were opposed to an increase in ICU training time and 80% were opposed to an increase in trainee numbers.

Directors' survey

Demographics

In total, 106 ICUs were registered with the CICM. Of the 106 directors, 76 responded to the directors' survey (72% response rate). Seventy-four per cent of responding ICUs were accredited for general training and 26% for limited training (6 months).

Most units (74%) admitted in excess of 1000 patients annually. Of the units from which directors responded, 48% were accredited for cardiothoracic subspecialty training, 41% for neurosurgical training and 38% for trauma training. Forty-two per cent of units provided an

ECMO service and one-third cared for patients requiring solid organ or bone marrow transplantation. In more than 80% of units, registrars had clinical responsibilities outside of the ICU (such as RRT and Code Blue service), but only 23% of units with registrar service commitments outside of the ICU had separate rosters for such services.

On average, there were about ten full-time equivalent (FTE) specialist intensivists and six CICM trainees per unit. For G6 units ($n = 18$), the average number of FTE intensive care specialists was 3.5 and the average number of CICM trainees was 1.2. For G12 and G24 units ($n = 58$), the average number of FTE intensive care specialists was 8.6 and the average number of CICM trainees was 6.0.

Availability of specialty rotations built into the ICU program

Sixty-four per cent of directors reported having access to anaesthesia training positions for ICU trainees in their respective hospitals and 80% of the directors reported

their final year of training were specifically asked if they felt prepared for consultant practice. Of the 90 trainees who were eligible to respond to this question, nearly one-third felt they were underprepared to take on a role as a specialist in intensive care.

The following were the areas of the curriculum where more than 20% of trainees felt they had not received sufficient training:

- overall ICU time (21.3%);
- on-call exposure (22.7%);
- cardiothoracic ICU, with reference to mechanical cardiac support (57.4%);
- trauma (29.6%);
- paediatric ICU (28.7%);
- communication (23.2%);
- end-of-life discussion and palliative care (50.6%); and
- difficult-to-ventilate patients (43%).

suitability of their ICU for at least one transition year position based on the CICM requirements.

Perceived factors limiting future capacity

Directors' responses to questions about factors which may limit future capacity to train are summarised in Table 3.

Assessment of trainee preparedness for consultant practice

Eighty-five per cent of directors felt that new fellows were sufficiently prepared or well prepared for consultant level practice. However, 15% of directors felt that new fellows were ill prepared, and some directors mentioned procedural inexperience and significant variation in competence among trainees.

Supervisors-of-training survey

Supervisors from 145 hospitals were invited to take part in the supervisors-of-training survey, and 82 supervisors responded (57% response rate). The number of anaesthesia and medicine positions specifically earmarked for CICM trainees from the responding hospitals in Australia and New Zealand were 81 and 112, respectively. The number of transition year positions which met the CICM requirements was estimated to be 101. Extrapolating these numbers to all the hospitals surveyed would translate to 120, 165 and 140 positions for anaesthesia, medicine and transition year, respectively.

Discussion

This study quantified the CICM's current training resources in Australia and New Zealand using several domains — casemix, rosters, supervision, rotation availability, procedural exposure, and estimates of trainee workload involved in the clinical responsibilities outside the ICU such as RRT services. While overall satisfaction with the training program was high, it is a major concern that a significant proportion of final-year trainees felt underprepared for specialist practice, and that this view was shared by 15% of directors. Another key finding of the study was the substantial amount of time spent by trainees (about 20% of their rostered clinical time) in clinical responsibilities outside the ICU. A higher proportion of rostered day shifts rather than night shifts, more conducive for supervision and participation in educational activities, was reported for fewer than 20% of the surveyed units. The surveys also identified significant concerns regarding future capacity to train in several domains, with specialty rotations, clinical and procedural experience, and transition year availability featuring prominently.

To our knowledge, this is the most comprehensive report to date on the capacity to train from an Australian and New Zealand specialist medical college. Although the Royal Australasian College of Physicians has developed a discussion article on the same subject,¹⁰ the CICM is the first such college to have directly assessed the experiences of end users (trainees and directors) with the various domains relevant to assessing training capacity. This report provides baseline data on the availability of casemix, procedural volume, procedural exposure, rostering arrangements, trainee responsibilities and commitments outside of the ICU, access to supervision, and access to specialty rotations such as anaesthesia and transition year. In addition, it identifies potential challenges for training capacity in the future.

While our data do not enable a simple, numerical calculation of the capacity to train, they provide a framework for collaborative discussion and strategy development with trainees and fellows, as well as other stakeholders and regulatory bodies. For example, the finding of limitations on anaesthesia training positions (with trainees having to wait for a year to secure an anaesthesia term) may provide a basis for stipulating a ceiling on the number of trainees. However, this type of interpretation requires considerable caution. Workforce prediction models are often not accurate, and growth in demand for ICU services cannot be easily estimated. The ease of access to transition year positions is unclear as the first cohort of trainees from the new curriculum had not started presenting for this stage of training when the trainees' survey was conducted. Budgetary constraints on the creation of new transition year positions will result in modification of existing ICU rosters to meet the transition year requirements of the CICM program, and the impact of these changes on the junior trainee roster is unknown. Another unknown in these prediction models is the potential for limitations in the capacity to assess trainees for certification. This could also affect the number of trainees who can be trained and certified annually.

The strengths of the study include its anonymous nature, its high content validity, a good response rate (especially from the directors), the assessment of capacity to train through three different lenses (trainees, directors and supervisors of training), and the similarity of conclusions between trainee responses and those of the directors in a key domain — preparedness for consultant practice. Moreover, all trainees, directors and supervisors of training were part of a registered database, which ensured that the entire cohort was contactable and had the opportunity to participate.

Our study had some limitations. The response rate from the trainees, while acceptable for this type of study,

was lower than expected. However most of the trainee respondents were those who had completed either the First Part examination or both the First Part and Second Part examinations, therefore they represented those committed to the training program. Also, the responses to the questions relating to procedural experience and exposure were based on recall (rather than more objective sources such as log books) and may therefore be inaccurate. In addition, the survey did not capture reasons why trainees did not gain experience with certain procedures or why they performed low numbers of certain procedures. Whether these findings are related to the substantial periods spent on responsibilities outside the ICU warrants further investigation. Most of the trainee respondents had registered before the 2014 curriculum change, so this survey may not accurately reflect the challenges in determining the capacity to train with the new curriculum. It is also possible that the reasons cited by final-year trainees for unpreparedness for a consultant position could be mitigated by the transition year component of the new curriculum. Finally, the survey only captured data for the preceding 12 months of ICU training time.

Conclusion

This report provides an assessment of the available resources within Australia and New Zealand for the training of doctors in intensive care medicine and identifies significant limitations and concerns among both ICU trainees and directors about the capacity to train doctors in this specialty. The findings call for detailed oversight and review of several aspects of the training program, including the determination of an optimal number of training positions.

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Competing interests

Philip Hart is Chief Executive Officer of the CICM; Raymond Raper is President of the CICM.

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References

- 1 Jones D, George C, Hart GK, et al. Introduction of medical emergency teams in Australia and New Zealand: a multi-centre study. *Crit Care* 2008; 12: R46.
- 2 Bagshaw SM, Webb SA, Delaney A, et al. Very old patients admitted to intensive care in Australia and New Zealand: a multi-centre cohort analysis. *Crit Care* 2009; 13: R45.
- 3 Australian Medical Workforce Advisory Committee. The intensive care workforce in Australia. Sydney: AMWAC, 1999.
- 4 Joyce CM. The medical workforce in 2025: what's in the numbers? *Med J Aust* 2013; 199: S6-S9.
- 5 Health Workforce Australia. Health workforce 2025, medical specialties, volume 3. Adelaide: HWA, 2012; pp 59-60. https://submissions.education.gov.au/forms/archive/2015_16_sol/documents/Attachments/Royal%20Australasian%20College%20of%20Surgeons.pdf (viewed Mar 2019).
- 6 College of Intensive Care Medicine [website]. <https://www.cicm.org.au/About/About-Us> (viewed Mar 2019).
- 7 Bevan R, Freebairn R, Lee R. College of Intensive Care Medicine: changes to intensive care medicine training. *Crit Care Resusc* 2014; 16: 291-3.
- 8 Ashbolt M, Corke C, Venkatesh B. Determining the optimum capacity to train — a challenge for the College of Intensive Care Medicine of Australia and New Zealand. *Crit Care Resusc* 2017; 19: 283-4.
- 9 College of Intensive Care Medicine of Australia and New Zealand. Objectives of training: the transition year. <https://www.cicm.org.au/Resources/Training-Resources-Documents> (viewed Mar 2019).
- 10 Royal Australasian College of Physicians. Capacity to train consultation paper. Sydney: RACP, 2015; pp 1-36. <https://www.racp.edu.au/docs/default-source/default-document-library/es-capacity-to-train-consultation-paper-2015.pdf> (viewed Mar 2019).

Capacity to Train Survey – Current CICM Trainees.

1. Where are you currently training?

2. What is the CICM accreditation level for your most recent ICU training rotation?

3. Year of graduation from Medical School:

4. In which country did you obtain your primary medical qualification?

Australia

New Zealand

Other (please specify)

5. What is your current fractional employment (select closest EFT)

0.25

0.5

0.75

1.0

6. What is your current training status:

Active Trainee (completing required part of CICM training program)

Deferred Training (currently in training position additional to CICM requirements)

Interrupted Training (not currently in a training position eg; on long-term leave)

7. Examination status:

Y/N

Completed or exempted
from CICM First Part
Exam

Completed CICM
Second Part Exam

8. Which curriculum are you training in?

Pre 2014 Curriculum

Post 2014 Curriculum

9. Are you currently training with any other colleges?

NO

ANZCA

ACEM

RACP

Other (please specify)

10. What is your current rotation?

ICU

Emergency/Acute Medicine

Anaesthetics

Other

Medicine

11. Over the last two months how many hours have you worked per fortnight? (On average)

12. In your current roster, what is the proportion of day/evening shifts to night shifts?

13. What level of supervision do you have for night shifts?

Consultant onsite

Senior Registrar onsite

Consultant/Senior Registrar on call

14. Do you have an on call requirement?

15. If yes, on average how many per fortnight?

16. Do you have non clinical shifts?

17. If yes, on average how many per fortnight?

18. Please answer the following questions based on your most recent term in ICU.

What proportion of your ICU clinical time is spent outside of the ICU on the following duties:

	Percentage
MET/Rapid Response Service	<input type="text"/>
Patient transport	<input type="text"/>
Other ward duties (eg: tracheostomy follow up)	<input type="text"/>
Non clinical duties	<input type="text"/>

19. Does your unit have specific training in:

	Y/N
Communication and negotiation	<input type="text"/>
End of Life discussions	<input type="text"/>
Medical simulation	<input type="text"/>
Trans-thoracic Echocardiography	<input type="text"/>
Trans-oesophageal Echocardiography	<input type="text"/>

20. What is your impression of the current level of teaching/training in your unit:

- Satisfactory - I feel it will adequately prepare me for consultant level practice by the end of my training
- Unsatisfactory - lack of clinical exposure due to responsibilities external to ICU
- Unsatisfactory - there is a lack of direct supervision
- Unsatisfactory - lack of teaching due to after hours rostering

Unsatisfactory - Other (please comment)

21. Do you have adequate access to your supervisor?

- Yes
- No

22. For those on the post 2014 curriculum, have you experienced any problems in accessing supervision for the required workplace based assessments?

- Not relevant
- Yes
- No

23. Have you completed college requirements for the following rotations?

Y/N

Anaesthetics

Medicine

Emergency/Acute
Medicine

Paediatrics

Rural

24. Have you received recognition of prior learning for any of these terms?

Y/N

Anaesthetics

Medicine

Emergency/Acute
Medicine

Paediatrics

Rural

25. Have you experienced problems in obtaining the required training time in the following rotations?

Yes/No

Anaesthetics

Medicine

Emergency/Acute
Medicine

Paediatrics

Rural

Comments

26. If so, how many years additional training time has been required as a result of difficulty in accessing these positions?

- | | |
|---------------------------|---------------------------|
| <input type="radio"/> 0.5 | <input type="radio"/> 2.5 |
| <input type="radio"/> 1 | <input type="radio"/> 3 |
| <input type="radio"/> 1.5 | <input type="radio"/> 3.5 |
| <input type="radio"/> 2 | <input type="radio"/> 4 |

27. Have you experienced difficulty in obtaining ICU sub-specialty training (for those on the post 2014 curriculum)

	Yes/No
Cardiac	<input type="checkbox"/>
Neuro	<input type="checkbox"/>
Trauma	<input type="checkbox"/>

Comments

28. For trainees with at least 12 months ICU experience, what is your exposure to the following challenging ICU situations. (Estimated exposures over a 12 month ICU term)

	Number
Difficult Intubation	<input type="checkbox"/>
Difficult invasive ventilation	<input type="checkbox"/>
Prone Positioning	<input type="checkbox"/>
Resuscitation (cardiac arrest)	<input type="checkbox"/>
IABP	<input type="checkbox"/>
ECMO	<input type="checkbox"/>
VAD	<input type="checkbox"/>
CRRT/SLED	<input type="checkbox"/>
End of Life/Limitation of Treatment Discussions	<input type="checkbox"/>

29. For trainees with at least 12 months ICU experience, what is your exposure to the following ICU Procedures (estimated procedures per annum performed by yourself over a 12 month ICU rotation)

	Number
Endotracheal Intubations	<input type="text"/>
Percutaneous tracheostomies	<input type="text"/>
Central Venous Access lines	<input type="text"/>
Non tunnelled dialysis catheters	<input type="text"/>
Clinician performed transthoracic echocardiography	<input type="text"/>
Clinician performed transoesophageal echocardiography	<input type="text"/>
Invasive Cardiac output monitoring PICCO/PAC	<input type="text"/>
ECMO Cannulations	<input type="text"/>
Bronchoscopy	<input type="text"/>
Thoracocentesis	<input type="text"/>

30. What is your opinion of the adequacy of the current curriculum (post 2014) to meet the needs of graduating trainees:

	Inadequate	Borderline	Adequate	Excessive
Clinical experience/training time in intensive care (42 months of intensive care training)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Experience in responsibility for clinical decision making (expected in Transition year)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On call exposure (expected in Transition year)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardiothoracic experience (6 months in a hospital designated by CICM as suitable for cardiothoracic training)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Neurosurgical experience (6 months in a hospital designated by CICM as suitable for neuro-intensive care training)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Inadequate	Borderline	Adequate	Excessive
Trauma experience (6 months in a hospital designated by CICM as suitable for trauma training)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paediatrics experience: (Required exposure to paediatrics in an approved unit)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rural Experience (3 months in any discipline)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication skills (CICM Communication course)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Goals of Care/End of life discussion skills (no formal training requirement)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organ Donation Conversations (FDC requestor course completion)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Negotiation skills (CICM Management skills course)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical cardiac support (IABP/ECMO) (no formal requirement)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General medicine experience (6 months - acute care or emergency medicine and at least 6 months of internal medicine)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Airway skills (Advanced airway skills course and 12 months clinical anaesthesia training)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skills in managing difficult ventilation cases (no formal requirement)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Palliative care training (no formal requirement)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Simulation experience (no formal requirement)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Echocardiography Training (Basic level – 30 peer reviewed cases)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Inadequate	Borderline	Adequate	Excessive
Education/teaching training (expected in Transition year)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

31. For trainees who are in the final year of training - do you feel adequately prepared for consultant practice?

- Yes
- No
- N/A

32. In the delivery of your current training program have you experienced any limits or bottlenecks to your progress? (Other than the clinical rotations mentioned in question 24)

33. If there was an increase in the number of CICM trainees in the future, which of the following factors do you think may provide a significant impact or bottleneck? Please rank in regards to their likely impact

	Unlikely	Unsure	Likely	Definite
Limited quality training time due to limited safe working hours, and/or expanded after hours and external unit responsibilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adequate supervision due to fixed consultant staffing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limited access to an adequate case-mix of patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limited access to compulsory non ICU rotations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limited access to compulsory sub specialty ICU rotations (Cardiac/Neuro/Trauma)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of Transition year positions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of training and clinical experience in important ICU procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of Echocardiography training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of staffing and support in individual ICU's to undertake the educational and work-based assessment requirements of the College	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

34. Are there any other difficulties you foresee in the delivery of the post 2014 curriculum?

35. What new skill sets do you feel may become vital for graduates of the CICM program over the next 10 years, and may have an impact on training capacity?

36. Do you feel that your unit could accommodate additional CICM trainee numbers without impacting on the current quality of training?

Yes

No

37. What would be the impact of additional CICM trainees in your unit on the following?

	Reduced	No effect	Improved
Teaching culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teaching sessions (quality and access)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clinical exposure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exam preparation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exposure to procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After hours service delivery requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access to compulsory non ICU rotations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

38. What would be the impact of increasing the number of Career Medical Officer (CMO) staff on the following in your unit?

	Reduced	No effect	Improved
Teaching culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teaching sessions (quality and access)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exam preparation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clinical exposure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procedure exposure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After hours service delivery requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

39. If there was a significant increase in trainee numbers with a detectable effect on training experience do you feel that the College should:

	Yes	No
Increase ICU training time to ensure that all trainees get adequate training	<input type="radio"/>	<input type="radio"/>
Limit trainee numbers to ensure that all trainees are afforded a quality training experience	<input type="radio"/>	<input type="radio"/>

Directors' survey

* 1. State/Territory/Country

2. Hospital Name

3. CICM Training Status

- General Training
- Limited General Training (G6)

4. Accredited for training in:

- Cardiothoracic ICU
- Neurosurgical ICU
- Trauma ICU

5. Please confirm the total medical staff currently working in your intensive care unit

	Number	FTE (to nearest whole number)
Total Intensive Care Specialists	<input type="text"/>	<input type="text"/>
Total Senior Registrars	<input type="text"/>	<input type="text"/>
Total Junior Registrars	<input type="text"/>	<input type="text"/>
Total RMO/HMO	<input type="text"/>	<input type="text"/>
Number of CICM trainees	<input type="text"/>	<input type="text"/>

6. Please confirm the number of CICM trainees currently on rotations to other departments as part of their CICM training program (ie does not include trainees on interrupted training whilst completing other fellowship programs)

	Number
Anaesthesia	<input type="text"/>
Medicine	<input type="text"/>
Paediatrics (ward/emergency)	<input type="text"/>
Paediatrics (PICU)	<input type="text"/>
Rural Hospital	<input type="text"/>

7. Junior CICM Registrar - Average number of hours worked per fortnight:

8. Junior CICM Registrar - Ratio of day shifts: night shifts (please choose closest option)

9. Senior CICM Registrar - Average number of hours worked per fortnight:

10. Senior CICM Registrar - Ratio of day shifts: night shifts (please choose closest option)

11. Senior CICM Registrar - Do they have remote on call requirements?

Yes

No

12. Senior CICM Registrar - Number of on call instances per week

13. Comments on Registrar Roster

14. Registrar External Unit responsibilities - Do JR/SR registrars have external responsibilities ?

Yes

No

15. If YES please clarify what external roles:

	Yes	No
Rapid response teams (MET/Code Blue)	<input type="radio"/>	<input type="radio"/>
TPN	<input type="radio"/>	<input type="radio"/>
Consults / referrals	<input type="radio"/>	<input type="radio"/>
Discharge reviews	<input type="radio"/>	<input type="radio"/>
Tracheostomy Rounds	<input type="radio"/>	<input type="radio"/>
External oversight of general ward patients	<input type="radio"/>	<input type="radio"/>
Patient transport or retrieval	<input type="radio"/>	<input type="radio"/>

16. Is there a separate roster for these external services?

- Yes
 No

17. What proportion of a CICM Junior registrar's total clinical time is devoted to external responsibilities?
(Please select closest option)

- 60% 20%
 50% 10%
 40% 5%
 30% <5%

18. What proportion of a CICM Senior registrar's total clinical time is devoted to external responsibilities?
(Please select closest option)

- 60% 20%
 50% 10%
 40% 5%
 30% <5%

19. How many Supervisors of Training (SOT) are employed in your unit?

20. To complete supervision duties are SOT's allocated

	Yes	No
Reduced clinical time	<input type="radio"/>	<input type="radio"/>
Reduced non-clinical responsibilities	<input type="radio"/>	<input type="radio"/>

21. What (if any) is the dedicated non-clinical FTE allowed to an SOT for training and assessment purposes:

22. Do non-SOTs have responsibilities to conduct Workplace Based Assessments?

- Yes
 No

23. If Yes, do they have additional non-clinical FTE for these responsibilities?

- Yes
 No

24. Clinical Casemix Assessment -

Please provide the following casemix data for a 12 month period (2016 preferred).

Total number of admissions	<input type="text"/>
No. of Emergency admissions	<input type="text"/>
No. of Elective admissions	<input type="text"/>
No. of Cardiothoracic admissions	<input type="text"/>
No. of Trauma admissions	<input type="text"/>
No. of Neurosurgical admissions	<input type="text"/>

25. Clinical Casemix Assessment -

Please provide the following casemix data for a 12 month period (2016 preferred).

Invasively ventilated patients

Bed days (preferred)

Hours

26. Intensive Care Services provided:

Average patient days per year

Cardiovascular support:

IABP

Cardiovascular support:

ECMO

Renal Support: CRRT

Renal Support: SLED

27. Other Services Provided

Yes

No

Solid Organ transplant
service

Bone marrow transplant
service

Interventional radiology

28. Transition Training

How many senior training positions consistent with the College's expectation of the Transition Year of training (T26) could your Unit offer?

29. Training Resources Available

Does your unit offer specific training in:

	Yes	No
Communication and negotiation	<input type="radio"/>	<input type="radio"/>
End of Life discussions	<input type="radio"/>	<input type="radio"/>
Medical simulation	<input type="radio"/>	<input type="radio"/>
Trans-thoracic Echocardiography	<input type="radio"/>	<input type="radio"/>
Transoesophageal Echocardiography	<input type="radio"/>	<input type="radio"/>

30. Please state the following procedure incidence per annum, including stating or estimating the proportion of procedures performed by Registrars and RMOs (including both CICM trainees and non CICM). If you are unable to provide data for a procedure please leave that line blank.

	Total Procedures	% performed by Registrars or RMOs	Is this estimated or derived from data?
Central Venous Access lines	<input type="text"/>	<input type="text"/>	<input type="text"/>
Non tunnelled dialysis catheters	<input type="text"/>	<input type="text"/>	<input type="text"/>
Endotracheal intubations	<input type="text"/>	<input type="text"/>	<input type="text"/>
Percutaneous tracheostomies	<input type="text"/>	<input type="text"/>	<input type="text"/>
ECMO Cannulations	<input type="text"/>	<input type="text"/>	<input type="text"/>
Clinician performed transthoracic echocardiography	<input type="text"/>	<input type="text"/>	<input type="text"/>
Clinician performed transoesophageal echocardiography	<input type="text"/>	<input type="text"/>	<input type="text"/>
Invasive Cardiac output monitoring PICCO/PAC	<input type="text"/>	<input type="text"/>	<input type="text"/>
Bronchoscopy	<input type="text"/>	<input type="text"/>	<input type="text"/>
Thoracocentesis	<input type="text"/>	<input type="text"/>	<input type="text"/>

31. The following five questions are an evaluation of your impression of new fellows skills and the adequacy of the new curriculum to meet the needs of contemporary ICU practice.

In your opinion how well prepared are new fellows for consultant level practice?

- well prepared
 ill prepared
 sufficiently prepared

Comments

32. What is your opinion on the adequacy of the new curriculum (post 2014) in preparing trainees for independent specialist practice?

	Inadequate	Borderline	Adequate	Excessive
Clinical experience/training time in intensive care. (42 months of intensive care training)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Experience in responsibility for clinical decision making (expected in transition/SR years)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On call exposure (expected in transition/SR years)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardiothoracic experience (6 months in a hospital designated by CICM as suitable for cardiothoracic training)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Neurosurgical experience (6 months in a hospital designated by CICM as suitable for neuro-intensive care training)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trauma experience (6 months in a hospital designated by CICM as suitable for trauma training)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paediatrics experience: (Required exposure to paediatrics in an approved unit)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Inadequate	Borderline	Adequate	Excessive
Rural Experience (3 months in any discipline)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication skills (CICM Communication course)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Goals of Care/End of life discussion skills (No formal training requirement)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organ Donation Conversations (FDC requestor course completion)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Negotiation skills (CICM Management skills course)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical cardiac support (IABP/ECMO) (No formal requirement)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General medicine experience (6 months - acute care or emergency medicine and at least 6 months of internal medicine)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Airway skills (Advanced airway skills course and 12 months clinical anaesthesia training)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skills in managing difficult ventilation cases (No formal requirement)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Palliative care training (no formal requirement)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Simulation experience (no formal requirement)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Echocardiography training (Basic level – 30 peer reviewed cases)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education/teaching (expected in transition/SR years)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

33. Are there any training elements not covered above that are important to producing quality graduates?

34. In the future, what factors do you feel may limit your capacity to provide comprehensive and quality training?

	Yes	No
Reduction in quality training time due to after-hours and unit external rostering, and safe working hours	<input type="radio"/>	<input type="radio"/>
Unit capacity to provide expected level of supervision	<input type="radio"/>	<input type="radio"/>
Exposure to adequate case-mix and ICU subspecialty patients	<input type="radio"/>	<input type="radio"/>
Availability of compulsory non ICU rotations	<input type="radio"/>	<input type="radio"/>
Availability of transition year positions	<input type="radio"/>	<input type="radio"/>
Infrequent but important procedures e.g. percutaneous tracheostomy, bronchoscopy, prone positioning, ECMO etc	<input type="radio"/>	<input type="radio"/>
Availability of Echocardiography and other subspecialty training	<input type="radio"/>	<input type="radio"/>
Unit capacity to undertake the educational and work-based assessment requirements of the College	<input type="radio"/>	<input type="radio"/>

Other (please specify)

35. What skill sets do you feel may become vital for graduates of the CICM program over the next 10 years?

36. The following five questions are an evaluation of current training capacity:

CICM's expectation is that units provide a quality and comprehensive training experience to all college trainees. Keeping this, and your unit's obligations to provide training to non-CICM trainees, please answer the following questions. Answers will only be used in aggregate and are in no way connected to the HAC accreditation of your unit nor will they inform any decisions regarding trainee numbers allocated to your unit.

Do you feel that you would be able to employ additional CICM registrars and provide the same level of training?

- Yes
- No
- Unsure

37. If yes, how many additional CICM registrar FTE

38. Are you currently employing CMO staff?

- Yes
- No

39. If CMO staff were available would your Unit consider employing them?

- Yes
- No

40. Would you consider employing additional trainees of other colleges (RACP/RACS/ANZCA/ACEM) to fulfil unit staffing requirements?

- Yes
- No