Symposium

A Road Map to Planning a Pediatric Simulation Session

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ABSTRACT

Medical education has increasingly focused on patient safety in the last few decades. Awareness of and emphasis on adult learning principles have made simulation training a novel method. Creating a realistic case scenario experience is very important for the active engagement of the participant to facilitate reflection during debriefing. Designing a simulation session in order to recreate a realistic clinical experience requires rigorous research and meticulous planning. Poor preparation may cause the whole experience of simulation to be counter-productive. These insights are simplified into a step by step approach in this article where the importance of a thorough Needs-Assessment, clear aims, SMART learning Objectives and a well-designed scenario is elucidated thus demystifying the intricate process of planning a simulation session.

Key words: Simulation, Needs-assessment, Learning Objectives, planning.

You work in a newly established hospital and there is a spate of new registrars in the wards. Management of emergencies has been disorganised in the ER and simple newborn stabilisations are going awry. You would like to conduct training sessions in the brand new simulation lab in your hospital. How do you set about it?

Simulation is the new kid on the block. It is unequivocal that simulation is an effective and powerful educational tool with patient safety as its ethos. Training by simulation is fast becoming an integral part of the curriculum of medical education in many universities and there are state-of-the-art sim labs on site in medical schools. High Technology Manikins and high fidelity sessions are providing exciting learning opportunities. However a word of caution is in order, that the 'immersiveness' of the simulation can be as powerful if done right as disheartening and indeed dangerous if done wrong. These sessions therefore need to be conducted with meticulous planning.

'Training the Trainers 'courses offer a comprehensive

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overview of the science of simulation technology to those who want to set up sim sessions. This article, though by no means as comprehensive, aims to touch upon the various aspects involved in designing a paediatric simulation session.

The first step - "Needs Assessment"

First and foremost, a rigorous educational 'Needs assessment'[1] shall provide the answers to a few basic but vital questions which shall build the framework of the session. Needs assessment is defined as a systematic process to collect and analyze information about an expressed or implied educational or organizational need, which can be simplified thus.

1. **Why** do we need a training session now?
   This fundamental question lays the foundation of planning for the training session. The needs assessment analyses the gap between the current situation and the desired situation and defines it as a 'need'. In this case you have a new hospital and a new team of registrars and nurses whose error in the management, delay in instituting necessary treatment or poor communication is leading to sub optimal results. This merits corrective measures in the form of training.
   Research and analysis of the data needs to prove the fact that training is in fact a 'real' need and

not just what you want to do or a 'felt' need (like wanting to show off your new manikin). When a training need is clearly defined , one must decide if it is possible to bridge this learning gap and if it is feasible to do so with the available resources for the benefit of the organisation.

2. **What** should we address in this session?
What is the learning gap? Are the registrars hesitant in initial management of a status epilepticus? (Knowledge gap). Do they struggle to get an adequate seal with the mask on the face of a newborn? (Skill gap). Is there a lack of clarity in instructions and role allocation in a resuscitation? (Attitudes and Behaviours gap)
Concepts like the 'Golden Hour'[2] demand precision and competence from all the team members and the success of the resuscitation depends not only on the knowledge and skill but also the attitudes and behaviours that each team member brings to the situation. Depending on where the gap is perceived the aims of the session can be scripted. Knowledge and skills gap are more concrete and evident whereas the attitudes and behaviours are often dormant and can be addressed as part of the hidden curriculum.
For example a reasonable aim for a training session could be 'by the end of this session the candidates would be able to manage common paediatric and newborn emergencies competently while working as a team" As you can see aims are broad, abstract and not time bound. But it is the foundation on which the session can be built.

3. **Which** is the best instructional tool?
Instructional models like lectures, self study, case studies etc could sometimes be more suited to the aims at hand and simulation should not be done merely because we can and want to. That said, simulation, as an experiential learning tool, in its many diverse forms, allows the freedom to make and learn from mistakes without compromising patient safety, and through expert debriefing has the added value of focussing on and developing attitudes and behaviours in our inherent clinical practice[3]. Therefore it would be a perfect fit in the present case.

4. **Where** should the training take place?
Now that you have decided simulation is the apt tool, you need to decide where you want to do it. In-situ simulation or training in the actual clinical environment not only offers great realism but is a rich resource to identify latent threats and provide a systems check. However powerful logistic considerations like technical set up, performance anxiety, time constraints and infection control often impede the implementation of this practice[4]. A sim lab with an attached lecture gallery with audio visual aids has the advantages of operational ease and lack of interruption but may take away from the fidelity of training in the ER or delivery ward. Choose wisely.

5. **When** should the training take place?
How many hours or days of training are required to fulfill your aims? If in a sim lab then is a weekday more convenient or a weekend? If in-situ, should the training take place during lunch time where maximum numbers can be captured at shift change or at night time when it is quieter? A new educational strategy called just-in time-training[5] (JITT) is gaining momentum where the training occurs in close temporal proximity to a clinical encounter at work place although busy workplace and lack of contextual fidelity offer barriers to this kind of training.

6. **Who** should be the trainees in this session?
If the simulation session is focussing on a specific skill, it is possible to keep the group of trainees uniform. For eg insertion of an intraosseus needle can be practiced on a task trainer by a group of registrars alone. On the contrary, for a broad aim as above, a full team immersion simulation with nurses junior doctors and consultants can not only replicate real life situations but also enable emphasis on team work and communication.
Now that we have answered the 6 important questions of Why, What, Which, Where, When and Who, the next step will be How do we go about this? Here we formulate our Learning Objectives(LOs) .

Learning Objectives
Unlike aims, Learning Objectives are precise, concise

and time bound. For eg.,The Aim of NRP (Neonatal Resuscitation Program) states that the candidate will be able to perform initial steps in the resuscitation whereas the learning objectives shall assess if he can position the airway and deliver positive pressure ventilation if required in the first minute. Aims are like the address to a destination, the Learning Objectives are like the route map.

The formulation of the LOs are based on some important factors

1. Who your trainees are:
   Your delegate set in your sim session may consist of inexperienced trainees in the initial stages of their training (junior registrars), advanced learners (consultants), a combination of both or a multidisciplinary team (including nurses). The LOs should try to addresss the training needs of each set of learners

2. What would you like them to learn
   Learning is done in 3 domains, Cognitive (Knowledge), Psychomotor (Skill) or Affective (Attitude) as per Bloom's Taxonomy[6]. It is best to focus on only 2-3 objectives in any scenario and a mixture of domains so all aspects of team training are addressed.
   One of the proven ways to formulate good Learning Objectives is to make them SMART which is an acronym for Specific, Measurable, Achievable, Relevant and Time bound. An e.g., of a SMART learning objective is, "the nurse will demonstrate chest compressions in a manikin as per the NRP guidelines"

Scripting a scenario

This is the crucial step in the process of planning where the learning objective is used to decide what kind of a simulation method is applied. A clear flow to the scenario with step-by step description of the events and expected interventions and outcomes should be carefully scripted and circulated to all the faculty members.

The following bear consideration:

1. **Manikins and Fidelity**: A Hi- Tech simulation manikin (sim baby), a low tech (Neo natalie), task trainer (IV insertion arm) or even a standardised patient / actor for role play can be used for simulation as per the LO. Fidelity, which is defined as the resemblance of the simulation to the intended real life situation can be achieved independent of the technology.

2. **Equipment and pro**ps: Eg: ventilators, syringe pumps, monitors, drugs etc need to be clearly thought of and provided. The use of moulages is fast gaining popularity by enhancing the realism of the simulation

3. **Personnel**: This includes the number of faculty required, the simulation technicians who will run the manikin and the presence of confederates, if any, in the scenario.

4. **Debriefing:** This is the most important feature of the process of a simulation training session and preparation for this is key. A number of models of debriefing are available to be used like the 'Advocacy with Enquiry'[7], 'Plus Delta'[8] etc. Debriefing promotes reflective learning and has the potential to expose some uncomfortable personality traits. Sensitive dialogue in an environment that is safe and non-judgemental is key to the success of the session. Therefore trainers need to be trained in the art and science of debriefing.
   So as you can see, organising a simulation session will involve some real hard work . But if you are well equipped with a thorough needs assessment, clear aims, smart objectives and a crisp scenario, then a simulation session becomes an enjoyable, powerful and productive learning experience.
   Happy simulating!

References

1. James W, Altschuld, Kumar DD. Needs Assessment: An Overview.SAGE publications 2010. ISBN :978-0-7619-2595-8. doi: 10.4135/9781452256795.
2. Thomas EJ, Sexton JB, Lasky RE, et al.Teamwork and Quality during neonatal care in the delivery room. J Perinatol 2006;26:163-9.
3. Ziv A, Small SD, Wolpe PR. Patient safety and simulation-

based Medical Education. Med Teach 2000;22:489-95.

4. Patterson MD, Blike GT, Nadkarni VM. In Situ Simulation: Challenges and Results. Advances in Patient Safety: New Directions and Alternative Approaches (Vol.3: Performance and Tools).Rockville;2008.

5. Kamdar G, et al. Qualitative evaluation of just-in-time simulation-based learning: the learners' perspective. Simul Healthc 2013;8:43-8.

6. Bloom BS, et al. Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain.Bloom, Englehart, Furst, Hill, & Krathwohl, 1956.

7. Rudolp JW, et al. There's no such thing as "nonjudgmental" debriefing: a theory and method for debriefing with good judgment. Simul Healthc 2006;1:49-55.

8. Gardner R. Introduction to debriefing. Semin Perinatol 2013;37:166–174.

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