2015-02

Development of <scp>A</scp>ustralian clinical practice outcome standards for graduates of critical care nurse education

Gill, Fenella

10.1111/jocn.12631
Journal of Clinical Nursing
Wiley

JCN Journal of Clinical Nursing

ORIGINAL ARTICLE

Development of Australian clinical practice outcome standards for graduates of critical care nurse education

Fenella J Gill, Gavin D Leslie, Carol Grech, Duncan Boldy and Jos M Latour

Aims and objectives. To develop critical care nurse education practice standards.

Background. Critical care specialist education for registered nurses in Australia is provided at graduate level. Considerable variation exists across courses with no framework to guide practice outcomes or evidence supporting the level of qualification.

Design. An eDelphi technique involved the iterative process of a national expert panel responding to three survey rounds.

Methods. For the first round, 84 statements, organised within six domains, were developed from earlier phases of the study that included a literature review, analysis of critical care courses and input from health consumers. The panel, which represented the perspectives of four stakeholder groups, responded to two rating scales: level of importance and level of practice.

Results. Of 105 experts who agreed to participate, 92 (88%) completed survey round I; 85 (92%) round II; and 73 (86%) round III. Of the 98 statements, 75 were rated as having a high level of importance – median 7 (IQR 6–7); 14 were rated as having a moderate level of importance – median 6 (IQR 5–7); and nine were rated as having a low level of importance – median 4 (IQR 4–6)–6 (IQR 4–6). The majority of the panel rated graduate level of practice as 'demonstrates independently' or 'teaches or supervises others' for 80 statements. For 18 statements, there was no category selected by 50% or more of the panel. The process resulted in the development of 98 practice standards, categorised into three levels, indicating a practice outcome level by the practitioner who can independently provide nursing care for a variety of critically ill patients in most contexts, using a patient- and family-focused approach.

What does this paper contribute to the wider global clinical community?

- A rigorous research approach was used to develop standards for critical care nurse education graduate practice.
- The graduate practice standards provide a clear definition for professional health workforce standards.
- These standards can be used by course providers to achieve consistent graduate practice outcomes.

Authors: *Fenella J Gill*, BN, MNurs Graduate Certificate Tertiary Teaching, Lecturer, Nurse Researcher, Faculty of Health Science, School of Nursing and Midwifery, Curtin University and Child & Adolescent Health Services, Princess Margaret Hospital for Children, WA; *Gavin D Leslie*, PhD, IC Cert, BAppSc, Professor, Critical Care Nursing, Joint Appointment Royal Perth Hospital and Faculty of Health Science, School of Nursing & Midwifery, Curtin Health Innovation Research Institute, Curtin University, Perth, WA; *Carol Grech*, PhD, BN, MN, Professor, Head, School of Nursing & Midwifery, University of South Australia, Adelaide, SA; *Duncan Boldy*, PhD, BSc, CertEd, Professor and Research Advisor, Faculty of Health Science, School of Nursing and Midwifery, Curtin University, Perth, WA; *Jos M Latour*, RN, PhD, FEfCCNa, Professor, Nurse Scientist, Adjunct Research Fellow, Faculty of Health, Education and Society, School of Nursing and Midwifery, Plymouth University, Plymouth, UK, Department of Pediatrics, Intensive Care Neonatology, Erasmus MC – Sophia Children's Hospital, Rotterdam, The Netherlands, and Faculty of Health Science, School of Nursing and Midwifery, Curtin University, Perth, WA, Australia

Correspondence: Fenella J Gill, Lecturer, School of Nursing and Midwifery, Curtin University, GPO Box U1987, Perth, WA 6845, Australia. Telephone: +61 (0)402881604.

E-mail: f.gill@curtin.edu.au

Conclusion/relevance to clinical practice. The graduate practice outcomes provide a critical care qualification definition for nursing workforce standards and can be used by course providers to achieve consistent practice outcomes.

Key words: assessment, Delphi study, graduate-level education, intensive care, nursing, nursing education research, postregistration qualifications

Accepted for publication: 24 March 2014

Introduction

Internationally, critical care is one of the largest nursing specialties. Registered nurses (RNs) who choose to work in this specialty are often expected or required to undertake postregistration critical care nurse education. In some countries, national and regional critical care workforce standards include staffing of critical care units with a minimum proportion of nurses who hold postregistration specialty qualifications. However, globally there are considerable variations. For example, no minimum proportion has been specified in the USA or Canada; an 'adequate' supply of qualified critical care nurses is recommended by the European federation of Critical Care Nursing associations (2007); in the UK, the British Association of Critical Care Nurses advocated that every patient has immediate access to an RN with a postregistration qualification (Bray *et al.* 2010); and in Australia and New Zealand, it is recommended that at least 50%, preferably 75%, of nurses working in ICU hold a critical care postregistration qualification (Australian College of Critical Care Nurses 2003, Critical Care Nurses' Section 2005, College of Intensive Care Medicine of Australia & New Zealand 2010, Australian Council on Healthcare Standards 2011).

Background

Level of qualification and expected learning outcomes vary widely across critical care nurse education programmes (Gill *et al.* 2012) to fulfil the demand for specialist critical care nurses. In Europe, and within Europe, the UK, there have been steps taken towards achieving a greater consistency in critical care courses and graduate practice outcomes (Critical Care Networks-National Nurse Leads 2013, European federation of Critical Care Nursing associations – EfCCNa 2013). Also within Europe, instruments have been developed to assess basic intensive care knowledge of Finnish nurses (Lakanmaa *et al.* 2014b), and in Cyprus to determine what competencies were expected of postgraduate critical care nurses (Hadjibalassi *et al.* 2012). A different approach was taken in the USA and Canada where the credentialing or certification process enables critical care nurses to test themselves against a national standard (Canadian Nurses Association 2011, American Association of Critical Care Nurses n.d.). However, deficiencies remain in areas such consumer consultation and no specific graduate academic and practice outcomes have been developed elsewhere. Given the current transition of nursing to higher education in Europe (Collins & Hewer 2014) and the continuing demand for qualified specialist nurses in critical care across the world, it is important that it is clear what can be expected of the graduate of specialist education.

In Europe, the National Competency Framework for adult critical care nurses in the UK (Critical Care Networks-National Nurse Leads 2013, Price 2013) and the Critical Care Nursing Competence Framework for the European critical care nursing workforce (European federation of Critical Care Nursing associations – EfCCNa 2013) have both been developed to guide practice and inform postregistration critical care nurse education programmes. The format of the UK competencies is for three steps of competence to identify specific expectations for competency development at various stages: step 1 identifies the competencies expected prior to the nurse commencing a critical care education programme within a 12- to 18-month time frame, and steps 2 and 3 identify the competencies to be achieved during the critical care education programme (Critical Care Networks-National Nurse Leads 2013). The different practice environments and postregistration nurse education systems in North America make it difficult to directly compare to the Australian context (Gill *et al.* 2012), although the Canadian Standards for Critical Care Nursing Practice (Canadian Association of Critical Care Nurses 2009) include statements suggesting that expectations for postregistration critical care nurse educational outcomes may be similar. Additionally, both the USA and Canada offer a certification process (Canadian Nurses

Association 2011, American Association of Critical Care Nurses n.d.) for critical care nurses to test themselves against national standards, which is an alternative strategy to achieve consistency in critical care nurse practice.

In Australia, the critical care environment includes adult and paediatric intensive care, cardiac care as well as any 'area specifically staffed and equipped for the continuous care of critically ill patients' (Australian College of Critical Care Nurses 2002, p. vi). The critical care nursing workforce comprises RNs. The pathway to nursing registration is by undertaking a bachelor degree (Lusk *et al.* 2001, Gill *et al.* 2012). Often, new graduates employed in critical care settings initially undertake local education programmes and are then encouraged or expected to commence graduate-level 'formal' critical care education. This is predominantly provided in the higher education (university) sector (Aitken *et al.* 2006, Gill *et al.* 2013a). This has meant a shift from the vocational-based postregistration courses offered by healthcare facilities to almost all courses now being offered by universities.

The transition process for both nurse registration preparation and postregistration courses to the higher education (university) sector is currently being experienced in Europe (Collins & Hewer 2014), and there may be lessons to learn from the Australian experience. There are reports of difficulties in specialist nursing education already being experienced in Europe as a consequence of the Bologna process (Millberg *et al.* 2011). The Australian Qualifications Framework (AQF) has set national policy and regulation for postschooling college- and university-level qualifications, ensuring that academic courses can be benchmarked both nationally and internationally (Tertiary Education Quality & Standards Agency 2011, Australian Qualifications Framework Council 2013). However, a framework to guide minimum practice standards for specialist graduate nursing programmes has not been identified. The lack of regulation or guidance has contributed to the considerable variation in critical care courses across the country. While circumstances may differ, this problem is seen in most jurisdictions where critical care nursing is a specialty.

Variation in graduate practice outcomes exists despite the widespread use of the Competency Standards for Specialist Critical Care Nurses in Australia. The Competency Standards were developed to articulate the practice of the specialist critical care nurse, as a framework for curricula development and as a basis for clinical assessment (Australian College of Critical Care Nurses 2002). Critical care course providers have reported modifying the Competency Standards to reflect their expectations for course graduate practice outcomes (Aitken *et al.* 2006, Gill *et al.* 2013a). The inconsistency in interpreting the Competency Standards in this context and local differences, such as employer expectations of graduates and critical care practice environments, have all contributed to the variation across courses (Gill *et al.* 2013a).

It is also apparent that health consumer input into the development of critical care course curriculum and content has been deficient across counties offering postregistration critical care nurse education (Gill *et al.* 2013b). In Australia, this is likely to change with the introduction of a new national programme for safety and quality in Australian hospitals introduced in January 2013. Working in partnership with consumers is one of the ten hospital standards considered essential to improve patient safety and quality of care (Australian Council on Healthcare Standards 2012). While health consumers have become an increasing focus for quality healthcare outcomes internationally, critical care nurse education curricula have traditionally placed emphasis on clinical competence and technical expertise (Gill *et al.* 2013a), rather than developing relationships with and supporting critical care patients and their families. However, compelling reports with wide-reaching impact such as the Mid-Staffordshire NHS Foundation Trust Public Inquiry (The Mid Staffordshire NHS Foundation Trust Public Inquiry 2013) reinforce the importance of why health consumers and other key stakeholders need to be at the forefront of practice standard development. Given the environment of increasing health consumer involvement, it is interesting to note that health consumers were not consulted in the development of either of the UK or the European competency frameworks (Critical Care Networks-National Nurse Leads 2013, European federation of Critical Care Nursing associations – EfCCNa 2013). Similarly, in the USA there is little evidence to indicate that consumers play an active role in the development of certified critical care nurses.

To address this complex milieu of influencing factors and views, a project was designed in three stages to develop comprehensive practice standards for graduates of critical care nurse education. To achieve this, we first undertook a contextual review (Gill *et al.* 2013a) and then identified health consumers' priorities for critical care graduate practice standards (Gill *et al.* 2013b). These findings informed the current study reported here, which was to obtain the views of nursing stakeholders using an eDelphi technique. Taking into account drivers associated with new hospital and higher education regulatory environments, the aim of this study was to develop critical care nurse education practice outcome standards that would be applicable in the

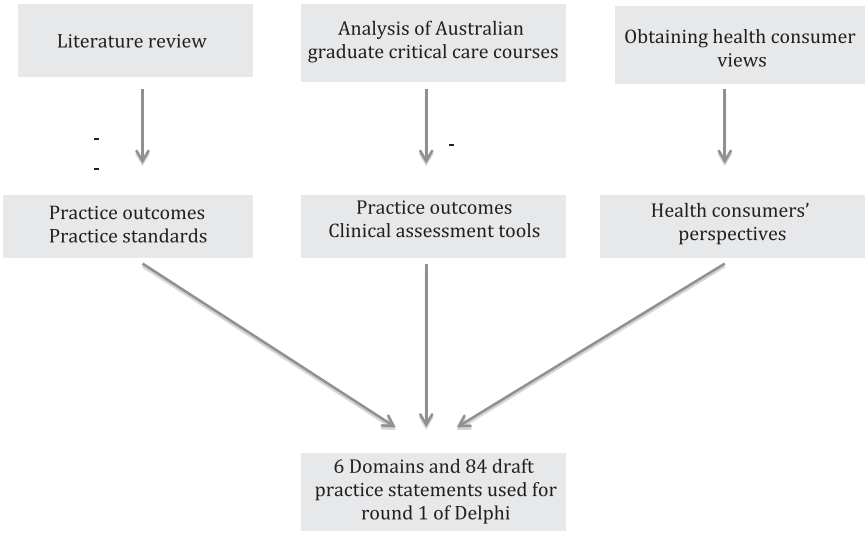

Figure 1 Process of developing draft statements.

Australian context but could also fill a gap in the approach to curricula development for an international critical care nurse audience.

Method

An eDelphi technique was used that consisted of the iterative process of administering three rounds of surveys to a national panel of critical care nurse experts using web-survey software. In the first survey round, panel members were asked to rate the importance of statements rather than using the classic Delphi technique of responding to open questions (Keeney *et al.* 2010). The statements were developed as a result of earlier phases of a large study that included a literature review, analysis of 22 critical care courses and input from health consumers (Gill *et al.* 2012, 2013a,b). The process of developing the draft statements is illustrated in Fig. 1.

Ethics approval was obtained from the University Human Research Ethics Committee (SON&M 23-2011). Panel members were informed that consent was inferred by the submission of the completed surveys. A detailed description of the study methodology has been described in an earlier paper (Gill *et al.* 2013c) and is summarised below.

The panel

The panel members were purposively selected to obtain the perspectives of stakeholders. Four groups were identified: an advisory group, course stakeholders, practice stakeholders and course graduates (within 12 months of completing a critical care course). Well-defined selection criteria were applied to populate each of the groups. The sampling strategy was guided by the five-step procedure (Box 1) originally described by Delbecq *et al.* (1986) and more recently by Okoli and Pawlowski (2004). Thus, the diverse group represented nursing stakeholders from each state and territory and from a range of critical care contexts (including adult and paediatric intensive care, cardiac care and critical care). The target size for each group was 25 to allow for some attrition over the Delphi rounds.

Box 1. Steps in selecting panel members

Step 1	Identification of the most appropriate stakeholder groups for the panel. Four groups were identified
Step 2	Population of the stakeholder groups with names derived from: related research participation, related publications, professional email lists, professional college board and advisory panel involvement. Course graduates were contacted via email distributed by course coordinators*
Step 3	Contacting individuals Ask them to nominate other experts
Step 4	Creation of sublists for each stakeholder group Ranking of experts based upon criteria of representation of professional role/state or territory/ specialty practice area
Step 5	Invite experts according to their ranking for each stakeholder group Target size for each group was 25 Stop soliciting experts when group size is reached or total population invited

*Course graduates from four states and one territory volunteered to participate and were all selected.
Adapted from Delbecq *et al.* (1986), and Okoli and Pawlowski (2004).

Survey development

The initial survey contained 84 statements describing the scope of clinical practice expected of an RN critical care course graduate organised into six domains: (1) patient- and family-centred care (11 statements); (2) quality of care and patient safety (10 statements); (3) resuscitation (five statements); (4) assessment, monitoring and data interpretation (four statements); (5) critical illness management (43 statements); and (6) teamwork and leadership (11 statements).

The survey and data collection processes were first pilot tested, as recommended by Presser *et al.* (2004), by 14 academics and critical care nurses who provided feedback and comments about the statements, process, survey instructions and ease of completing the survey. No difficulties were encountered with the process, and feedback resulted in minor wording changes and editing for clarity only. For the round I survey, a seven-point rating scale was used and response choices ranged from not at all important to extremely important. Panel members were also invited to make comments and suggestions in order to include further statements or clarify the options offered.

For round II and III surveys, a second categorical competency scale was included for participants to identify the level of practice expected of course graduates for each statement derived from the round I results. The five categories were adapted from Miller's assessment framework (Miller 1990) and more recent work by The CoBaTrICE Collaboration (2006). The response categories were as follows: no knowledge required; has knowledge of or describes; demonstrates under supervision; demonstrates independently; and teaches or supervises others. In round II, panel members were also invited to make comments and provide feedback.

Distribution of eDelphi survey rounds

Web-survey software SurveyMonkey was used to administer the eDelphi process (Gill *et al.* 2013c). For each round of surveys, three follow-up reminder emails per round were sent to nonresponders. The round II surveys were sent only to participants who responded to round I, and for round III, surveys were sent only to participants who responded to round II. Following each of the first two survey rounds, each panel member who completed a survey received feedback consisting of the distribution of responses and a summary of comments, together with a copy of his/her individual responses. Following round I, a summary of the panel's comments and a stacked bar chart depicting the seven response choices were generated for the level of importance scale for each statement, grouped within domains (group of statements).

Based upon the round I survey panel's comments, the round II survey instructions for the panel reiterated four key points that the standards:

- Should represent what panel members considered to be appropriate for national critical care course graduate standards, not only what currently existed in their own area of practice.
- Differed from the existing ACCCN Competency Standards for Specialist Critical Care Nurses (2002) as they related to critical care nursing education and expected graduate outcomes.
- Were in addition to, or beyond, beginning general or RN competencies (Nursing & Midwifery Board of Australia n.d.) and were at the level of critical care course graduate.
- Were identified as minimum critical care course graduate practice standards rather than a graduate award level.

Following round II, stacked bar charts for both scales (level of importance and level of practice) were produced, with a summary of comments and suggestions for further development of the statements. Stability of group responses between round II and round III was calculated to guide decision-making for stopping the Delphi technique after three rounds or conducting a fourth round. A fourth round may have been required if significant differences were found between the last two consecutive rounds.

Data analysis

The round I survey panel feedback was reviewed, and comments relevant to the topic were included for thematic analysis. This method is a step-by-step process focusing on the search of repeated patterns of meaning across the data sets to identify prominent themes (Creswell 2009, Liamputtong 2010). In the first step, all comments were read through to obtain an overall perspective of the information and reflect on its meaning. In the next step, the content data were independently coded using the domains and statements as the primary categories. The comments that reflected similar ideas were grouped together and given a representative code. The identified codes were examined using a constant comparison process where each code was compared with the rest of the data to establish and summarise the prominent themes.

The SurveyMonkey software was used to generate the stacked bar charts illustrating the distribution of responses

by level of importance. Data were imported into SPSS version 19 (IBM Corp 2012), and descriptive statistics including frequency distributions were computed. Median and interquartile ranges were calculated as data were not continuous or normally distributed. A chi-squared test was used to compare differences between the participant characteristics across rounds I and III. To measure the stability of responses between rounds II and III, differences were compared using the Wilcoxon signed-rank test. Group stability occurred if there was no significant difference between response-category frequencies for two consecutive Delphi rounds (Chaffin & Talley 1980, Keeney *et al.* 2010). Differences between four groups were compared using the Kruskal–Wallis test. Differences between two groups were compared using the Mann–Whitney test. Level of significance was set at $p < 0{\cdot}05$.

For the level of importance scale, statements were ranked by highest median and smallest IQR. Statements with a median of 7 and lower quartile range of 6 to 7 were defined as having a high level of importance, statements with a median 6 and IQR 5–7 a moderate level of importance and statements with a median <6 and IQR >5–7 a low level of importance. For the level of practice scale, statements were ranked within each domain by highest percentage. Panel agreement was defined as 50% or more for one category. The final steps to determine the statements for the graduate practice standards were undertaken by combining panel ratings for both scales.

Results

The eDelphi survey data were collected between July–September 2012. Of the 105 experts who agreed to participate, 92 responded to the first round. The response rate in round II was 85 (92%) and in round III 73 (86%). Table 1 details the response rates for each stakeholder group.

Panel demographic characteristics

Table 2 presents the demographic characteristics of the panel for round I ($n = 92$) and round III ($n = 73$). There were no statistically significant differences between panel members between round I and round III. The characteristics of the panel members in round III showed that nearly half (47%) worked in nursing practice or education roles. The remainders were course coordinators (14%), course graduates (15%) or worked in nursing research roles (23%). Typically, panel members worked in a clinical role (52%), in the adult intensive care setting (58%) and with 16 years or more critical care experience (62%). More than 20% held PhD qualifications.

Round I

Panel comments were categorised into three themes: (1) the scope or area of practice, (2) suggestions for changes to the existing statements and (3) new concepts. This process resulted in editing of 31 statements, the addition of 18 new statements and deletion of three statements, resulting in a total of 99 statements. The round II survey consisted of the described revisions to the statements and the addition of the second scale to indicate the level of practice expected for a course graduate.

Round II

From panel comments in round II, three main issues arose and a number of suggestions were provided. The issues were as follows: (1) despite the provision of guiding statements, panel members continued to identify that the different graduate practice expectations depended on the award level of course, (2) the need to define terms such as 'advanced', 'under supervision' and 'independently' and (3) one duplication (the statement for the patient requiring interventional cardiology being identified as inclusive of the

Table 1 Panel and group response rates for three survey rounds

Group	Agreed to participate	Respondents round I (%)	Respondents round II (%)	Respondents round III (%)
Advisory	27	25 (92)	24 (96)	19 (74)
Course coordinators	22	17 (77)	16 (94)	15 (94)
Practice stakeholders	37	34 (92)	30 (88)	26 (87)
Course graduates	19	16 (84)	15 (93)	11 (73)
Total	105	92 (88)	85 (92)	73 (86)

Table 2 Delphi panel characteristics for rounds I and III

	Round I (n = 92)		Round III (n = 73)		
	n	%	n	%	p-value
Age					
<31	11	11·9	8	11	p = 0·99
31–40	14	15·2	10	13.	
41–50	37	40·4	31	42·4	
>50	30	32·6	24	32·8	
Gender					
Female	75	81·5	60	82·2	p = 0·91
Male	17	18·5	13	17·8	
Work environment					
Public health service	68	73·9	29	39·7	p = 0·34
Private hospital	3	3·3	3	4·1	
University	19	20·7	17	23·3	
Combined hospital and university	10	10·9	6	8·2	
Critical care specialty area					
Adult ICU	55	59·8	42	57·5	p = 0·97
Paediatric ICU	11	12	8	11	
Cardiac care	5	5·4	5	6·8	
Critical care	19	20·7	17	23·3	p = 0·92
Other	2	2·2	1	1·4	
Clinical or nonclinical					
Clinical	49	53·3	38	52	
Nonclinical	29	31·5	25	34·2	
Combined	12	13	11	15	
State or territory					
Qld	13	14·1	11	15	p = 0·97
NSW	21	22·8	14	19·2	
ACT	3	3·3	3	4	
VIC	16	17·4	14	19·2	
TAS	2	2·2	2	2·7	
SA	11	12	7	9·6	
NT	1	1·1	1	1·4	
WA	26	28·3	21	28·8	
Years nursing					
2–5	9	9·8	6	8·2	p = 0·99
6–10	8	8·7	6	8·2	
11–15	7	7·6	7	9·6	
16–20	13	14·1	10	13·7	
>20	55	59·8	44	60·3	
Years in critical care					
<5	12	13·1	8	11	p = 0·97
6–10	11	12	10	13·7	
11–15	15	16·3	13	17·8	
16–20	13	14·1	9	12·3	
>20	41	44·6	36	49·3	
Qualification specialty*					
Adult ICU	53	57·6	41	56·2	p = 0·98
Paediatric ICU	11	12	9	12·3	
Cardiac	7	7·6	5	6·8	
Critical care	24	26	22	30	
Other	6	6·5	4	5·5	

ICU, intensive care unit; Qld, Queensland; NSW, New South Wales; ACT, Australian Capital Territory; VIC, Victoria; TAS, Tasmania; SA, South Australia; NT, Northern Territory; WA, Western Australia.

*Some panel members held more than one qualification.

statement for the patient requiring cardiac catheterisation). Further suggestions for statements were related to curricula detail rather than outcome practice standards. In addition, a number of statements were identified as being relevant to all patients rather than grouped within the respiratory section. While no further changes were made to the round III survey, the comments and suggestions were addressed in the resultant graduate practice standards.

Round III

Following deletion of the duplicated statement, there were 98 statements for round III.

Stability of responses between rounds II and III. Comparison of the median responses for the level of importance scale from round II and III surveys found one statistically significant difference in the teamwork and leadership domain ($z = -1{\cdot}98$, $p = 0{\cdot}047$). For the remaining five domains, there were no statistically significant differences, implying at least a reasonable stability of responses between consecutive rounds. Given this level of agreement between rounds, the small amount of feedback and suggestions received in round II, as well as the potential panel burden to participate in another survey, a fourth round was considered to be unwarranted.

Level of importance scale. Of the total 98 statements, 75 statements were rated as having a high level of importance – median 7 (IQR 6–7); 14 statements were rated as having a moderate level of importance – median 6 (IQR 5–7); and nine statements were rated as having a low level of importance – median 4 (IQR 4–6)–6 (IQR 4–6; Table S1).

Differences between groups. The panel consisted of four groups representing nursing stakeholders: advisory group, course stakeholders, practice stakeholders and course graduates, and it was of interest whether their responses differed. Comparison was made between the groups based on domain by stakeholder group mean scores in respect of their responses to the level of importance scale. No statistically significant differences were found between the four groups' mean rank responses (Table 3).

The panel consisted of participants from adult and paediatric intensive care, cardiac and critical care settings. Given the diverse panel backgrounds, it was also of interest whether panel responses differed between settings, in particular between the adult and paediatric practice settings. Comparison was made between these two groups, and there were no statistically significant differences

Table 3 Comparison round III mean rank responses for level of importance in each domain. (a) Stakeholder groups: advisory group (n = 19), course coordinators (n = 15), graduates (n = 11), practice group (n = 26). (b) Adult (n = 64) and paediatric (n = 8) critical care groups

(a) Domain	H or χ^2	df	p-value*
Patient- and family-centred care	0·56	3	0·91
Quality of care and patient safety	4·33	3	0·23
Resuscitation	0·89	3	0·83
Assessment, monitoring and data interpretation	2·94	3	0·40
Critical care management	2·49	3	0·48
Teamwork and leadership	2·94	3	0·40

(b) Domain	Z	p-value†
Patient- and family-centred care	−0·14	0·89
Quality of care and patient safety	−0·40	0·69
Resuscitation	−2·52	0·01
Assessment, monitoring and data interpretation	−0·72	0·47
Critical care management	−1·43	0·15
Teamwork and leadership	−1·06	0·29

*Kruskal–Wallis test; df, degrees of freedom.
†Mann–Whitney U-test (2 tailed).

between the two groups' mean rank responses for level of importance for five of the six domains (see Table 4). A statistically significant difference (p = 0·01) was found for the resuscitation domain. This could be explained by one statement within the domain where paediatric nurses indicated that 'Facilitates family presence during resuscitation' was of significantly higher importance (p = 0·008).

Level of practice scale. The second rating scale comprised five categories of level of clinical practice. The majority of the panel rated graduate level of practice as 'demonstrates independently' for 73 statements and 'teaches or supervises others' for seven statements. These were considered the highest level of practice. Of those 80 statements, there were three statements where 75% or more of the panel agreed on the category. These were: 'Individualises emotional and psychological support for the patient and family', 'The patient with acute coronary syndrome' (term used to describe symptoms attributed to obstruction of the coronary arteries and includes angina and myocardial infarction) and 'The patient with shock'. For 77 statements, between 50–75% of the panel agreed on the category. For the remaining 18 statements, there was no category selected by 50% or more of the panel (Table S2).

Critical care course graduate practice standards. The final steps to determine the statements for the graduate practice standards were to combine panel ratings for both scales, delete further repetition and use panel suggestions and comments to refine statement wording. The statements, within domains, are presented in a structured format using three levels of practice standards (See Box 2). Note that this was a final step undertaken by the researchers in the interpretation process (not determined *a priori*). The levels do not infer level of practice; they only define the process used to categorise the panel support for the standards and reflect three levels of panel support.

For one statement in the domain of 'Critical illness management', under the section 'Care of special populations Neonatal patients', the median panel rating for level of importance was <4 (IQR 2–5). The statement was not included. The graduate practice standards are presented in Table 4.

Box 2. Three levels of graduate practice standards

Level 1: for statements with high level of importance rating of median 7 and panel rating >50% for level of practice category 'demonstrates independently' and/or 'teaches or supervises others'
Level 2: for statements with moderate level of importance rating of median ≥6 (IQR 5–7) and panel rating of the highest percentage for level of practice category 'demonstrates independently'
Level 3: for statements with low level of importance rating of median range 4 (IQR 4–6)–6 (IQR 4–6) and panel highest percentage rating for level of practice category 'demonstrates independently'

Discussion

The study findings have revealed practice standards for graduates of critical care nurse education based upon the Australian context. These standards, categorised into three levels of practice, are considered to be appropriate for RNs who have completed a graduate-level critical care programme. The standards clearly indicate a practice outcome level by the practitioner who can provide nursing care for a variety of critically ill patients in most contexts, using a patient and family-focused approach.

In considering these findings in an international context, it is worthwhile comparing the study findings with other standards or frameworks. In Finland, an instrument was designed to assess basic competence in intensive and critical care nursing rather than nursing practice outcomes follow-

Table 4 Graduate practice standards

Domain: A patient and family focused approach to care

Level 1

- Promotes a compassionate and therapeutic environment for the well-being of the patient and family
- Communicates effectively with the patient and family including patients who are intubated/nonverbal
- Involves patients and families in decisions about care and treatment
- Assists families to adapt to the critical care environment
- Acts as a patient and family advocate
- Protects patient and family dignity
- Protects patient and family privacy and confidentiality
- Demonstrates respect of the patient and family's cultural and religious beliefs
- Facilitates and supports family choices to be present at the patient bedside
- Provides effective nursing management for the patient and family requiring end of life care

Level 2

- Individualises socio-emotional support for the patient and family
- Provides patient and family education
- Addresses patient and family ethical concerns

Domain: Quality of care and patient safety

Level 1

- Identifies and reports unsafe, inappropriate, incompetent practice
- Provides safe and effective practice in the administration of drugs and therapeutic interventions
- Identifies and minimises risk of critical incidents and adverse events
- Complies with infection control measures
- Communicates effectively in the multidisciplinary team
- Identifies and reports environmental hazards and promotes safety for patients, families and staff
- Demonstrates effective use and knowledge of technology/biomedical equipment

Level 2

- Incorporates research evidence into practice
- Ensures continuity of care from patient admission to discharge/transfer
- Suggests changes to policy/protocols/guidelines

Domain: Resuscitation

Level 1

- Anticipates, identifies and responds effectively to clinical deterioration
- Provides effective nursing management for the patient requiring airway management
- Provides effective nursing management for the patient requiring cardiopulmonary resuscitation
- Effectively participates as a member of the resuscitation team
- Provides effective nursing management for the patient postresuscitation
- Safely transports the critically ill patient

Level 2

- Facilitates family presence during resuscitation

Domain: Assessment, monitoring and data interpretation

Level 1

- Effectively prioritises patient care needs
- Anticipates, monitors, recognises and responds to trends in physiological variables
- Provides effective nursing management of invasive patient monitoring
- Gathers, analyses and integrates data from a variety of sources (technological and patient derived) to inform clinical decision-making
- Undertakes a comprehensive physical, mental and socio-emotional patient assessment

Domain: Critical illness management

Level 1

- Requiring intravenous fluids
- Requiring vasoactive drugs
- Requiring blood products
- Requiring analgesia
- Requiring sedation
- With or at risk of delirium

Respiratory Care

Level 1

- Requiring oxygen therapy
- Requiring noninvasive mechanical ventilatory support
- Requiring invasive mechanical ventilation
- Weaning from mechanical ventilation
- Requiring intercostal catheters/pleural drains
- With chronic respiratory failure and mechanical ventilation

Cardiac Care

Level 1

- With arrhythmias
- With acute coronary syndrome
- With heart failure
- Requiring cardiac pacing

Level 2

- Pre- and/or postcardiac surgery

Level 3

- Requiring interventional cardiology
- With a mechanical assist device

Shock and sepsis care

Level 1

- With sepsis
- With shock
- With electrolyte, glucose, acid–base and blood gas disturbances
- With gastrointestinal dysfunction
- At risk of or actual altered skin integument
- With multiorgan failure
- With altered haematological function

Renal and hepatic care

Level 1

- With renal failure
- Requiring renal replacement therapy
- With liver failure

Level 3
- Postorgan transplantation

Surgical and trauma care
Level 1
- With altered level of consciousness
- With raised intracranial pressure
- With trauma
- With comorbidities following complex surgery
- Who is a potential organ and tissue donor

Level 2
- Acute spinal cord injury
- Thermal injury

Care of special populations
Level 1
- Culturally and linguistically diverse patients

Level 2
- Bariatric patients
- Mental health patients

Level 3
- Obstetric patients
- For adult critical care nurses: Paediatric patients

Domain: Teamwork and leadership
Level 1
- Recognises own scope of practice
- Acts as a positive role model
- Takes a collaborative approach to decision-making
- Recognises and actively manages own stress and supports others
- Effectively manages and coordinates the care of a variety of patients

Level 2
- Supports other staff to enable delivery of effective care
- Effectively engages in bedside teaching

Level 3
- Performs in the ACCESS/Admissions/Resource Nurse Role
- Acts as Shift Coordinator/Team Leader

Supervises, and delegates to others, the delivery of patient care

ing a critical care education programme (Lakanmaa *et al.* 2014a). In Cyprus, broad competencies were developed to inform postgraduate critical care nursing curricula rather than articulate graduate practice outcomes (Hadjibalassi *et al.* 2012). Therefore, these two instruments were not included in the following comparison. There are similarities in the domains, subdomains and competencies articulated by the Australian, UK (Critical Care Networks-National Nurse Leads 2013) and European (European federation of Critical Care Nursing associations – EfCCNa 2013) sets of competencies or practice standards. All have built on the expected RN competencies and addressed core areas of critical care nursing practice. Care of the critically ill obstetric and mental health patients was not identified in the competencies expected of the critical care nurse in any of the standards. One statement in the graduate practice standards specifically identified that in Australia adult critical care nurses were not expected to be able to independently care for critically ill paediatric patients. This was not articulated in either of the other standards. This was not surprising for the UK standards as they were explicitly developed for adult critical care nurses. There were similarities that existed across the three standards, which was expected given that the intensive care nurse practice contexts are similar in environment, patient mix, staffing and scope (Gill *et al.* 2012).

In the European and UK frameworks, the competency statements have been articulated in greater detail than the statements in this study. This difference in approach to describing the competencies in detail may be explained by the UK framework's focus on adult intensive care. In the UK, there is a separate set of standards for the care of critically ill children, including, in an appendix, recommendations for a nationally consistent paediatric intensive care education programme for nurses (The Paediatric Intensive Care Society 2010). The European framework focus also appears to be intensive care. In Europe, it appears that the terms 'critical care' and 'intensive care' have been used synonymously (European federation of Critical Care Nursing associations 2004, Benbenishty *et al.* 2005, Fulbrook 2010, Fulbrook *et al.* 2012). The Australian practice standards reflect expectations of graduates across a variety of critical care environments that include adult and paediatric intensive care, cardiac care, tertiary, secondary and regional critical care units.

In addition to descriptions of competencies to be demonstrated in practice, the UK framework also describes the associated knowledge to be demonstrated through discussion between assessor and student. Both the European competencies and the Australian practice standards describe practice outcomes only. Differences also appear to exist in the level of practice that has been articulated. The level of graduate practice identified in this study most closely matches the UK step 2 competencies. The European competencies and the UK step 3 competencies (articulating UK critical care education outcomes) describe a more advanced practice level, of the team leader, being a resource to others and supporting junior staff. In this study, we have identified that Australian graduate outcomes are expected to be for a practitioner who can independently care for most critically ill patients in a variety of contexts. In more advanced practice roles such as team leader and being a resource to others, the expected graduate level of practice was 'demonstrates under supervision' or 'has knowledge of or describes'. This reflects expectations for Australian graduate outcomes that are less advanced than in Europe. Possible explanations to account for these

differences include that it may be that Australian nurses undertake critical care courses earlier in their career than nurses in Europe. As the European standards were developed using a single method of reviewing expert feedback as opposed to the four-step approach adopted for this study, it is likely that there may be more variability to actual practice than we have found in the Australian standards. Identifying why these differences exist warrants further exploration.

Expectations around graduate scope of practice also differ. European and UK critical care education graduates are expected to demonstrate competency in some of the more specialised areas, such as managing critically ill patients following cardiac surgery, with burns and, in the UK competencies, patients requiring trauma rehabilitation. Competencies not described in the UK or European frameworks but included in the Australian results are the management of cardiac patients with heart failure or acute coronary syndrome. This is not surprising given the broader critical care context in Australia.

The practice standards identified in this research have defined the scope for Australian critical care nurse education graduate-level practice. Graduates are expected to be able to independently care for critically ill patients in the majority of contexts, with a number of contexts explicitly identified as being beyond the scope of practice for the graduate. These include the following: more highly developed skills in providing socio-emotional support to patients and families, incorporation of evidence to practice, specialist post-operative care, specialist cardiac nursing and care of patient groups such as mental health patients, obstetric patients and for adult critical care nurses, the care of paediatric patients. This is not to say graduates are not able to work within these environments but will require further experience and support to transition to the level of independent practice. In the area of teamwork and leadership, it is clear that while graduates should act as positive role models, participate in decision-making and manage the care of a small group of patients, it is not reasonable to expect new graduates to take on distinct team leader roles in the critical care environment. Having knowledge of or describing the skills involved in shift coordination, admissions roles and supervision of others is considered sufficient. Graduates will be able to build on that knowledge and gain experience to develop skills in these areas in subsequent months and years.

It was interesting that while there was feedback from some of the panel members that their expected graduate practice outcome may depend on the award level, in fact there was panel agreement about the level of graduate practice outcome for a critical care qualification. Such delineation of graduate scope of practice is an important study finding. The practice outcomes identified through this study do align with graduate certificate or diploma level education (Australian Qualifications Framework Council 2013), which is where specialist nurse practice is most often offered throughout the world. While the focus in courses is producing clinically competent graduates who can manage a variety of critically ill patients, the outcomes do not reflect leaders in the critical care context. If graduate education qualifications are to be modelled on a master level qualification, it might be perceived that there is a gap in the preparation of critical care nurse leaders (Pirret 2007). Areas for further research include specific educational approaches for specialist level critical care practice development and further exploration of the profession's expectations of master level practice outcomes.

The study findings provide a definition for the Australian professional health workforce standards recommendations that at least 50% of nurses working in an intensive care unit should hold a critical care qualification (Australian College of Critical Care Nurses 2006, The Intensive Care Society 2007, Australian Council on Healthcare Standards 2011). Up until now, there have been varying interpretations of what comprises a 'critical care qualification', and these findings can now be used to provide a consistent interpretation. This may be achieved by communicating our findings to inform the workforce standards for intensive care units (Australian College of Critical Care Nurses 2003, College of Intensive Care Medicine of Australia & New Zealand 2010, Australian Council on Healthcare Standards 2011).

The graduate level of practice has been identified as independently caring for critically ill patients in most contexts, but not undertaking critical care nurse team leader roles. This differs from the Competency Standards for Specialist Critical Care Nurses (Australian College of Critical Care Nurses 2002), which have been widely used for critical care nurse education curricula development and as a basis for student clinical assessment (Aitken *et al.* 2006, Gill *et al.* 2013a). The Competency Standards articulate the standards for the specialist level or the experienced nurse leader in critical care practice and have been modified for use in clinical practice assessment (Gill *et al.* 2006, 2013a). With specific critical care nurse education graduate practice standards identified, course providers can use these standards to achieve a greater consistency in graduate practice outcomes.

The study has limitations that need to be addressed. Although the Australian critical care nurse education practice standards have been built on a strong methodological basis study, limitations include the researchers' use of subjective judgement for interpretation of the eDelphi data.

For example, panel agreement cut points were selected at 75% and 50% to aid categorisation of data. The next step will be to interpret the identified standards into a clinical assessment tool to measure graduate practice standards.

The majority of panel members being from the adult intensive care practice setting might also be considered a limitation to the study design. While the panel membership reflected the overall Australian critical care nurse population (Australian Health Workforce Advisory Committee 2002), the views of other subspecialty groups, particularly from the paediatric intensive care setting, were less well represented. The paediatric setting was included in this study because some Australian critical care units cater for adult and paediatric patients. The one statistically significant difference found was not surprising given the family-centred philosophy embraced by paediatric nurses (Latour & Haines 2007). Although no other statistically significant differences were identified, further research may reveal other differences between adult and paediatric critical care graduate nurse practice standards.

Conclusion

An eDelphi technique was used to identify critical care nurse education graduate practice standards in Australia. The national panel members were critical care nurses who represented four key stakeholder groups. Over the three eDelphi survey rounds, the panel members identified three levels of graduate practice standards. Critical care nurse education graduates are expected to be able to independently care for critically ill patients in the majority of contexts, with a number of contexts explicitly identified as being beyond the graduate scope of practice. In particular, in this study we found it is beyond the scope of Australian graduates to take on distinct leadership roles in the critical care environment, which differs from the UK and European expectations of graduates. The Australian practice standards reflect the views of health consumers and critical care nursing stakeholders. Inclusion of health consumer views to inform the standards development distinguishes these critical care nurse education practice standards from the UK and European critical care competencies.

Relevance to clinical practice

The graduate practice standards provide a critical care qualification definition for professional health workforce standards. Course providers will be able to use the graduate clinical practice standards to achieve consistent graduate practice outcomes. Further work to develop a clinical practice assessment tool based on the practice standards will provide a valid and consistent approach to measuring graduate practice outcomes. This process offers a model that may be useful for other graduate specialty education programmes both within Australia and internationally.

Acknowledgements

The authors thank the experts who participated in the study.

Disclosure

The authors have confirmed that all authors meet the ICMJE criteria for authorship credit (www.icmje.org/ethical_1author.html), as follows: (1) substantial contributions to conception and design of, or acquisition of, data or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content and (3) final approval of the version to be published.

Funding

This study received no funding.

Supporting information

Additional Supporting information may be found in the online version of this article:

Table S1 Round three statements level of importance ranked by median within each domain.

Table S2 Categories of level of practice responses and percentages.

References

Aitken L, Currey J, Marshall A & Elliott D (2006) The diversity of critical care nursing education in Australian universities. *Australian Critical Care* **19**, 46–52.

American Association of Critical Care Nurses (n.d.) Available at: http://www.aacn.org/dm/mainpages/certificationhome.aspx (accessed 10 October 2013).

Australian College of Critical Care Nurses (2002) *Competency Standards for Specialist Critical Care Nurses*, 2nd edn. Cambridge Media, Perth, WA.

Australian College of Critical Care Nurses (2003) *Position Statement on Intensive Care Nurse Staffing*. Available at: http://www.acccn.com.au/images/stories/downloads/staffing_intensive_care_nursing.pdf (accessed 02 March 2011).

Australian College of Critical Care Nurses (2006) *ACCCN Position Statement on the Provision of Critical Care Nurse Education*. Available at: http://www.acccn.com.au/images/stories/downloads/provision_CC_nursing_edu.pdf (accessed 02 March 2011).

Australian Council on Healthcare Standards (2011) *Intensive Care Clinical Indicators User Manual*. Available at: http://www.achs.org.au/ (accessed 01 March 2011).

Australian Council on Healthcare Standards (2012) *National Safety and Quality Health Service Standards Program*. Available at: http://www.safetyandquality.gov.au/publications/national-safety-and-quality-health-service-standards/ (accessed 02 December 2013).

Australian Health Workforce Advisory Committee (2002) *The Critical Care Nursing Workforce in Australia 2001–2011*. Available at: http://www.ahwo.gov.au/documents/Publications/2002/The critical care nurse workforce in Australia.pdf (accessed 01 March 2011).

Australian Qualifications Framework Council (2013) *Australian Qualifications Framework*, 2nd edn. Australian Qualifications Framework Council. Available at: http://www.aqf.edu.au/Portals/0/Documents/2013%20docs/AQF%202nd%20Edition%20January%202013.pdf (accessed 01 April 2013).

Benbenishty J, DeKeyser Ganz F & Adam S (2005) Differences in European critical care nursing practice: a pilot study. *Intensive and Critical Care Nursing* **21**, 172–178.

Bray K, Wren I, Baldwin A, St. Ledger U, Gibson V, Goodman S & Walsh D (2010) Standards for nurse staffing in critical care units determined by: The British Association of Critical Care Nurses, The Critical Care Networks National Nurse Leads, Royal College of Nursing Critical Care and In-flight Forum. *Nursing in Critical Care* **15**, 109–111.

Canadian Association of Critical Care Nurses (2009) *Standards for Critical Care Nursing Practice*. Canadian Association of Critical Care Nurses, London, ON. Available at: http://www.caccn.ca/ (accessed 01 March 2011).

Canadian Nurses Association (2011) *2012 Certification by Exam How to Write the CNA Certification Exam General Application Guide for Certification by Exam*. Canadian Nurses Association. Available at: http://www.cna-aiic.ca/CNA/ (accessed 15 June 2011).

Chaffin WW & Talley WK (1980) Individual stability in Delphi studies. *Technological Forecasting and Social Change* **16**, 67–73.

College of Intensive Care Medicine of Australia and New Zealand (2010) *Minimum Standards for Intensive Care Units*. Available at: http://www.cicm.org.au/cmsfiles/IC-01 Minimum Standards For Intensive Care Units – Current September 2011.pdf (accessed 28 March 2011).

Collins S & Hewer I (2014) The impact of the Bologna process on nursing higher education in Europe: a review. *International Journal of Nursing Studies* **51**, 150–156.

Creswell J (2009) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*, 3rd edn. Sage Publications Inc, Thousand Oaks, CA.

Critical Care Networks-National Nurse Leads (2013) *National Competency Framework for Adult Critical Care Nurses*. Available at: http://www.cc3n.org.uk/competency-framework/45779-77310 (accessed 01 April 2013).

Critical Care Nurses' Section (2005) *Minimum Guidelines for Intensive Care Nurse Staffing in New Zealand*. New Zealand Nurses' Organisation, Wellington, New Zealand. Available at: http://www.nzno.org.nz/ (accessed 01 March 2011).

Delbecq A, Gustafson D & Van de Ven A (1986) *Group Techniques for Program Planning: A Guide to Nominal Group and Delphi Processes*. Green Briar Press, Middleton, WI.

European federation of Critical Care Nursing associations (2004) *Position Statement on Post-registration Critical Care Nursing Education within Europe*. Available at: http://www.efccna.org/ (accessed 15 June 2011).

European federation of Critical Care Nursing associations (2007) *Position Statement on Workforce Requirements within European Critical Care Nursing*. European federation of Critical Care Nursing associations. Available at: http://www.efccna.org/ (accessed 01 March 2011).

European federation of Critical Care Nursing associations – EfCCNa (2013) *EfCCNa Competencies for European Critical Care Nurses*. Available at: http://www.efccna.org/images/stories/publication/competencies_cc.pdf (accessed 01 April 2013).

Fulbrook P (2010) Critical care or intensive care? *Connect: The World of Critical Care Nursing* **7**, 107.

Fulbrook P, Albarran JW, Baktoft B & Sidebottom B (2012) A survey of European intensive care nurses' knowledge levels. *International Journal of Nursing Studies* **49**, 191–200.

Gill F, Leslie G & Southerland K (2006) Evaluation of a clinical performance assessment tool (CPAT) within a critical care context. *Australian Critical Care* **19**, 105–113.

Gill F, Leslie G, Grech C & Latour J (2012) A review of critical care nursing staffing, education and practice standards. *Australian Critical Care* **25**, 224–237.

Gill F, Leslie G, Grech C & Latour J (2013a) An analysis of Australian graduate critical care nurse education. *Collegian*. [Epub ahead of print].

Gill F, Leslie G, Grech C & Latour J (2013b) Health consumers' experiences in Australian critical care units: postgraduate nurse education implications. *Nursing in Critical Care* **18**, 93–102.

Gill F, Leslie G, Grech C & Latour J (2013c) Using a web-based survey tool to undertake a Delphi study: application for nurse education research. *Nurse Education Today* **33**, 1322–1328.

Hadjibalassi M, Papastavrou E, Lambrinou E, Tsangari H, Athini E, Georgiou E, Nicolaou E & Merkouris A (2012) Development of an instrument to determine competencies of postgraduate ICU nurses in Cyprus. *Nursing in Critical Care* **17**, 255–264.

IBM Corp (2012) *IBM SPSS Statistics for Windows, Version 21.0*, 19th edn. IBM Corp., Armonk, NY.

Keeney S, McKenna H & Hasson F (2010) *The Delphi Technique in Nursing and Health Research*. Wiley, Chichester.

Lakanmaa R-L, Suominen T, Perttilä J, Ritmala-Castrén M, Vahlberg T & Leino-Kilpi H (2014a) Basic competence in intensive and critical care nursing: development and psychometric testing of a competence scale. *Journal of Clinical Nursing* **23**, 799–810.

Lakanmaa R-L, Suominen T, Perttilä J, Ritmala-Castrèn M, Vahlberg T & Leino-Kilpi H (2014b) Graduating nursing students' basic competence in intensive and critical care nursing. *Journal of Clinical Nursing* **23**, 645–653.

Latour JM & Haines C (2007) Families in the ICU: do we truly consider their needs, experiences and satisfaction? *Nursing in Critical Care* **12**, 173–174.

Liamputtong P (2010) *Research Methods in Health: Foundation for Evidence Based Practice*. Oxford University Press, South Melbourne, Vic..

Lusk B, Russell RL, Rodgers J & Wilson-Barnett J (2001) Preregistration nursing education in Australia, New Zealand, the United Kingdom, and the United States of America. *Journal of Nursing Education* **40**, 197–202.

Millberg L, Berg L, Lindstrom I, Petzall K & Ohlen J (2011) Tensions related to implementation of postgraduate degree projects in specialist nursing education. *Nurse Education Today* **31**, 283–288.

Miller G (1990) The assessment of clinical skills/competence/performance. *Academic Medicine* **65**, s63–s67.

Nursing and Midwifery Board of Australia (n.d.) Available at: http://www.nursingmidwiferyboard.gov.au/ (accessed 06 May 2013).

Okoli C & Pawlowski S (2004) The Delphi method as a research tool: an example, design considerations and applications. *Information & Management* **42**, 15–29.

Pirret A (2007) Master's level critical care nursing education: a time for review and debate. *Intensive and Critical Care Nursing* **23**, 183–186.

Presser S, Couper MP, Lessler JT, Martin E, Martin J, Rothgeb JM & Singer E (2004) Methods for testing and evaluating survey questions. *Public Opinion Quarterly* **68**, 109–130.

Price A (2013) National critical care competency framework. *Nursing in Critical Care* **18**, 103–104.

Tertiary Education Quality and Standards Agency (2011) *Higher Education Standards Framework (Threshold Standards)*. Available at: http://www.comlaw.gov.au/Details/F2012L00003/Download (accessed 21 June 2013).

The CoBaTrICE Collaboration (2006) Development of core competencies for an international training programme in intensive care medicine. *Intensive Care Medicine* **32**, 1371–1383.

The Intensive Care Society (2007) *Standards for Intensive Care Units*. The Intensive Care Society. Available at: http://www.ics.ac.uk/ (accessed 02 March 2011).

The Mid Staffordshire NHS Foundation Trust Public Inquiry (2013) *Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry Executive Summary, London*. Available at: http://www.midstaffspublicinquiry.com/sites/default/files/report/Executive summary.pdf (accessed 21 June 2013).

The Paediatric Intensive Care Society (2010) *Standards for the Care of Critically Ill Children*. The Paediatric Intensive Care Society, London. Available at: http://www.ukpics.org.uk/ (accessed 30 October 2011).