OVERVIEW

1. Need

Given the current COVID-19 pandemic, medical students have necessarily been excluded from the clinical environment given need to conserve PPE and maintain safety. CMU suspended all patient care teaching activities effective March 16, with an uncertain timeline for return. The AAMC has encouraged medical schools to explore “alternative methods” for educating medical students, including online content and participation through distance learning technologies.

2. Project Scope

We offered opportunities for students to participate in simulation sessions remotely via videoconference. Utilizing our current simulation technology infrastructure, in addition to a standalone videoconferencing cart, students were able to participate in manikin-based simulation sessions. These sessions replaced in-person simulations normally conducted during clerkships. Utilizing simulation staff as avatars, each student was assigned a role during the simulation, and was responsible for the patient interview, review of data and ordering of diagnostics and interventions.

3. Requirements

Learners were required to utilize their university issued laptops with broadband access. An additional Cisco® SX-10 videoconference unit and display was required in the simulation suite. Sessions were recorded within the Cisco Webex® environment. Feed was provided to the unit through our simulation recording system.

4. Affected Parties

CMU faculty, students and simulation center staff

5. High-Level Timeline/Schedule

Initial testing occurred March, 2020. Curriculum go-live April 6, 2020
6. Technical Specifications

**Detailed Equipment List:**

- Cisco Webex® Institutional License (HIPAA-compliant BAA in place)
- Simulation recording system (B-Line Medical™)
- Patient monitor PC
- Stimulus/Presentation computer
- Instructor PC and monitor (running B-Line SimCapture™)
- Cisco® SX 10 videoconferencing codec on mobile cart with 55” display
- Student issued laptops

**Setup**

To achieve our goal of offering remote manikin-based simulation, we extend the tools already at our disposal including Cisco Webex®, B-Line Medical™ simulation recording system, Crestron® media system, and our on-premise Cisco® videoconferencing unit. We believe this setup can be replicated using different tools available at your location.

In our simulation suite we utilize two dedicated PC’s, an all-in-one (AIO) computer for the patient monitor and a desktop connected to a 60” display for stimulus material. The video outputs for these machines are fed into a Crestron® media system and from there are fed into our B-Line SimCapture™ servers.

We then start a new simulation recording on our Instructor PC and choose to display only the stimulus and patient monitor computers. The Instructor computer is connected to a Webex meeting and the secondary monitor on this computer is used to share the B-Line session into the meeting. This allows the simulation technician to operate the manikin, while ensuring that students are receiving content through the videoconference. For organizations without simulation recording or content switching systems, we recommend connecting both the stimulus and patient monitor computers directly to the Webex® meeting. In this case, a confederate will be required to switch the computer sharing screen because Webex® (and most other videoconference systems) only allows one computer to share content at a time.

Also, within the simulation suite, we use a 55” display mounted on a mobile cart. A Cisco® SX10 codec was mounted above the TV. The codec was then connected to the Webex meeting. This allows the simulation staff in the room to see and interact with the students and visualize shared content. As an alternative, a computer with a large monitor, high quality webcam, and conference room microphone could be used in place of the SX10 codec and TV.

All students connect to the Webex® meeting from their university provided laptops, but any computing device can be used with WebEx. We believe that other videoconference services can be used including, Zoom®, Google Hangouts®, Microsoft Teams®, GoToMeeting®, etc.
7. Network/IT Diagram (Appendix A)
8. Setup Photographs

Manikin, patient monitor and stimulus monitor

Videoconference unit in simulation suite
Second monitor instructor PC

Instructors interacting with students
9. Institutional Contacts

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