Utilizing Simulation in Resident Sedation Education: Measuring Performance and Self-Efficacy

Marlee Hansen, DDS; Beau Meyer, DDS, MPH; Janice Townsend, DDS, MS; Kim Hammersmith, DDS, MPH, MS
The Ohio State University and Nationwide Children's Hospital, Columbus, OH

Medical education literature suggests that simulation can be an effective way to teach and improve communication and emergency management skills.

No uniform or validated assessment of emergency management skills required for dental sedation providers.

Purpose: To evaluate resident performance and self-efficacy in various moderate sedation skills through different simulation styles as part of an advanced dental education program.

Methods:

- One informed consent and two emergency management simulations were integrated into the didactic sedation course
  - Standardized patients
  - Simulation mannequins
- **Demographic and previous experience** questionnaires to provide context
- **Quantitative and qualitative performance measures** to evaluate simulation as a resident assessment tool
- **Self-efficacy** questionnaires pre- and post-simulation to evaluate simulation as a training tool
- Descriptive and non-parametric statistics

Despite improving self-efficacy, implementing simulation exercises for resident assessment requires thoughtful supplemental training aids and validated performance measures.

Simulations and Assessment Tools

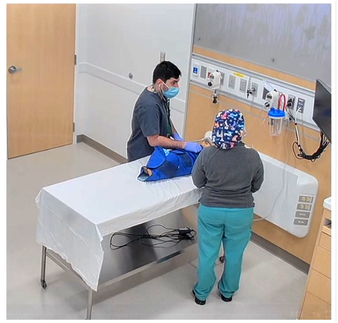

Figure: Resident with a dental assistant managing a sedation adverse event in the NCH Simulation Center.

Performance:

- Second year residents performed better than first year residents for informed consent, but similar for emergency management
- Informed consent = high performance
  - Biggest area of improvement: communication skills
- Emergency management = mixed performance
  - Biggest areas of improvement: situational knowledge, problem solving, teamwork and communication

Self-Efficacy:

- Self-efficacy significantly increased after completing all three simulations
  - 24 percentage point improvement (strongly agree: 18% pre-simulation, 42% post-simulation, $p<0.001$)

Acknowledgements: Special thanks to the pediatric dental residents and assistants for their participation in the simulation exercises.