Title

Simulation as a research translation technique

Abstract

In the clinical setting, simulation is emerging as an important educational technology for learning about contemporary clinical care. The aim of this case study was to illustrate the feasibility of simulation as a research translation mechanism. Designing and delivering a simulated learning activity for delirium prevention was a key implementation strategy in a larger study focused on translating research evidence into practice. Using evidence about delirium prevention, and in collaboration with key stakeholders, the simulation team developed a delirium prevention scenario that was conducted four times with nurses in the participating ward. This study suggests that the use of simulation design and delivery as a research translation mechanism is feasible. Based on this experience, further research into how simulations can function as research translation mechanisms is recommended, with a view to improve patient outcomes through supported practice change.

Key Points

- Implementing research evidence is a significant challenge for health services
- Planned action requires discussion, tailoring of research to context, and advocacy for the new practice
- Clinician and researcher co-design of a simulation can provide an additional mechanism for implementing research evidence in practice

Key Words

Co-design; implementation; evidence; simulation; stakeholders; delirium; translation

Background

Research translation is a dynamic process involving interaction between researchers and end users (Milat & Li, 2017). While the literature on translation models is burgeoning (Milat & Li, 2017), specific translation strategies are less evident. This case study provides insight into how developing and delivering a simulation can enhance the translation of research evidence about delirium prevention and care into practice in one health service.

Delirium is described as an acute disorder of attention and cognition, which is distressing and often leads to further complications including falls, and sometimes even death (Inouye, Westendorp & Saczynski, 2014). There is comprehensive evidence that non-pharmacological care activities are the most effective in preventing and managing delirium (Hshieh et al., 2015). These care activities are commonly conducted by nurses, positioning nurses to lead delirium prevention and care strategies.

The translation of research evidence into practice is more likely when the practitioners can make the activities workable in practice and able to integrate it into their collective workflow (May, Sibley, & Hunt, 2014). Simulation is a guided, immersive interactive technique that affords the participants the opportunity to engage in a 'real-world experience' in a safe, non-threatening environment (Gaba, 2004) and may provide a vehicle to support nurses to incorporate the delirium prevention and care strategies into their collective workflow. Not only can practice be improved through team learning in a simulation, co-design of simulation experiences is promoted as a mechanism to jointly create, shape, test and refine pathways of care (Kneebone, Weldon, & Bello, 2016).

Co-design requires cooperation between individual agents to share their knowledge and resources, working together to create a new product, with the aim of improved outcomes and efficiency (Ward et al., 2018). The co-design of simulation can provide a mechanism for research translation, whereby those involved gain in-depth understanding of the research

basis for practice change and become informal advocates of that change within their teams. This brief communication describes the process of co-design of a specialised simulation as a research translation mechanism to illustrate the feasibility of clinical simulation for research translation.

The simulation case

The simulation was developed as part of a three-level education program that also included on-line modules and team discussions of clinical cases with a range of experts. Researchers approached members of the simulation team in a state health service in southeast Queensland to develop a simulated learning activity to support care of the patient presenting with a possible delirium. The INACSL *Standards of Best Practice: Simulation* ^{SM} *Simulation Design* (2016) were used to design this simulation. The debriefing was structured using the Promoting Excellence and Reflective Learning in Simulation (PEARLS) framework (Eppich & Cheng, 2015). The *Delirium Clinical Care Standard* (ACSQHC, 2016) was used to design the nursing activities.

The scenario. As part of the implementation research project, barriers to effective delirium care were identified as lack of screening for delirium, limited inclusion of families in delirium prevention and care, and a limited set of management strategies for patients who exhibit acute confusion. Following the standards for simulation design (INACSL Standards Committee, 2016), the learning objectives incorporated cognitive (knowledge), affective (attitude) and psychomotor (skills) learning domains. To address the barriers to effective delirium care, the team agreed to three key learning objectives:

1) Recognise and respond to delirium;

2) Effectively communicate and include the family in delirium care; and

3) Perform and/or interpret the screening tool for delirium on admission

The simulated clinical immersion with a simulated patient structure was used. Through discussions with clinicians, educators, and researchers, the simulation team developed a scenario (see Figure 1). The simulation was set in the simulation lab, and included a simulated patient (actor), replicated bedspace from a ward (physical fidelity); realistic patient presentation including moulage and created clinical records to align with the case (conceptual fidelity); and included an active voice of the patient, distractions, multiple staff members and a family member (psychological fidelity). An unfolding case scenario was used in that the simulated patient responded based on the participants' actions.

[Insert figure 1 here]

Delivery

The simulation sessions were held between June to December 2017. Nursing and allied health staff from the ward hosting the research translation ward attended. Each simulation session was attended by 4 to 5 nurses for a total of 22 nurses. All the nurses who attended had completed two online learning modules on delirium from ADHERe (Delirium Care, 2019).

The session was facilitated by an experienced simulation educator. Each session consisted of a five to ten-minute pre-brief, 20-minute simulation, and 30 to 35-minute de-brief. In the pre-briefing, the primary simulation educator set clear boundaries, expectations and goals, solicited a commitment to act as if everything is real, and attended to logistic details such as the start and stop time of the session, and conveying respect for the learner. A second simulation educator was the simulated patient and, using moulage, was aged. The clinical educator and/or researcher posed as the family member (or neighbour), and two participants volunteered to engage in the simulation scenario. Other ward staff in attendance observed the scenario. The Nurse Unit Manager, ward Educator and ward Clinical Facilitator

took turns attending the sessions and contributed to debriefing discussions with the staff participants.

The debrief focussed on advocacy and inquiry and followed PEARLS framework (Eppich & Cheng, 2015). In the debrief, the simulation educator would: set the scene for the debrief including an overview of the session; elicit emotional reactions or comments which could reveal new topics of discussion; provide a descriptive summary to clarify understanding; facilitate discussion of the topics raised by the participants; and invite participants to share their take-away message from the simulation in a 'round-the-room' technique.

The principle of co-design was operationalised in several ways. Firstly, the learning objectives and outcomes were co-designed by simulation experts, researchers and clinicians, inclusive of Nursing Unit Manager and Educator who are accountable for non-clinical, as well as clinical, activities and the Clinical Facilitator, Registered Nurses and Enrolled Nurses who are accountable for clinical care in the ward. The simulation team drafted the scenario and discussed each version with clinicians and researchers until there was consensus. Researchers and clinicians participated in each delivery and engaged clinicians in discussion about practice. Outcomes of these discussions led to minor modifications of the delirium prevention and care intervention on the ward.

One limitation in this work was the lack of formal evaluation of the simulation. At the time, the focus was on feasibility of simulation as a research translation mechanism. Feasibility was concluded based on good attendance and engagement from the nurses who came to the four sessions and anecdotal feedback regarding how the sessions led the nurses to revise their collective practices.

Discussion

In this example, research evidence about delirium prevention and care was translated into nursing action in a simulated learning activity. Simulated learning emerged as a method to improve professional competence, individually or in teams, which is consistent with other studies of simulation and interdisciplinary communication (Hargestam et al., 2016). However, in this case study, producing the simulated activity, as well as conduct of the activity, provided a mechanism for translating research evidence into practice. As the involved clinicians, educator and researchers planned and revised the scenario in response to nurses' engagement and performance, there is the possibility of deeper learning about how these nursing behaviours can improve the patient and family experience and reduce the impact of delirium.

Translation of research evidence into clinical practice has predominantly been through the production of knowledge tools or products such as practice guidelines, decision aids and rules, and care pathways (Graham et al., 2006). While these tools are produced to present knowledge in clear, concise and user-friendly formats, the likelihood of uptake is dependent upon user competence and confidence. Like Graham and colleagues (2006), planned action, where groups discuss, negotiate, resist and value the usefulness and appropriateness of particular research to their setting and circumstances, tailoring the knowledge generated by research to their unique circumstances is recommended.

When focused on designing a simulation, group members may learn more about the barriers and facilitators to implementing the research evidence in practice. As the clinical scenario is shaped and refined, group members are actively working to increase clinician uptake of research-derived actions. The clinicians who are involved in the design and delivery of the scenario may become advocates for the practice change in the ward, with dissemination of practice, rather than knowledge, as the outcome. Further research including in-depth evaluation of the mechanisms involved and possible impact on practice is required.

This clinical simulation was part of a broader implementation package for delirium prevention and care. While practice change cannot be attributed to a single element of an implementation program, the high levels of engagement from nurse participants in the scenario and post-briefing indicate active and deep learning, which is recognised as sustainable learning (Biggs, 2012) and indicates that the processes of simulation design and delivery are feasible.

Clinical simulation provides a vehicle for research translation, whereby engagement from end users such as clinicians and ward-based educators and managers can work collaboratively with researchers to improve uptake of new, evidence-based, practices. In particular, attending to the principles of co-design in scenario development, delivery and evaluation offers emerging opportunities to work towards continuous improvement in practice. Further, through the final debriefing stage (around-the-room), nurse participants can consider their simulated experience and how they can incorporate what they have learned into their teams. Further research into the potential value of clinical simulation as a research translation mechanism should focus upon describing the nature of application that nurses identify in the debriefing sessions and comparing these descriptions to observations of practice in the ward. Making changes to improve patient outcomes, such as reducing the incidence and impact of hospital-acquired delirium for older patients, will also require researcher focus on patient outcomes.

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