

Section B: Case Study

Title: Application of cardiorespiratory physiotherapy skills in a simulated clinical learning suite.

Summary: This simulated learning opportunity facilitated physiotherapy students to explore and demonstrate practice for the management of a critically ill patient in a safe, clinical learning environment. Emerging technology augmented the student learning experience and innovated our curriculum using contemporary methods of pedagogy.

What was done:

This learning opportunity supported the physiotherapy students to effectively manage a critically ill, intubated and ventilated patient. Methodology:

Stage 1:

- In a classroom environment students were provided with information and discussed:
 - evidence based theoretical knowledge of patient management
 - practical skills of communication, both verbal and nonverbal, and airway clearance with a training model

Stage 2:

- Students were presented with a patient case study
- In a group, the peers assessed the patient presentation using clinical reasoning to identify a problem list and treatment plan

Stage 3:

- In the Clinical Skills Centre, Belfast Health & Social Care Trust
 - Contextualisation of learning in a realistic ICU environment, with a human performance manikin which produced a physiological response in real time, mimicking an unresponsive, critically ill, intubated patient
 - Staff demonstration of an effective 'hands on' treatment
 - Students performed 'hands on' treatment in pairs
 - Facilitated feedback including 'Fishbowl' type discussion from a viewing room with rest of student group
 - Reflection and generation of action points for future learning
 - Facilitated by: Band 4 technician; Band 8 clinical physiotherapist; two lecturers.

This innovative practice supports the priorities within the Five & Fifty strategy:

Civic contribution - enabling collaboration with our alumni network of partners in the health care sector and wider educational community.

Academic excellence - This is the first time this innovation has been incorporated into the BSc Physiotherapy programme in NI, providing a unique opportunity for students. Simulated learning creates an environment that facilitates "creative inquiry", increases participation in learning, builds confidence, and enables students to adopt a more responsible attitude to learning, creating independent learners. This emergent technology uses high fidelity simulation, creating realism to facilitate a vibrant learning community. It enabled learning practices by moving paper-based case studies to a more real live practical situation.

Global vision skills - acquisition through simulation training promotes clinical decision making and problem solving which is critical to physiotherapy practice, ensuring readiness for the global work environment.

Operational excellence - the simulated learning environment embraces technology to facilitate and compliment established teaching infrastructure, supporting and maximising a student's educational experience.

Motivation and aims:

The Chartered Society of Physiotherapy value simulated learning within the curriculum. It enables student learning through development of clinical knowledge and skills in a safe, protected environment; this complements the practice-based learning process preparing students for a continually changing healthcare environment (CSP 2015; 2016). Incorporating clinical simulation within the physiotherapy curriculum is supported by long standing educational principles of learning. In designing the learning objectives for a clinical scenario, using technology enhanced 'hands on' simulation, the hierarchical order for obtaining cognitive skills is utilised (Bloom's Taxonomy 1956). This active learning process enables progression of knowledge through transformative experiences (Kolb 1984). Experiential learning, through clinical simulation, enables students to learn skills in a safe and realistic environment improving learning outcomes such as confidence, clinical reasoning and 'hands on' skills (Gough 2016; Smith and Cocker 2017). Improving a student's confidence in their own ability is linked to an increase in competency (Mansell et al 2019).

Embedding this high fidelity, high technology simulation experience within the curriculum fulfils our vision of embracing innovation, to enhance an effective learning environment, within a changing learning landscape. The professional knowledge underpinning our rationale facilitated active learning with students engaged in the case study and learning through doing. This approach enabled level 6 physiotherapy students to learn professional skills safely, in an authentic, low risk ICU environment, which mirrored the challenges students will face in clinical practice.

The aims were:

- (i) To optimise learning of the physiotherapy management of a post-operative, critically ill, intubated and ventilated patient.
- (ii) To incorporate the use of a realistic simulated environment, Education & Clinical Skills Centre BHSC, to enhance active student learning.

Implementation:

An outline of how you carried out the initiative, the approaches you adopted. What professional knowledge did you draw from to underpin your approach?

Enhancement of student learning, by incorporating high technological simulated learning, was explored over a number of years. Attendance at a conference: "Recreating reality – the learner's stories" facilitated staff development and collaboration with the METI company, resulting in a regional simulation day at Ulster University. Building a network of contacts, visiting the University of Hertfordshire and Southampton University, enabled exchange of ideas and expertise. Profession specific links were established with Dr Gough, Manchester Metropolitan University and Dr Thackery, Southampton University, simulation development officer for AHP in the Association of Simulated Practice in Healthcare (ASPiH), which enabled opportunities to benchmark and review best practice.

Funding has always been a challenge therefore successfully securing funding, through an application to the Head of School, for this academic year has proved invaluable to driving our creative innovation.

Successes and lessons learnt:

The simulated learning environment had an excellent impact on the student learning experience. Development of learning materials, using the Kolb reflective learning cycle, enabled students to develop their assessment and management of an acutely ill patient, in a safe learning environment, in preparation for clinical practice.

Evaluation explored development of knowledge and understanding; clinical reasoning; communication; practical skills; and building confidence. There was a 100% positive response to all questions. Students suggested increasing access to this learning resource by attending midway through the module and again at the end to consolidate learning.

Students thought the simulation

- “allowed application of learning from practical classes in a more ‘real-life’ situation”
- “really helped to pull together all the learning from the critical care module”.

This dynamic approach to improving teaching quality enables a proactive learning community, which facilitates and compliments existing learning. Access to a high fidelity, high technological simulation resource will enable redesign of module learning and assessment.

Transferability:

Is this practice transferable? Have you shared your experiences with colleagues? What would your advice be to others thinking of adopting your approach? Do you have any evidence of colleagues adopting your approach?

Enhancing resources would enable a more immersive learning environment. Access to ward, critical care and ICU simulation will enable transfer of knowledge to other modules within physiotherapy. There is an opportunity for allied health professional courses to use this technology based simulation in various profession specific clinical scenarios to enhance the student learning of ‘hands on’ clinical skills, clinical reasoning, communication and team work skills. Multi- professional integration within the School of Health Sciences could have a transformative effect on inter-professional learning.

Dissemination to colleagues in the School of Health Sciences: School Board, 31.10.19; Physiotherapy Course Committee, 4.12.19.

We would advise colleagues to utilise a logical patient centred format, incorporate e-learning resources and creating a digital learning space to enable self-reflection, thereby enhancing student preparation for working in clinical practice.

Further information:

This learning resource could have a transformative effect on student learning. It is powerful, safe, impactful, active learning. All third year physiotherapy students who attended this session, (n=34), provided feedback. We explored their views about the learning experience using open and closed questions. For example, we asked them about their experiences in relation to confidence, realism, attainment of practical skills, application of knowledge and clinical reasoning. All responses were overwhelmingly positive.

Student quote: “Everyone is talking about what a great experience we had. I don’t think any of us really understood the complexity of a patient like that in the ICU setting”

Student quote: “... The entire environment made everything so real in a way that a classroom cannot. Being able to watch others complete the simulation and then being able to brainstorm together in a constructive way on how to improve and what worked well was so beneficial. I can honestly say that this is the best learning experience that I have had on the physiotherapy course”

A Williams, Band 8 Physiotherapist, BHSC: “Brilliant opportunity, really informs clinical practice”.

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