Virtual Resus Room
An Innovative, Collaborative Approach To Online Simulation Education

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Abstract: Physical distancing restrictions during the COVID-19 pandemic have dramatically impacted medical education, challenging educators around the world to create interesting, novel ways to engage learners remotely. Virtual resus room (VRR) is an online simulation tool which can be used to supplement or temporarily replace in-person simulation in times when it cannot be held. The infrastructure of the Virtual Resus Room is simple, using separate audio and visual inputs. The visual portion is provided by a shared Google Slide that has been designed to feature the essential components of a resuscitation room. Every participant and facilitator will have the same slide open on their computer – so it can be interacted with in real time. Audio is provided using Zoom or any teleconferencing program of your choice. Through this, the facilitators can present the case and provide pertinent verbal updates. The team members can communicate to delegate roles, verbalize when they have completed tasks, and brainstorm together. [Shah C. Natl J Integr Res Med, 2021; 12(3):100-104]

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Introduction: For the past 25 years, simulation modeling has been used to facilitate operational and clinical decision making in health care. Simulation modeling offers the analyst extreme flexibility in modeling, including the capability to characterize complex situations, incorporate time-dependent events, and represent stochastic processes[1].

A simulation model is a computer-generated representation of a real-world system or process that can be used to analyse the evolving behaviour of a system over time, or modified to predict results of a variety of "what-if" scenarios [2]

Simulation models have been applied to a broad range of areas in health care to predict outcomes, unintended consequences, and costs of proposed interventions, thereby offering an invaluable decision aid for policy makers and health care leaders[3-5]

Simulation is used to model efficiently a wide variety of systems that are important to managers. A simulation is basically an imitation, a model that imitates a real-world process or system.[6]

Due to restriction imposed during COVID pandemic, simulation exercises in health care werenot possible at simulation centre or skillslab.

Keeping in mind the famous English proverb **Where there's** a **will there's a way,** a fantastic simulation tool was created by Sarah Foohey, Lecturer, DFCM, University of Toronto, titled "Virtual Resus Room(VRR) (https://virtualresusroom.com/) to overcome restrictions of physical distancing in performing in person simulations

What Is VRR? The Virtual Resus Room is a combination of collaborative tools: Google Slide and any teleconferencing tools like Zoom. These programs are used to create an online Sim environment that allows learners to work with a team to run through a simulated patient case.

Student and facilitators will have open a Google Slides document at the same time and simultaneously make edits. Facilitators will be updating the case in response to participant's decisions.

How Does The VRR Work? Everyone will open up the "Virtual Resus Room" (a shared Google Slides document). Participants has to interact real-time with this document to apply monitors, select and "use" equipment, and chart pertinent information.

A Zoom (or any videoconferencing tool) meeting will be used to provide audio and video, through

which the Facilitators will provide information about the case and participants will use their traditional Sim closed-loop communication techniques.

To see a demonstration video, please visit: https://virtualresusroom.com/demo

For each case, participants need: 1. Laptop with Internet Connection (can also use tablet) 2. Zoom (or any videoconferencing tool) Session Link (for audio) 3. Google Slides Link ("Virtual Resus Room")(figure 1).

Figure 1: What you Need for VRR
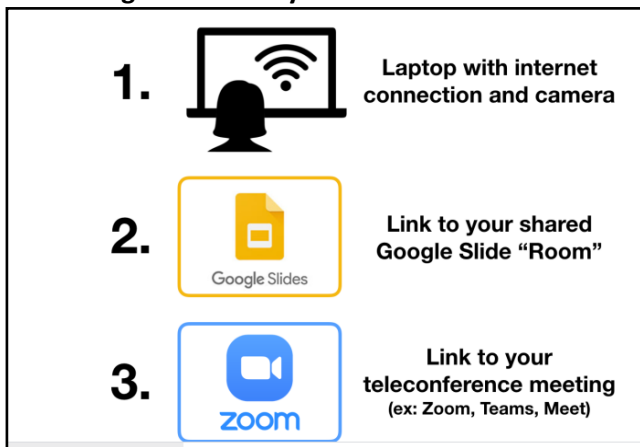
Getting Set Up(Figure 2): 1. Open Zoom (or any videoconferencing tool) Link - audio on, put Zoom (or any videoconferencing tool) on Gallery view and then resize to occupy a small portion of screen. 2. Open shared Google Slides link. 3. Improve "view": Go to Google Slides Menu - View: View Full Screen. Hide: speaker notes, ruler, guides 4. You will see:
- Page 1: Virtual Resus Room. Where all patient actions occur, vital signs shown, and notes made.
- Page 2: Medication Tray.
- Page 3: Airway Tray.
- Page 4+: Multimedia and Investigations that will be displayed as the case progresses.

Figure 2: Getting Setup VRR
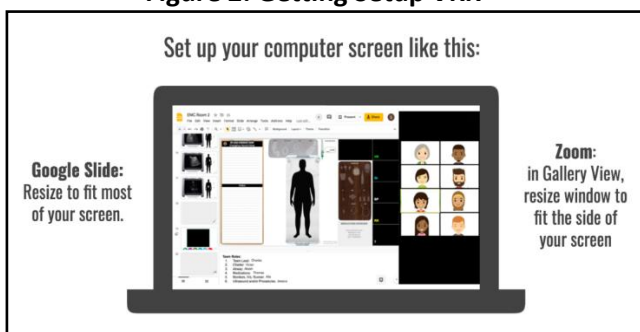
How do you use the "Virtual Resus Room"?
● Team Roles & Communication: Suggested Team Roles are: Lead, Meds & Monitors, Charter, Airway. Student have completed a task (ex: medication, monitor, airway manoeuvre) - close the loop!

If student want to know what the patient looks like –they need to ask out loud. Facilitators will answer. Depending on the case - they may direct learners to a slide to show associated multimedia. (Figure 3)

Figure 3: Typical Sim Roles
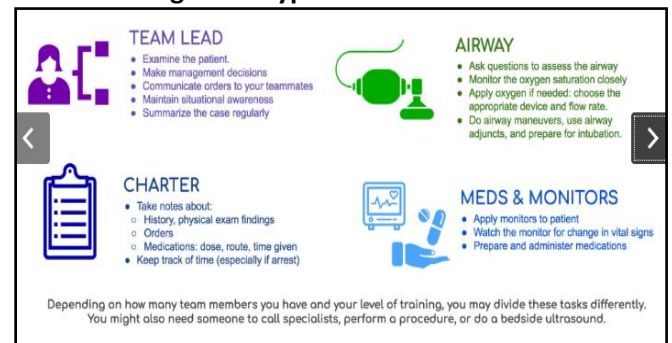
● Charting: Charter can use the Treatment Record text box to include information about history, orders, etc.

● Monitors: Click and drag monitors onto the patient to get vitals. Learners need to watch the monitor for vital signs changes throughout the case.

● Medications: student has to Copy medication from "Medication Tray" then Paste medication on page 1(sim page of google slide). Drag into "Medications Given Box" to administer. (A in Figure 4). Same time Charter can type exact dose and time administered into treatment record text box (B in Figure 4)

Figure 4: Use of Medication and Charter
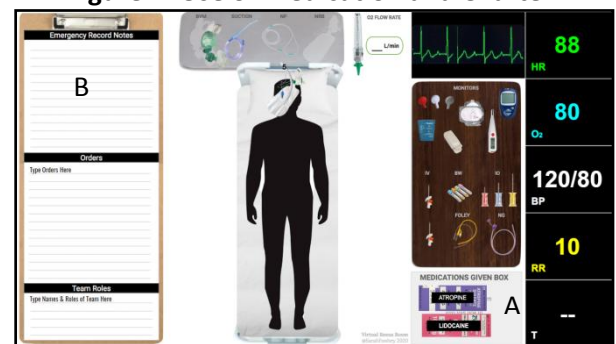
(Commonly used Computer Shortcuts are: Mac: Copy: Command-C. Paste: Command-V. PC: Copy: Control-C. Paste: Control-V. If you want to select

multiple objects: press and hold Shift, then click over each object individually).

● Equipment: student has to Click and drag equipment over the patient's body to complete the task (ex: glucometer, Foley, NG) while verbalizing that the task has been completed, The same process can be used forAirway equipment located in "Airway Tray".

What Will The Facilitators Do?
● Introduce case with participants
●Answer learners' questions about history and physical exam findings
● Update vitals in response to learner's actions
● "Reveal" investigations on subsequent slides as prompted by your orders.

What Will The Participants Do?
The principles of simulation run using the Virtual Resus Room are the same as in-person simulation.

If you are new to simulation, you can review the following information so you know what to expect.

Principles Of Simulation: Simulation training is a way to gain experience working as a team while rehearsing the management of sick patients.

VRR is a low-stakes space where learners can make mistakes and learn from them. The facilitator set here to support and guide them.

Simulation Terminology: Crisis Resource Management Skills: the non-technical skills required for effective teamwork in a crisis situation.

Some Examples Of CRM Skills Are:
● Closed loop communication: Team Lead asks for piece of information or for a task to be completed. The person who will complete the task acknowledges the request, and confirms when the task is completed. For Example : Lead: "Teresa - could you obtain IV access?". Teresa: "Yes I will…. IV in place".

● Situational Awareness: The ability to maintain focus on the "big picture" - understanding the environment, the situation, and what could happen next. Requires good communication and resisting the urge to give all your attention to a specific task.

For Ex: During a trauma - the team lead isn't focused on how to put in an IV, but instead is working through their ABCs assessment and thinking about what life threatening injuries could be present.

You can Learn more about CRM skills here: https://litfl.com/crisis-resource-management-crm/

Organizing A VRR Sim Session: Running a Virtual Resus Room Sim is very easy! You should be able to create a simulation experience for your learners that, like in the Sim Lab, is responsive and interactive.

Recommended VRR Session Structure: All participants need: laptop, stable internet connection. We can have **4-6** Learners per group, **1-2** Facilitators per group and spend **1 hour** per case (20 mins for case + 30 mins for debrief + 10mins between cases.

Components Of Sim Sessions (Figure 5):
Pre-brief: ● The pre-brief is a general introduction to the case - what to expect and how to work/interact with the sim resources at hand. In this context - this will include how to use the Virtual Resus Room online interface.

Figure 5:Components of Sim Sessions
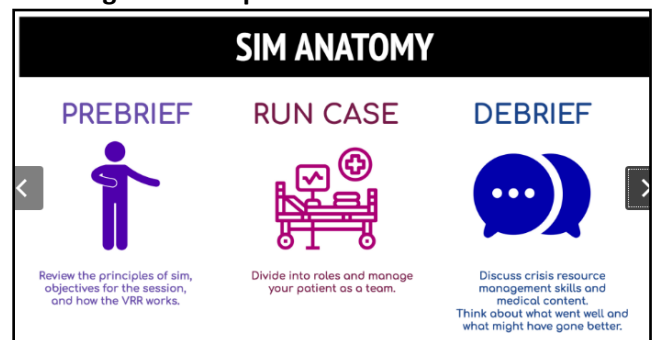
Running the Case: Following Team Roles can be assigned:
➢ Team Lead: Coordinates the team - delegates tasks, follows up with tasks, and guides the group through case. The lead should be "hands off", focusing on the big picture instead of any specific tasks. The team lead does not need to know everything or make every decision - can discuss with all team members and delegate tasks like looking up doses, etc.
➢ Airway: Assess AB, administers oxygen, does airway maneuvers, intubates, etc.

➢ <u>Meds + Monitors + Equipment:</u> The tasks and roles traditionally done by nurses in the ED.
➢ <u>Charter:</u> Documents pertinent clinical information and times when necessary (ex: during CPR).

<u>Example of Running Case:</u> You can begin all Sim's with this kind of script: ● Team Lead: "Can ___ please obtain 2 IVs and place monitors on the patient to attain the vital signs?" ● How to ask about airway: "Is the airway patent? Is the patient talking? Any swelling/obstruction visible?" ● How to ask about breathing: "Is there any work of breathing? Is there symmetrical chest rise?" ● How to ask about circulation: "What is the patient's mental status? What is their cap refill? colour?"

<u>Debrief:</u> The debrief is the group discussion that occurs after the case is completed. There are 2 main areas of discussion: Crisis Resource Management Skills and Medical Content. Your facilitator will guide your discussion with questions like: How are you feeling? Can you summarize the case? What went well during thecase? What could have gone better? What questions do you have?

Remember that the most important part of sim is to create a **psychologically safe learning environment**. When working with facilitators, students need to be confident that they will be able to handle a potential critical safety issue (either in the domain of medical knowledge or CRM skills) in a sensitive way.

What Do You Need To Do To Organize A VRR Sim?
Create your room, You can use "ready to run cases"(https://virtualresusroom.com/cases-2/)Or, you can build your own case(https://virtualresusroom.com/building-room/)

If you plan to have multiple groups doing the same case simultaneously, remember to a unique room for each group (by making a copy of your Google Slide Room).

Introduce Your Participants To The VRR: You can send them a link of participant instructions **(**https://virtualresusroom.com/761-2/**)** ahead of time.

It is advisable that you start your session with an interactive pre-brief, to make sure everyone knows how to open the slide set, click & drag, copy & paste, etc.

Teach Your Facilitators How To Use The VRR: You can send them a link to these facilitator instructions (https://virtualresusroom.com/running-the-sim/) ahead of time.

It useful to run a 30min introduction session for the facilitators ahead of time to improve their confidence using the VRR.

Prepare Debrief Materials: Depending on your teaching style, you may decide to create some formal learning materials. For large group clerkship teaching, some facilitators like to create debrief slides to make prep easier for our busy facilitators.

Provide Your Facilitators Details For Session: Session details to share include: schedule, Zoom (or any videoconferencing tool) and google slide links, case progression charts, debrief materials.

Training Facilitators Who Are New To Sim? : The VRR can be used as a way to introduce medical students and residents to the principles of facilitating a simulation.

Summary: Simulation has become a cornerstone of medical education, preparing us for life as a Medical Professional more than any other learning modality. Virtual Resus Room provide a fun, engaging, and high yield alternative approach without involving cost

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