Supplementary File 1. Telesimulation Configuration Guide (for staff)

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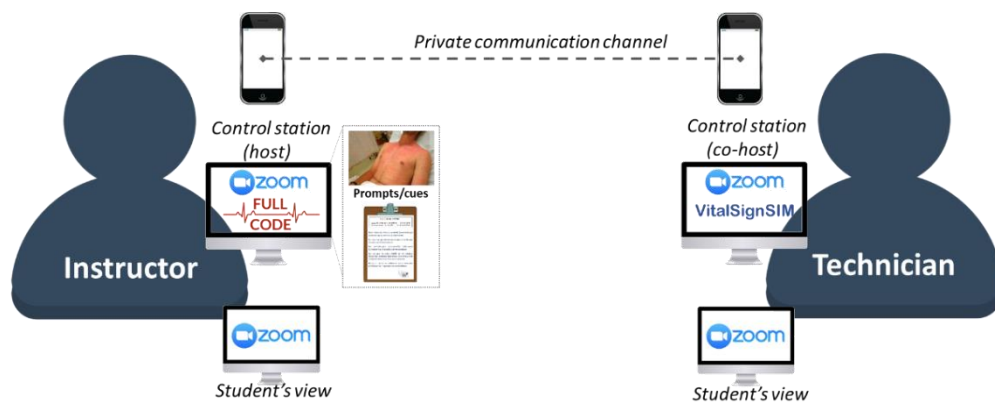*Last update: May 2020*

Introduction

This document provides notes and settings relevant to the implementation of telesimulation. It should be used as a configuration checklist, before starting a telesimulation scenario. For a detailed description on the entire process, we recommend the reading of *Sa-Couto C, Nicolau A. Using telesimulation to overcome COVID-19 distancing: a recipe with free online tools and a bit of imagination. MedEdPublish*. To view an example of a telesimulation scenario, an illustrative video (student's view) with parts from an actual class is available at: https://bit.ly/2TeeyP8.

All referred software, equipment and procedures may be adapted to the requirements and means available.

Resources needed

- 2 staff members (instructor and technician)
- 2 computers/tablet per staff (comp 1 - control station; comp 2 – monitor the students' view)
- Cell phones with headphones and built-in microphone (one per staff)
- Zoom (https://zoom.us/) installed in all computers
- Full-Code App (https://app.full-code.com/Player/Player.html) running in the control station of the instructor
- Prompts and cues (illustrative images and/or documents) available in the control station of the instructor
- VitalSignSIM (https://simulacao.med.up.pt/tools-resources/) installed in the control station of the technician

If you are not familiarized with the software (Full-Code App and VitalSignSIM) and the teleconferencing platform (Zoom), dedicate some time (a couple of hours) to test it. Play around with the features, ensuring

you are comfortable using them during the scenarios. A rehearsal is highly recommended before running the telesimulation scenario.

About ZOOM:

- Zoom allows free teleconferencing with the maximum duration of 40 min. This should be enough time for configuration and running the scenario, but you need to start a new meeting for debriefing. If you have an institutional account, there is no time limitation, and debriefing can be included in the same meeting (or other scenarios).
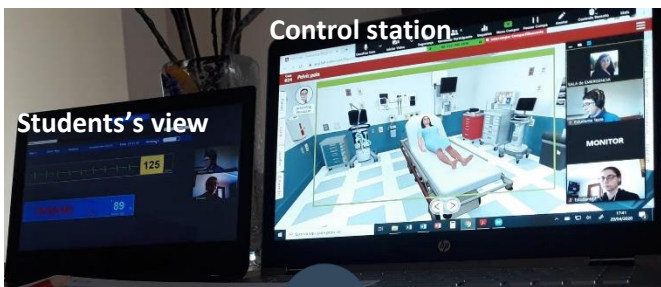
About Full-Code App:

- Full-code App is a serious game that simulates an emergency room. It offers 7 free clinical cases (with adult and pediatric patients), with many other cases available for buying. The case itself is not relevant for your specific scenario, as it will be used just for creating the environment.
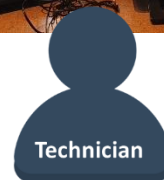
About VitalSignSIM:

- VitalSignSIM is software developed by CSB-FMUP that emulates a simple vital signs monitor. It allows easy control of the signals through the computer keyboard (read the user manual for the selection keys).

Structural organization and tasks

Instructor

Tasks:
Controls Zoom
Controls Full-code
Provides Prompts/cues
Communicate with students
Communicate with Technician (privately)
Take notes for debriefing

Technician

Tasks:
Controls Zoom
Controls VitalSignSIM
Provides patient voice
Communicate with Instructor (privately)

Set-up steps

Step 1: Instructor opens Full Code App and selects the case (on his control station). Depending on the scenario, some actions may be required (e.g. if your scenario starts with a patient with an IV line).

Step 2: Instructor opens all files/images with prompts and cues (on his control station). During the scenarios these should be selected using ALT+TAB keys.

Step 3: Technician runs VitalSignSIM (on his control station). Depending on the scenario, specific vital signs may be ON.

Step 4: Zoom setup (order must be followed). For further information on Zoom features, please, consult Zoom Help Center: https://support.zoom.us/hc/en-us

	Instructor	Technician
1	Starts a Zoom meeting in the control station (meeting Host) and shares the meeting ID (through a weblink or code) with the technician Note: Enter with camera OFF and sound ON	--
2	--	Joins the meeting in the control station. Note: Enter with camera OFF and sound ON
3	Assigns co-host profile to the technician control station	--
4	Rename the user to EMERGENCY ROOM.	Rename the user to MONITOR.
5	Create a breakout room and rename it to "HELP TEAM".	--
6	Enable all participants to screen sharing.	--
7	Share screen. Use advanced options and select "part of the screen" (only the patient should be visible to the participants).	Share screen - Select VitalSignSim window.
8	--	Select under the configurations "sharing computer sound"
9	Joins the meeting in the second computer (students' view), entering as "test student 1". Note: Enter with camera OFF and sound MUTED	Joins the meeting in the second computer (students' view), entering as "test student 2" Note: Enter with camera OFF and sound MUTED
10	Select "Enable waiting room".	--

Step 5: Establish the phone call between the instructor and technician (private communication channel).

Starting the scenario (*Instructor)*

Step 1: Place the Full Code in the "room entry" view.

Step 2: When all the participants arrive at the waiting room, check-in everyone. Welcome your students/participants. Review with them Zoom configurations and general recommendations. Note: Students should receive, as mandatory pre-class reading material, the guidelines and recommendations for telesimulation. Also, it is highly desirable to have a dedicated period for briefing the "space" and "simulator" (ideally in a different day than the actual scenario).

Step 3: If your scenario includes two teams, select (half) of the participants and assign them to the "HELP TEAM" breakroom. Note (Zoom configuration): Options(…)/Break Room/Assign/Open Room.

Step 4: Still in the "Room entry" view, brief the clinical case to the team that will receive the patient room). If you have a patient chart, it can be showed using ALT+TAB.

Step 5: Start the scenario by changing the view of the "Full Code App" to the patient (2 clicks on the left arrow).

Tips and tricks

Overall

- Reserve enough time for configuration settings. In the first trials, at least 10 minutes should be reserved before the beginning of the scenario. After 4-5 runs, it will take around 3-4 minutes.
- The private channel of communication between the instructor and the technician must be established in the beginning of the scenario, before students entrance in the main room. It is recommended to use headphone (placed in one ear only) with built-in microphone. To ensure the dialogue is not listen by the participants, the instructor and the technician should mute the zoom microphone (from each control station), and turn it ON after the dialogue has ended. An alternative strategy can be whispering with a hand in front of the mouth, avoiding turning the sound ON/OFF every time there a dialogue is needed.
- Before the beginning of the scenario, all images and documents that are expected to be needed (e.g. medical imaging or blood test results) must be prepared and checked for readability through Zoom. All sounds resulting from the vital signs monitor must be adjusted so that their volume is adequate and comfortable, avoiding excessive noise during the scenario.
- Avoid having other windows open. This will prevent opening undesirable files or webpages during your scenario.
- Use the students' view computer to test specific features (e.g. allocate students to breakrooms).

ZOOM

- Every time you start a Zoom meeting, configuration of the settings (e.g. room naming, creating simultaneous rooms, etc) is needed. If possible, use an institutional account to have unlimited time.
- Enable waiting room to avoid students entering before you are ready. After check-in all students, the waiting room, you can be disabled.
- Use the notation tool to highlight the location (e.g. write "EMERGENCY ROOM" on the top center of the visible screen). This tool can also be used to provide visual cues of actions that are not available (e.g. as no "ambu" bag is available on Full Code App, you can write near the head of the patient "hand bag ventilation"). Note that, this text will move as you change the views. It can also be erased at any time.
- Use breakrooms to split students in teams. The team allocated to the breakroom should be instructed that they will be allocated there, during part of the scenario, and will be, eventually,

called. The instructor or the technician should not enter the breakroom, as the screen sharing will be lost. During the scenario, to call the students in the breakroom, just close it. Students can either wait 60 sec to join the main room or actively choose to join immediately.

Full-Code App

- Select a case that has some similarities to the scenario you will be running (e.g. "Found down" case #22, if you want a patient that appears to be unconscientious; "Pelvic pain" case #24 for gastrointestinal bleeding; "Acute Dyspnea" case #56 for anaphylactic shock; etc).

- Use the different views of the room to create areas related with specific tasks (e.g. "room entry view" – to receive students and brief the clinical case; "telephone view" – when a call is made; etc).

- Select the available actions (e.g. insert IV; place O2 mask; etc) by clicking over the images. Note that some actions are case specific.

- If you want the patient to close his eyes/becomes unconscious during the scenario, use the Tab Interventions, select Medication Sedation and give an Etomidate bolus. If necessary, reduce the screen sharing to avoid students view of this action.

VitalSignSIM

- Vital signs can be turned ON (or OFF), independently. Depending on the scenario, VitalSignsSim may start with all/selected vital signs ON or OFF.