Learning needs analysis comparing novice and expert opinion, to develop a simulation-based intensive care unit training programme

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ABSTRACT

A learning needs analysis was performed using an online survey to establish the most appropriate curriculum for a simulation-based intensive care training programme for junior physiotherapists. Perceptions were compared between an intensive care-naïve 'novice' group of rotational physiotherapists from a single tertiary teaching hospital in Melbourne, Australia, and an 'expert' group of senior intensive care physiotherapists from across Australia. The learning needs analysis survey involved two questions. Question one required participants to rank assessment topics for perceived training importance from 1 (greatest) to 6 (least). Question two required participants to select which treatment topics from a list (total 15) they felt important for further training. 14/15 (93%) of the novice group, and 15/16 (94%) of the expert group completed the surveys. The highest ranked assessment topics for both groups were assessing intubated, ventilated patients and assessment of haemodynamically unstable patients. The highest rated treatment topics for both groups were lung hyperinflation, and rehabilitation. Based on these results and practical considerations, the subsequently developed simulation-based intensive care training programme comprised four modules: general assessment of an intensive care unit patient, assessment of haemodynamically unstable patients, positioning, and lung hyperinflation.

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INTRODUCTION

The use of immersive simulation in health professional training is growing at a dramatic rate (Blackstock and Jull 2007, Bradley 2006, Issenberg and Scalese 2007, Jones 2011, Jones and Sheppard 2007, Jones and Sheppard 2011, McGaghie et al 2010, Shoemaker et al 2009). Medical specialties including emergency medicine, intensive care and anaesthesia have been the longest users and continue to lead this growth (Bradley 2006, Issenberg and Scalese 2007, McGaghie et al 2010, Shoemaker et al 2009, Singer et al 2013). Simulation use within nursing education is also increasing worldwide, including in Australia and New Zealand (Brown et al 2012). Other health professionals, including physiotherapists, have been slower to adopt these newer teaching methods (Blackstock and Jull 2007, Gough 2011, Jones 2011, Jones and Sheppard 2007). Simple forms of simulation have been part of physiotherapy training for many years (Blackstock and Jull 2007), with classmates or colleagues acting as standardised patients to enable learning and practising of manual assessment and treatment techniques (Health Workforce Australia 2010). Also, part-task trainers such as resuscitation mannequins have been commonly used to teach CPR skills. There is a growing body of research into many different aspects of simulation use with physiotherapy students (Blackstock et al 2013, Gough 2011, Huhn et al 2008, Jones 2011, Ladyshewsky et al 2000, Watson et al 2012), including an Australian Government report into simulation use in physiotherapy education, prepared by representatives of seven Australian universities (Health Workforce Australia 2010). Despite this, there remains a paucity of literature relating to simulation training for qualified physiotherapists. A search of the literature (Electronic databases searched, to 31st October 2013: Medline, CINAHL, Google Scholar; bibliographies of identified articles hand-searched) found only one peer-reviewed English-language publication relating to simulation training for qualified physiotherapists: a conference report on a nationwide survey of simulation use in the United Kingdom (Gough 2011).

It is common practice in Australia and New Zealand hospitals for recently graduated or inexperienced physiotherapists to rotate through a number of clinical areas to develop their clinical abilities. These rotational physiotherapists often also undertake rostered weekend work in the Intensive Care Unit (ICU).

Prior to 2010, the weekend training programme for rotational physiotherapists at St Vincent's Hospital, Melbourne, consisted of five consecutive days of supervised clinical practice with the ICU Senior Physiotherapist. An internal programme audit in 2008 highlighted the narrow clinical exposure this practice provided for these rotational physiotherapists: they only experienced those clinical presentations present in ICU at the time of their training. Also, there were no formal refresher sessions after the initial five days of training.

In response to this audit, it was decided to develop a modular, simulation-based ICU training programme for the rotational physiotherapists. The proposed programme would consist of four discrete training modules, based on the specific topics determined through a learning needs analysis. Each hour-long module would include three components: an introduction and tutorial to ensure participants had the necessary theoretical knowledge for that topic; a 'bedside' practical session with the mannequin (METI Human Patient Simulator, CAE Healthcare, Canada) to allow practice of relevant technical skills; and an informal debrief, to allow reflection and for discussion of any questions which had arisen. The reflection stage is considered to be key to acquisition of new knowledge and skills, as noted by Sandars (2009, p 686): 'The experience must be interpreted and integrated into existing knowledge structures to become new and expanded knowledge. Reflection is crucial for this active process of learning'. While the programme primarily focused on developing theoretical knowledge and practical skills, the reflection stage was also intended to foster some of the attributes necessary for physiotherapists working in ICU. These attributes included critical analysis, and the ability to assimilate multiple sources of information to arrive at a clinical decision. An additional aim of the programme was to improve the low level of confidence in ICU anecdotally reported by many rotational physiotherapists. This programme was intended to complement rather than replace the original training (Huhn et al 2008) and also be used as a regular refresher programme. Planned evaluation of the programme consisted of brief surveys of participants' reactions at the completion of each module: level one of Kirkpatrick's model of training programme evaluation (Kirkpatrick 1996).

To determine the specific topic for each module, a learning needs analysis was undertaken investigating the perceived ICU clinical skills most in need of further training. Different methods of performing learning needs analyses are reported in the literature, both general (Kirkpatrick 1977) and specific to health professionals (Harden 1986, Lockyer 1998, Mann 1998). Some are relatively simple, consisting of questionnaires (Dent et al 2008, Lai 2009), while some are complex, multi-faceted approaches (O'Shea and Spike 2005). One method of learning needs analysis includes consideration of both novice and expert opinion (Kirkpatrick 1977). Whilst identifying novices is often relatively easy, identifying experts can be more challenging. There are numerous different methods of determining expertise discussed in the literature, both in general (Dreyfus and Dreyfus 2005, Shanteau et al 2002), and within healthcare (Benner 1984, Boshuizen and Schmidt 1992). There are also numerous studies exploring aspects of expertise within general physiotherapy (Jensen et al 1990), as well as within and between different physiotherapy specialties (Jensen et al 2000, Jensen et al 1992). Within cardiorespiratory physiotherapy, there are studies investigating qualities of expert physiotherapists (Roskell and Cross 2001), clinical reasoning processes of expert physiotherapists (Smith et al 2007, Smith et al 2010) and comparison of novice and expert physiotherapists (Case et al 2000, Dunford et al 2011). Many of these studies reported differences between novice and expert physiotherapists in perceptions, cognitive processes, and behaviours. In contrast, Dunford et al (2011) showed no significant differences between novice and expert physiotherapists providing emergency on-call (primarily cardiorespiratory) physiotherapy in New Zealand hospitals in their responses to an emergency on-call clinical vignette task. There were however statistically significant differences between the groups in their self-rated confidence, self-rated stress, and perceived support required in emergency on-call situations. Despite the large number of studies investigating aspects of expertise, there is a lack of consensus of how exactly to determine expertise, with a number of different approaches used. Many of the studies within cardiorespiratory physiotherapy use experience as a surrogate for expertise (Case et al 2000, Dunford et al 2011, Smith et al 2010), however Case et al (2000) acknowledge that 'experts require something additional to experience to define them' (p 15). According to Shanteau et al (2002, p 254): 'At best, experience is an uncertain predictor of expertise. At worst, experience reflects seniority – and little more'.

This article reports the results of a learning needs analysis, comparing novice and expert opinion, as the first stage in developing a simulation-based ICU training programme for rotational physiotherapists.

METHODS

Participants

All rotational physiotherapists (Novice group, n = 15) at St. Vincent's Hospital were eligible to participate, irrespective of whether they had previously completed the weekend training programme. A convenience sample of experienced ICU physiotherapists (Expert group, n = 16) was recruited from professional contacts known to the author (DS) or other senior members of the St. Vincent's Hospital Physiotherapy Department, from metropolitan tertiary teaching hospitals in three Australian states (Victoria, Queensland, Western Australia). To be eligible, these participants had to be employed as senior ICU physiotherapists in their organisation. This is a variation of the 'Social Acclamation' approach described by Shanteau et al (2002), with our expert respondents identified for their ICU expertise by their employers, rather than their peers (Shanteau et al 2002) or a governing body (Roskell and Cross 2001).

Whilst a number of the expert participants had simulation experience, the majority did not; this was not a consideration in participant recruitment.

Consent

Ethical approval was gained from the St. Vincent's Hospital Human Research Ethics Committee (QA001/10). Informed consent was obtained with the initial survey question: 'Are you happy for the de-identified data collected from this survey to be used in future for research purposes?'

Survey

An online survey was developed (www.surveymonkey.com), which investigated a number of issues relevant to novice physiotherapists working in ICU.

Five demographic questions investigated time since graduation; acute cardiorespiratory clinical experience – general, and ICU-specific (time); ICU-specific in-house education and training (time); and relevant external professional development courses they had undertaken. As well as these demographic questions, the survey had two sections: 'Learning Needs Analysis', and 'ICU Perceptions'.

The learning needs analysis compared 'felt' needs (what participants felt they needed), and 'normative' needs (what

experts felt the participants needed) (Gillam and Murray 1996). The survey introduction described the purpose of the learning needs analysis as 'to identify skills and topics in ICU physiotherapy felt most important for ongoing training and education of junior physiotherapists'. The email containing the survey hyperlink also explained the planned outcome of the project: 'Results from this survey will be used to develop a number of ICU teaching modules using high-fidelity simulation for junior physiotherapists at St Vincent's Hospital, Melbourne'. The learning needs analysis contained two questions, one pertaining to assessment topics, the other to treatment topics. Respondents were asked to rank six assessment topics in order of importance for ongoing training from 1 (most important) to 6 (least important) (Figure 1). Treatment topics were presented as a list of 15 different physiotherapy techniques commonly used in ICU, with respondents selecting as few or as many as they felt further education and training were necessary for (Figure 2). To enable teaching modules to be developed, these treatment topics were divided into five groups of similar techniques: positioning, manual techniques, lung hyperinflation, suctioning, and rehabilitation. The lists of assessment and treatment topics were derived from the existing St Vincent's Hospital ICU physiotherapy competencies. Both assessment and treatment questions allowed respondents to add 'Other' topics.

Figure 1: Assessment topics

1. Which are the most important assessment skills for ongoing training? Please rank the following topics from 1 (most important) to 6 (least important).

	Ranking
Prioritisation of ICU patients	
Assessing acute neurosurgical/head-injured patients	
Assessing haemodynamically unstable patients	
Assessing intubated, ventilated patients	
Assessing mobility of ICU patients	
Assessing ICU patients with tracheostomy	

Any other topics?

The 'ICU Perceptions' section of the survey investigated attributes of physiotherapists working in ICU such as self-confidence, self-rated competence, and experience, related to different aspects of ICU including equipment, physiotherapy techniques, and clinical diagnoses. This section was included to provide a detailed description of the St. Vincent's Hospital rotational physiotherapist cohort, however was not used to develop the simulation-based ICU training programme.

The survey was tested on a cohort of senior (non-rotational) physiotherapists at St. Vincent's Hospital who had worked there as rotational physiotherapists and were therefore familiar with the weekend training programme. This testing was used to determine survey length, as well as ensuring appropriate and unambiguous wording of questions and instructions to respondents (Lockyer 1998, Portney and Watkins 2009, Woodward 1988). A hyperlink to the finalised survey was circulated via internal hospital email to all novice group participants.

Figure 2: Treatment topics

2. Of the techniques listed below which do you feel you need extra education and training for?

- [ ] Positioning intubated patients
- [ ] Positioning head-injured patients
- [ ] Positioning patients with orthopaedic injuries
- [ ] Positioning patients with unilateral CXR changes
- [ ] Percussions
- [ ] Vibrations
- [ ] Manual hyperinflation
- [ ] Ventilator hyperinflation
- [ ] Suctioning - via ETT
- [ ] Suctioning - via trache
- [ ] Suctioning - via nasopharyngeal/guedel
- [ ] Transfers: SOEOB (ventilated)
- [ ] Transfers: Sit -> stand (ventilated)
- [ ] Transfers: Bed -> chair (ventilated)
- [ ] Mobilisation (MOS, ambulation) on ventilator
- [ ] Any additional techniques?

The expert group survey was based on the novice group survey, with wording modified to make it appropriate to staff in a senior clinical role, with teaching or supervisory responsibilities. Demographic questions were also modified, and one open-ended question added pertaining to staff supervision and teaching experience. The learning needs analysis section introduction also clarified that 'These questions are general – not specific to your hospital'. Otherwise, the content of the survey was identical to the novice group survey. A hyperlink to this survey was then emailed to all expert group participants.

Three reminder emails were sent to all participants during the four-week data collection period. Novice group data collection was undertaken in November 2009, and expert group data collection was undertaken in January 2010.

Data Analysis

Data analysis was limited to descriptive statistics. Non-parametric assessment topic ranking data was described by medians and inter-quartile ranges. Treatment topics were scored as a number (%) of respondents selecting each topic and graphed for visual comparison. Due to the small sample, visual analysis of results, as well as practical considerations, were used to select the final topics for the ICU training programme. Data were collated and analysed using Microsoft Excel 2007.

RESULTS

Demographics – *Novice Group*

14/15 (93%) surveys were completed by the novice group. The majority of respondents had either '6-12 months' (5/14,

36%), or '12-24 months' (4/14, 29%) of experience. Only 3/14 participants (21%) had greater than two years experience, one of whom (7%) had greater than three years experience.

Expert Group

15/16 (94%) of surveys were completed by the expert group. The majority of respondents had more than 10 years clinical experience (9/15, 60%), with no respondents having less than 2 years. There was a similar result for ICU-specific clinical experience, with 8/15 (53%) having more than 10 years ICU experience, and only 2/15 (13%) respondents having less than 2 years ICU experience. More than half of the respondents had formal post-graduate qualifications, either a Doctorate (4/15, 27%), a Masters (3/15, 20%) or a Post-Graduate Diploma (1/15, 7%). The remaining respondents (7/15, 47%) reported no post-graduate qualifications.

Assessment Topics

The two highest ranked assessment topics from both groups were: assessing intubated, ventilated patients, and assessment of haemodynamically unstable patients. The ordered rankings of both groups for each assessment topic are outlined in Tables 1 and 2.

Table 1: Ranked Assessment Topics – Novice Group

Overall Ranking	Assessment Topic	Median (IQR) Ranking
1	Assessing haemodynamically unstable patients	2.5 (2 - 3.75)
2	Assessing intubated, ventilated patients	3 (1.25 - 4)
3	Assessing acute neurosurgical / head-injured patients	3 (2.25 - 4)
4	Assessing ICU patients with tracheostomy	3.5 (2 - 5)
5	Prioritisation of ICU patients	5 (2 - 6)
6	Assessing mobility of ICU patients	5 (4.25 - 6)
Additional Topics*	Assessment of drips, drains and lines; Assessment of imaging and pathology results	

* Entered by respondents

Treatment Topics

Results for individual treatment topics can be seen in Table 3, as well as pooled treatment topic groups (Figure 3). The two highest ranked treatment topic groups were lung hyperinflation (79% of all respondents), and rehabilitation (74% of all respondents).

Additional treatment topics suggested by the novice group were prone positioning and medications. Additional treatment topics suggested by the expert group were orthopaedic restrictions, Intermittent Positive Pressure Breathing (IPPB) and saline instillations.

DISCUSSION

Both novice and expert group respondents showed a high level of agreement for the four most important topics for further training for physiotherapy assessment and treatment of patients in ICU. Of the two assessment topics, assessing

Table 2: Ranked Assessment Topics – Expert Group

Overall Ranking	Assessment Topic	Median (IQR) Ranking
1	Assessing intubated, ventilated patients	1 (1 - 2)
2	Assessing haemodynamically unstable patients	3 (2 - 3)
3	Prioritisation of ICU patients	3 (2 - 3.5)
4	Assessing ICU patients with tracheostomy	4 (4 - 5)
5	Assessing mobility of ICU patients	5 (4 - 5)
6	Assessing acute neurosurgical / head-injured patients	6 (3.5 - 6)
Additional Topics*	Assessment of non-intubated patients, including the need for non-invasive ventilation; Assessing paediatric patients; Medical assessment in multi-organ failure, musculoskeletal assessment, and assessment of respiratory failure and vital capacity.	

* Entered by respondents

intubated, ventilated patients is clearly a very important skill, as it is relevant to many patients within the ICU. However, assessment of haemodynamically unstable patients has both specific and general application in ICU patients. As well as being relevant to those patients with a primarily cardiac diagnosis, it also has important wider application: many patients with non-cardiac diagnoses such as septic shock often exhibit severe haemodynamic instability. In addition, haemodynamic instability is a major contraindication to many physiotherapy treatment techniques (Paratz 1992, Stiller 2000) – including all of the treatment topics listed in this study. The ability to establish a patient's haemodynamic stability is therefore vital to enable safe patient treatment (Paratz 1992, Stiller 2000). As one of the expert group respondents commented, 'identifying the ... haemodynamically unstable patient among any other group from a safety point of view would be up near the top'. Whether respondents chose this topic for its specific relevance to cardiac patients or its general applicability to establishing haemodynamic stability of all ICU patients was not clear – respondents only ranked the assessment topics, and were not asked to justify their responses. There is potential overlap between respondents' perceptions of 'assessing intubated, ventilated patients' and 'assessing haemodynamically unstable patients', which highlights the complex nature of many ICU patients. We recognise that a broad range of complementary assessment skills are necessary for physiotherapists working in ICU. However, our aim was to find the two assessment topics perceived to be most important, to develop an ICU training programme. For this reason, we asked respondents to rank assessment topics by relative importance, rather than using a more restrictive method such as selecting a limited number of topics from the list.

The two highest rated treatment topic groups were the specific technical skills of lung hyperinflation and the broader collection

Table 3: Treatment topic responses, by group

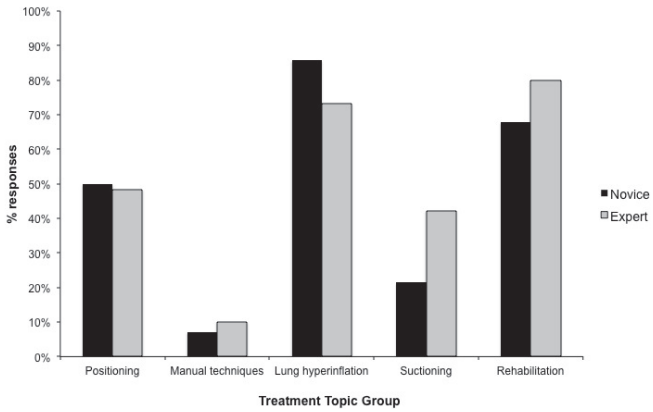
Treatment topics	Novice Group (n = 14)	Expert Group (n = 15)
Positioning intubated patients	5 (36%)	8 (53%)
Positioning head-injured patients	12 (86%)	9 (60%)
Positioning patients with orthopaedic injuries	6 (43%)	6 (40%)
Positioning patients with unilateral CXR changes	5 (36%)	6 (40%)
Percussions	1 (7%)	2 (13%)
Vibrations	1 (7%)	1 (7%)
Manual hyperinflation	12 (86%)	9 (60%)
Ventilator hyperinflation	12 (86%)	13 (87%)
Suctioning – via ETT	2 (14%)	5 (33%)
Suctioning – via trache	3 (21%)	3 (20%)
Suctioning – via nasopharyngeal / guedel	4 (29%)	11 (73%)
Transfers: SOEOB (ventilated)	9 (64%)	12 (80%)
Transfers: Sit → stand (ventilated)	9 (64%)	10 (67%)
Transfers: Bed → chair (ventilated)	9 (64%)	12 (80%)
Mobilisation (MOS, ambulation) on ventilator	11 (79%)	14 (93%)
Additional topics*?	1† (7%)	2‡ (13%)

CXR: Chest x-ray; ETT: endo-tracheal tube; Trache: tracheostomy; SOEOB: Sit on edge of bed; MOS: March on spot; * Number of responses listing additional topics; † Novice additional topics: Prone positioning – indications and technique with lines and ventilator; medications; ‡ Expert additional topics: Orthopaedic restrictions, IPPB (intermittent positive pressure breathing), saline instillations; tracheostomy weaning.

of techniques and skills which comprise the rehabilitation topics. Specific application of lung hyperinflation techniques will vary between patients depending on their clinical status, goals of treatment and physiological response. However, the technique itself is still relatively easy to reproduce and teach in a simulation environment, and manual hyperinflation has been taught for many years using part-task trainers (Blackstock and Jull 2007). Whilst simulation techniques are not reported as being used in the acquisition of ventilator hyperinflation skills in Australia and New Zealand (Hayes et al 2011), there would appear to be no reason why they could not. In contrast, a number of practical factors make all of the rehabilitation topics difficult to reproduce appropriately in a simulation environment. These include both patient-related factors and the significant practical and fidelity issues associated with attempting to mobilise a large, heavy, inanimate, cable-laden mannequin – which would potentially outweigh the learning benefits. Therefore, the next highest ranked treatment topic group – 'positioning' (49% of all respondents) – was selected as the second treatment topic for the ICU training programme. There are currently no commercially available mannequins suitable for the rehabilitation topics, however one alternative strategy may be the use of standardised patients.

While visual analysis of the data showed generally good agreement between groups for both assessment and treatment

Figure 3: Percentage of positive responses for treatment topics (grouped) requiring further training, for novice and expert respondents.



questions, there were a number of apparent differences. The assessment topic 'assessment of acute neurosurgical / head-injured patients' – was the third-ranked topic for the novice group, but the sixth-ranked (i.e. lowest) ranked topic for the expert group. This may reflect a desire in the novice group for further training in areas of perceived higher clinical acuity, which are potentially more challenging and unfamiliar to those with limited ICU experience. This reason may also account for the low ranking by the expert group – the topic is only applicable to a small sub-group of those patients seen in ICU.

One treatment topic which demonstrated a substantial difference between groups was 'suction – via nasopharyngeal / Guedel'. Four (4/14, 29%) novice respondents felt that this was important for further training, compared to 11/15 (73%) of the expert respondents. There appeared to be minimal difference between groups with the other two topics in this treatment group, both 'suction – via endotracheal tube' (novice group 2/14 (14%) vs expert group 5/15 (33%)), and 'suction – via tracheostomy' (novice group 3/14 (21%) vs expert group 3/15 (20%)). While respondents were instructed to complete the surveys with specific regard to 'ICU physiotherapy skills and topics', there was no requirement to justify their choices. As such, the reason for the difference between groups on this one topic is not apparent. It may be that the expert group feels that this is a more difficult technical skill than the other suction topics and therefore more important for further training. Alternatively, 'suction – via nasopharyngeal / Guedel' is the suction technique most likely to be an important skill for a physiotherapist working outside the ICU. Therefore, it is possible that it is the awareness of this potential wider applicability that caused the expert group to rate it more highly overall.

Our method of comparing novice with expert opinion is a variation on the 'Survey of Needs' approach described by Kirkpatrick (1977, p 22-23): '…the superiors of the supervisors [learners] could be given the same form and asked to identify needs of the supervisors as seen by the "boss"'. As our expert group were not the direct clinical superiors of the novice group, there is also some similarity with the 'Advisory Committee' approach also described by Kirkpatrick (1977).

As well as the modified 'Social Acclimation' approach (Shanteau et al 2002) used to identify our expert respondents, those with

post-graduate qualifications (8/15, 53%) would also satisfy the 'Certification' approach (Shanteau et al 2002). Selecting our expert respondents in this way, rather than purely on experience, accounts for the wide variation in duration of experience in the expert group. For this reason, it is also possible that some of the novice respondents may have had a similar duration of experience to some of the expert respondents.

Our use of online surveys had a number of advantages over other methods of learning needs analysis such as focus groups or interviews (either phone, or face-to-face). The anonymity of a survey may have allowed novice group participants to feel less threatened (Lockyer 1998) and therefore answer more honestly. Also, an online survey allowed us to gather opinions from an expert group spread across three Australian states. A survey-based learning needs analysis was also used by Dent et al (2008) to develop the simulation-based Advanced and Complex Medical Emergency (ACME) Course for emergency medicine fellows. Their survey asked Fellows of the Australasian College of Emergency Medicine to rate sixty topics from 'undesirable' to 'highly desirable' for further continuing professional development, using Likert scales. One of the major reported disadvantages of survey-based needs analysis is poor response rates (Lockyer 1998, Portney and Watkins 2009). With our response rates of 93% for the novice group and 94% of the expert group, we avoided this.

The goal of this study was to develop an ICU training course specifically for the rotational physiotherapists at St Vincent's Hospital. Selecting this cohort as our novice group provided the most accurate description of the 'felt' needs (Gillam and Murray 1996) for the course, similar to the approach described by Dent et al (2008) and Lai (2009). By developing the ICU training programme curriculum specifically for those who would be undertaking it, we hoped to enhance their intrinsic motivation to learn (Mann 1999). This would promote a deeper approach to learning than if the learners had perceived the topics as less relevant to them (Pasquale 2013).

Of the literature relating to simulation programme development (Jones 2011, Seropian 2003, Seropian et al 2004), none deals with training programmes for qualified physiotherapists. The only published physiotherapy-specific study, by Jones (2011), describes a process to develop simulation scenarios for third-year physiotherapy students. Scenario topics were selected by the course developers based on common diagnoses treated by a cardiorespiratory ward physiotherapist. The difference between participants in Jones' (2011) study and those in this study – that of third-year students compared to qualified physiotherapists – is a major reason why the learning needs analysis process was important. It would have been simpler to select topics for the training programme based solely on the experience of the senior physiotherapist responsible for ICU training – termed a 'Dictator' approach (Harden 1986). However, this would have relied heavily on their judgement, taking little account of the ongoing learning which occurs as junior staff gain experience, and potentially better insight into their learning needs. Undergraduate students however, with limited or no experience to draw upon, are likely to have far less insight into this – essentially they don't know what they don't know. Other published non-physiotherapy related studies relating to simulation programme development deal with general considerations such as budgeting and business models, staffing with appropriately trained staff, or purchasing the appropriate equipment for the intended programmes (Seropian 2003, Seropian et al 2004), rather than curriculum development.

Limitations

A limitation of this study was the small sample – larger cohorts may have provided a more representative sample of novice and expert physiotherapists' perceptions of which topics are most important for further training. Also, a larger sample would have allowed more detailed formal statistical analysis. The purpose of this learning needs analysis was to identify the four ICU skills most in need of further training for rotational physiotherapists at one hospital. As such, visual analysis of the survey data achieved this. However, we recognise that more robust statistical analysis, using a validated testing tool, would have allowed far stronger conclusions to be drawn. A further limitation of this study was that considerable time has elapsed since the data collection was undertaken, so these results may not reflect the ICU training and educational needs of the current cohorts of rotational physiotherapists. A strength of the study was the high response rate (Portney and Watkins 2009).

CONCLUSION

Based on visual analysis, there appeared to be good agreement between the novice and expert groups in both the assessment and treatment topic questions. The four highest ranked assessment and treatment topics were: assessment of intubated, ventilated patients; assessment of haemodynamically unstable patients; lung hyperinflation techniques; and rehabilitation. From these results, coupled with practical considerations, the pilot simulation-based ICU training programme was developed consisting of the following four modules: general assessment of an ICU patient; assessment of haemodynamically unstable patients; positioning; lung hyperinflation techniques. This pilot programme has since evolved to form two separate simulation-based ICU training programmes for rotational physiotherapists.

KEY POINTS

- The two highest rated assessment topics for intensive care training of junior physiotherapists were assessment of intubated, ventilated patients in intensive care, and assessment of haemodynamically unstable intensive care patients.
- The two highest rated treatment topics for intensive care training of junior physiotherapists were lung hyperinflation techniques, and rehabilitation.
- There was good agreement between physiotherapists of varying levels of intensive care experience regarding the most important topics for further training.

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PERMISSIONS

Ethical approval was gained from the St. Vincent's Hospital Human Research Ethics Committee (Approval number QA 001/10). Informed consent was obtained with the initial survey question: 'Are you happy for the de-identified data collected from this survey to be used in future for research purposes?', as well as implied by completion of the online survey.

DISCLOSURES

No funding was sought or obtained to undertake this project.

A Victorian Government Department of Health 'Improving care for older people and people with complex needs' Scholarship was received to aid development of the simulation training programme for junior physiotherapists. This scholarship was used to fund a local and international study tour of centres currently utilising simulation for physiotherapy training, and was not related to undertaking this learning needs analysis.

The authors have no conflicts of interest to declare.

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