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Abstract of the Scientific Literature

Simulation to Identify Errors in Pediatric Procedural Sedation

The practice of sedating patients for diagnostic and therapeutic procedures may be associated with life-threatening respiratory depression. A simulated scenario was developed that was reproducible with realistic pediatric physiology that degraded over time if no interventions occurred and improved when treated appropriately. Management of the scenario was observed and videotaped in an ideal setting—with a pediatric anesthetist (the gold standard), a radiology department, and an emergency department all in the same institution. Sedation experts, using a set of video markers for adverse event detection, diagnosis, and treatment, measured deviations from best practice. Hypoxia and hypotension lasted 4 1/2 and 5 1/2 minutes in the radiology and emergency departments, respectively, compared with 0 minutes in the gold standard setting. Many latent failures were identified during videotape review. This method revealed that use of a "crash test dummy" was a reliable and feasible method to objectively quantify rescue performance in actual sedation care settings. Vulnerabilities in personnel and care systems were identified, even though sedation care regulatory requirements (ie, "the guidelines") were met.

Comments: This study is an excellent example of the use of simulation to assess the performance of medical personnel during a sedation emergency. It paints a sobering picture of systemic and personal failures that can occur during a simulated pediatric adverse sedation event, even though those involved regularly provide sedation to children in a hospital setting. It clearly shows that meeting the guidelines is not enough and that regular practice during realistic simulated events is necessary to maintain diagnostic and rescue skills. Dentistry has not yet embraced sedation simulation as a teaching tool. The $120,000 price tag for the simulator used in this study may require interested dental institutions to partner in developing sedation simulation training centers that can be used by many. **ARM**

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