The Use of Virtual Humans in a Simulated Operating Room to Assess Laparoscopic Troubleshooting Skills

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**INTRODUCTION**

- Virtual humans (VHs) are life-sized, interactive avatars that can be used to teach and assess nontechnical skills in a simulated OR setting.
- The purposes of our study were to demonstrate the fidelity of VH teammates in a simulated laparoscopic troubleshooting scenario and to demonstrate that residents participating in a VH scenario have similar performance (non-inferiority) compared to residents participating in a human confederate scenario.

**METHODS**

- Study subjects participated in a virtual scenario with three OR teammates (anesthesiologist, circulating nurse and surgical technologist) based on the "Laparoscopic Troubleshooting Module" in the ACS/APDS Surgery Resident Skills Curriculum (Figure 1).
- Forty general surgery (n=16) and obstetrics and gynecology residents (n=24) were randomized into three study groups: human confederate teammate (n=14), scripted VH teammates (n=14), and hybrid VH teammates (n=12).
- VHs provided either prerecorded, scripted responses or real-time, "hybrid" responses from a study proctor using voice-changing software.
- Resident performance in the troubleshooting challenges (hypotension/bradycardia, abdominal distention, and hypercarbia) were scored by a second proctor.
- Fidelity of the scenario was assessed using questions related to immersiveness of the characters, setting, and content rated on a 5-point Likert scale.

**RESULTS**

- There were no significant differences in resident performance across the three study groups.
- Performance in the module was mediocre.

**CONCLUSION**

- Overall performance in the module was mediocre.
- There were no significant differences in resident performance across the three study groups.
- Our study highlights gaps in knowledge in the aspect of laparoscopic surgery and VHs in a simulated OR could potentially address this need.

**REFERENCES**