# The Occasional rural sim

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## INTRODUCTION

### The importance of sims

Medical simulations (sims) of various forms are among the most valuable educational tools available to medical education programmes and practising healthcare teams.[1,2] Simulations provide a safe environment for the improvement and maintenance of skills for new and experienced care providers, thereby improving patient care and safety.[1,2] A meta-analysis by McGaghie *et al*. found that simulation-based educational activities were more effective than traditional clinical education in teaching a wide variety of clinical skills, such as advanced cardiac life support.[3] They have also been shown to improve teamwork and interpersonal and interprofessional skills.[4,5] By helping practitioners improve in such varied ways, simulation-based medical educational activities enhance local competence and confidence.[1,4,6] Of importance for rural hospitals, simulations allow staff and learners to practise skills in high-acuity, low-frequency scenarios – increasing their confidence and potentially facilitating physician retention.[7]

### Sims in rural environments

Providers in rural environments face multiple barriers to taking part in simulation experiences. Simulation centres and trained simulation facilitators are often located in urban environments, making them difficult to access for rural providers and their healthcare teams. In fact, one study among rural Manitoba healthcare providers found that 80% of providers had 'very limited' or 'no' access to high-fidelity simulation tools.[8] Due to staffing shortages, it can also be difficult for rural practitioners to find time to receive formal simulation training. Finally, simulations can be very resource-intensive (especially high-fidelity sims), entailing cost and time demands that rural healthcare teams seldom have the financial or human resources to meet.[9] However, there is good evidence that low-fidelity simulations – which have significantly decreased resource demands and are thus much better suited to rural environments – can be effective learning tools.[10] In fact, low-budget and low-fidelity simulations have been shown to be just as effective as their more expensive counterparts in many situations.[10,11] There exist multiple online tools (see page 139 under Online Tools for Rural Simulations) that provide access to simulation scenarios and educational resources. They can help rural practitioners overcome these barriers and deliver effective simulations in rural environments.

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## THE PROCEDURE

### Planning for simulations

Before starting simulations in your setting, you should first discuss it with your healthcare team:

1. Goals: What do people feel they would want to learn/practise using simulations?
2. Schedules: How often do people want to engage in simulations (once a month and biweekly)?
3. Expectations: How will facilitation responsibilities be distributed? What are the expectations around participation? What are some initial ground rules that should be in place?

Having these discussions will help ensure that your simulation activities are directly in line with local learning goals and schedules, which should improve participation and buy-in from staff and learners.

Following this discussion, you should:

1. Schedule your first simulation session: Ensure you dedicate ample time for pre-briefing and debriefing the participants. As a general rule, the debrief should be at least as long as the scenario itself
2. Find a scenario to use for your simulation: You can create your own – either *de novo* or based on previous experiences – or you can access free online sources for scenarios (see section on page 139 Online Tools for Rural Simulations)
3. Prepare for the simulation: Spend time reviewing the scenario to become comfortable with the content, and gather the necessary materials.

### Starting the simulation activity: The pre-brief

Before beginning the simulation, it is critical for the facilitator – who can be any interested member of the healthcare team – to conduct a pre-briefing with the participants.[12,13] This serves as the foundation of the simulation learning experience, as it sets the stage for the learning and reflection that will take place over the course of the activity, maximising the learning experience.[12,13] By introducing participants to the activity and filling them in on the logistical aspects of the sim, it allows them to focus on the learning at hand.[12] Moreover, effective pre-briefing creates a psychologically safe space for learning, where learners feel comfortable making mistakes and are motivated to learn.[14] There are a few key points that should be covered in a good pre-briefing, in order:[12-15]

1. Introductions
2. Discussion of the session's structure and objectives (of simulation and learner evaluation, if any)
3. Discussion of session logistics (time expected and breaks)
4. Clarification of expectations and basic ground rules during simulation
5. Establishing the expectations around the confidentiality of the sim session – 'What happens in the sim room stays in the sim room'
6. Establishing the 'fiction contract' – acknowledging the technical limitations of the simulation and committing together to act as though the simulation is real
7. Establishing simulation roles
8. Orientation to the simulation environment (room and equipment).

### The simulation itself

The simulation itself can take many different shapes. For example, it could involve the repeated practice of a specific clinical skill, such as a cricothyrotomy on a task trainer, or a complex teamwork-focused clinical scenario, such as an emergency department team response to multiple trauma patients from a motor vehicle collision. It is up to the facilitator to determine what type of simulation would best suit the type of learning they are seeking and the appropriate level and type of fidelity (conceptual, psychological or physical) for the learning goals at hand.

In general, simulations are broken up into stages, with movement between stages dictated by time or the completion of certain 'trigger' actions by the participants. These stages are often accompanied by materials (X-rays, electrocardiogram results and ultrasounds) that can help enhance the realism and depth of learning of the simulation experience.

Figure 1 is a typical example of a scenario stage containing the following:

a. A roadmap of the simulation
b. Patient vitals at each stage
c. Checkboxes with expected learner actions
d. Modifiers to update patient status depending on simulation developments

e. Triggers to move to the next stage when appropriate
f. Facilitator notes (not pictured).

The facilitator's job is to help the learners progress through the scenario in a way that facilitates the achievement of the activity's learning objectives and allows the learners to apply their theoretical and practical knowledge in the context of the simulation.[15] This will involve the delivery of cues – both pre-determined and unplanned – to draw the participants' attention towards key pieces of information, help them clarify the simulated reality and redirect them towards the expected learning outcomes.[15]

Pre-determined cues are built into the simulation scenario to provide learners with information and guide scenario progression. For example, these can take the form of patient status updates, the provision of supporting materials or prompts from actors in the simulation.[15,16]

As a facilitator, you may find yourself having to provide unplanned 'life saver' cues when unexpected events or actions from the participants risk derailing the simulation experience.[15,16] Examples of such situations include: when learners misinterpret scenario information and begin management for a completely different condition than was intended, when learners miss critical scenario information or the failure/malfunctioning of critical scenario equipment.[16] As a facilitator, you should identify instances where such mishaps are most likely, plan for ways to minimise them and prepare to act when they arise to bring the simulation activity back on track.[16] It is best to deliver these 'lifesavers' in a way that maintains simulation fidelity, like using hints from simulation actors that emphasise or direct learners towards key information.[15] However, if you must, do not be afraid to pause the simulation to redirect and then restart it.[15]

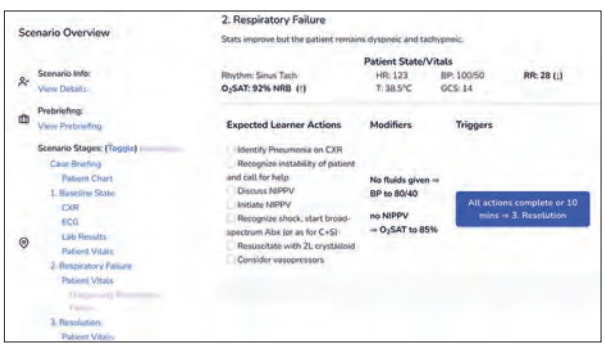



**Figure 1: A typical simulation scenario stage extracted from practiss.ca.**

## Wrapping up the simulation activity: The debrief

Once the simulation is finished, you need to debrief. Debriefing is the 'heart and soul' of the simulation experience.[17] Without it, there has been shown to be very little clinically important learning that takes place in simulation-based educational activities.[18] Debriefing allows learners to reflect on their experience, promoting understanding and the transfer of knowledge and skills through the simulation activity.[19] Ultimately, no simulation activity should take place without a debriefing.[19]

Debriefing should follow a specific, structured framework – this will make it easier for you to effectively debrief your team and ensure that all the important aspects of debriefing are covered.[19] There are many different validated debriefing frameworks that can be found online and in scholarly journals – commonly used frameworks include PEARLS, GAS, Debriefing with Good Judgement, SHARP [Figure 2] and the Plus–Delta model.[18] The choice of which framework to use depends on a variety of different factors such as time available, type of simulation and facilitator experience.[19] In general, all of the debriefing frameworks involve at least:

1. Gathering initial reactions to the simulation
2. Reflecting on and analysing things that went well

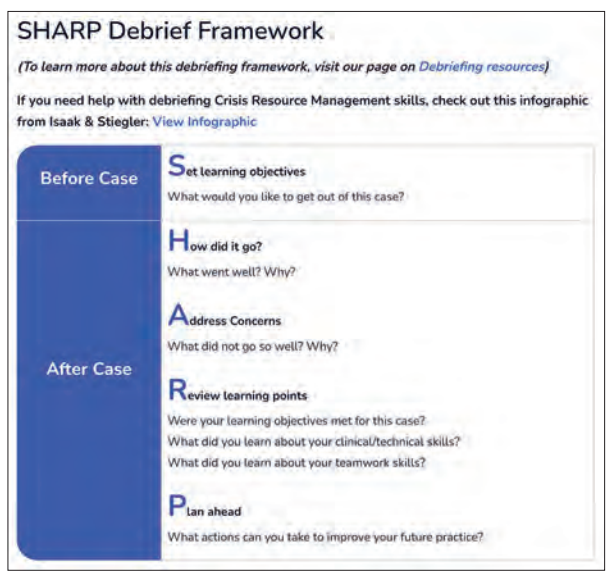



**Figure 2: The SHARP debrief framework on practiss.ca.**

3. Reflecting on and analysing things that could use improvement
4. Identifying takeaways from the activity.

### After the simulation activity: Collecting feedback

After the debriefing is done, it is important to collect feedback on the simulation activity as a whole. Collecting feedback from the participants is the best practice for simulation education,[20] both allowing for the improvement of the simulation scenario itself and for helping the facilitators improve their ability to run effective simulation experiences and debriefing activities.[18] This is of critical importance in rural environments, where facilitators may be inexperienced and untrained in simulation facilitation. For simulation activities delivered *in situ*, this is also a valuable opportunity to collect information on potential improvements or changes that could be brought to the care environment in light of the simulation activity. This feedback can be collected in a myriad of ways: through discussion, pen-and-paper written feedback or online polling among others. There is no literature supporting one method of feedback collection over another.

### Online tools for rural simulations

There exist a number of free-to-use online tools to support the delivery of simulations in rural environments. For example, emsimcases.com and simulationcanada.ca both hold a large selection of peer-reviewed simulation scenarios and a wide variety of resources on medical simulation education more broadly. healthysimulation.com is also a valuable site for connecting to simulation resources, tools and education. With a special eye to the barriers and opportunities for rural medical simulation education, we, the authors, also created the online simulation tool Peer-Run Applied Cases for Teaching Interdisciplinary Simulations and Scenarios (PRACTISS), a free and open-access interactive simulation tool explicitly designed for rural environments. PRACTISS (accessible at practiss.ca) includes support for novice facilitators, a large repository of rural simulation scenarios, integrated evidence-based resources, feedback tools and ways for users to create and upload their own interesting clinical scenarios to the platform.

As it can be difficult to run debriefing activities as a novice facilitator,[18] visual guides for applying the simulation debriefing frameworks can be found online – on websites such as practiss.ca and healthysimulation.com – allowing novice facilitators to run effective debriefing activities for their group. To further assist novice facilitators in their debriefing activities, we have created a decision matrix, accessible at practiss.ca, to help facilitators decide which debriefing framework to use for their simulation [Figure 3]. PRACTISS also holds a visual pre-briefing guide to help novice facilitators set the stage for effective learning during simulation activities.

Simulation feedback can be collected through a variety of methods, either online, in-person or through a mixed-methods approach. One way to collect feedback online is through the use of anonymised Google Forms – however, we have found this can be a time-consuming process for the facilitator. Alternatively, PRACTISS has built-in tools for collecting feedback from both the facilitator and simulation participants, enabling the viewing of those results in real time. Using their mobile devices, participants can scan an auto-generated QR code displayed on the facilitator's device, which brings them to a webpage where they can anonymously provide Likert scale and written feedback on the activity, facilitator and facility – as well as enter their e-mail address

| | Time | Facilitator Level | Prep Time | Scenario Type | Flexibility |
|---|---|---|---|---|---|
| PEARLS (Our Favourite) | Moderate | Novice | Moderate | Any | High |
| GAS | Short-Moderate | Novice | Low | Short w/ Clear Objectives | Low |
| Team Dynamics | Moderate | Novice | Moderate | Any, esp. Team-focused | Moderate |
| SHARP | Very Short | No experience | None | Any | Low |
| Diamond | Short | Novice | Low | Low number of non-technical skills | Low |
| Plus-Delta | Very Short | No experience | None | Any | Moderate |
| Debriefing w/ Good Judgement | Moderate-Long | Novice | Moderate | Any | Moderate |

**Figure 3: PRACTISS debrief framework selection matrix.**

to receive an automated e-mail providing proof of participation for CME submission. Feedback results can then be viewed by the facilitator in real time.

## CONCLUSION

Medical simulations are incredibly important educational tools, both for new learners and experienced clinicians alike.[2,4] However, there are many barriers that might prevent rural healthcare teams from taking advantage of the potential benefits of simulation activities, such as cost or training demands.[9,10] Low-fidelity and low-resource simulations can be an effective way to circumvent these barriers in rural environments.[9] Multiple free-to-use online tools, such as emsimcases.com, simulationcanada.ca and practiss.ca, exist to help facilitate the delivery of medical simulation experiences in rural environments. All of these tools provide access to simulation scenarios and educational resources and can help reduce the barriers to effective rural simulations.

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**Conflicts of interest**: The authors created Peer-Run Applied Cases for Teaching Interdisciplinary Simulations and Scenarios (PRACTISS), one of the free online simulation tools discussed in this article. That being said, we do not stand to benefit financially in any way from its use.

## REFERENCES

1. Al-Elq AH. Simulation-based medical teaching and learning. J Family Community Med 2010;17:35-40.
2. Ziv A, Wolpe PR, Small SD, Glick S. Simulation-based medical education: An ethical imperative. Acad Med 2003;78:783-8.
3. McGaghie WC, Issenberg SB, Cohen ER, Barsuk JH, Wayne DB. Does simulation-based medical education with deliberate practice yield better results than traditional clinical education? A meta-analytic comparative review of the evidence. Acad Med 2011;86:706-11.
4. Mohammed SA, Ahmed HM. The effect of simulation training on nurses and intern nursing students' skill, confident and satisfaction regarding neonatal resuscitation. IOSR JNHS 2016;5:17-27.
5. Merién AE, van de Ven J, Mol BW, Houterman S, Oei SG. Multidisciplinary team training in a simulation setting for acute obstetric emergencies: A systematic review. Obstet Gynecol 2010;115:1021-31.
6. Motola I, Devine LA, Chung HS, Sullivan JE, Issenberg SB. Simulation in healthcare education: A best evidence practical guide. AMEE Guide No. 82. Med Teach 2013;35:e1511-30.
7. Jolicoeur J, DeMiglio L, Kin LN, Orrantia E. Why they leave: Small town rural realities of Northern physician turnover. Can J Rural Med 2022;27:22-8.
8. Martin D, Bekiaris B, Hansen G. Mobile emergency simulation training for rural health providers. Rural Remote Health 2017;17:4057.
9. Premkumar K, Umaefulam V, O'Brien JM. Mobile medical simulation for rural anesthesia providers: A feasibility study. Can Med Educ J 2020;11:e60-71.
10. Beaubien JM, Baker DP. The use of simulation for training teamwork skills in health care: How low can you go? Qual Saf Health Care 2004;13 Suppl 1:i51-6.
11. Alinier G, Tuffnell C, Dogan B. Simulation on a Low Budget in Clinical Simulation. 2nd ed., Ch. 45. Academic Press: Cambridge, Massachusetts; 2019. p. 667-89.
12. Leigh G, Steuben F. Setting learners up for success: Presimulation and Prebriefing strategies. Teach Learn Nurs 2018;13:185-9.
13. Stephenson E, Poore J. Tips for conducting the pre-brief for a simulation. J Contin Educ Nurs 2016;47:353-5.
14. Rudolph JW, Raemer DB, Simon R. Establishing a safe container for learning in simulation: The role of the presimulation briefing. Simul Healthc 2014;9:339-49.
15. INACSL Standards Committee. INACSL standards of best practice: Simulation facilitation. Clin Simul Nurs 2016;12:S16-20.
16. Dieckmann P, Lippert A, Glavin R, Rall M. When things do not go as expected: Scenario life savers. Simul Healthc 2010;5:219-25.
17. Fanning RM, Gaba DM. The role of debriefing in simulation-based learning. Simul Healthc 2007;2:115-25.
18. Levin H, Cheng A, Catena H, Chatfield J, Cripps A, Bissett W, *et al*. Debriefing Frameworks and Methods. Clinical Simulation. 2nd ed., Ch. 34. Academic Press: London; 2019. p. 483-505.
19. INACSL Standards Committee. INACSL standards of best practice: Simulation debriefing. Clin Simul Nurs 2016; 2:S21-5.
20. INACSL Standards Committee. INACSL standards of best practice: Simulation design. Clin Simul Nurs 2016;12:S5-12.