Chloral hydrate sedation in the dexmedetomidine era

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Background: Chloral hydrate use in children has fallen out of favor as a primary sedation agent due to unpredictable sedation properties, prolonged recovery times, and the potential for severe adverse effects. Utilization declined across the nation after commercial production of the oral solution was discontinued in 2012. Despite the growing use of alternative sedatives, many pharmacies continue to compound chloral hydrate solution from raw ingredients. This compounding process is associated with more frequent sedation failures and requires the ingestion of larger suspension volumes. Fatalities associated with chloral hydrate use continue to occur.

Objective: To evaluate the use of chloral hydrate as the primary agent for procedural sedation.

Methods: We conducted a cross-sectional study of patients that received chloral hydrate for procedural sedation from October 2010 to December 2016 at two free-standing children's hospitals. Demographic data, procedure characteristics, location, provider specialty, and related complications were collected. The hospital pharmacy database of chloral hydrate utilization was matched to procedure billing data.

Results: There were 5874 chloral hydrate sedations during the study period (Figure 1). The highest rates of use occurred in 2014, when chloral hydrate was used for 1420 procedures. Cardiac procedures had the highest use (4250, 72.4%), most of which were echocardiography. Audiology clinic (681, 11.6%), neonatal care units (255, 4.3%) and pulmonary lab (168, 2.9%) accounted for the most common locations. Procedural sedation policy change in the classification of chloral hydrate from a minimal to moderate sedation agent occurred during the study period.

Conclusions: Despite significant declines in the use of chloral hydrate for procedural sedation across the country, local use of chloral hydrate remains high. The high rate of decline after 2014 was attributed to transition of high-use clinical sites to alternatives such as intranasal dexmedetomidine and the reclassification of chloral hydrate as a moderate sedation agent.