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BENCHMARK TEMPLATES FOR PEDIATRIC AMBULATORY DENTAL PRACTICES

RATIONALE

Office based surgeries (OBS) have seen a significant growth in complexity and in patient cases over the last two decades. An estimate of 100,000 - 250,000 cases of dental procedures occur in the pediatric population with a majority between the ages of three and five (1). Anesthesiologists are integral in OBS by ensuring children are comfortable and safe while providing local and general sedation to ensure optimal treatment. Dental caries affects 60-90% of the pediatric population worldwide with anesthetic procedures ranging from crowns, fillings, and extraction to root canals, bone grafting, and implant surgeries (2).

Notably, rates of dental caries are higher in children with different racial and ethnic backgrounds as well as in children who have neurodiverse conditions such as autism (3). Dental care is challenging for minorities due to financial constraints, language barriers and discrimination bias. The Centers for Disease Control and Prevention show dental access highest in non-Hispanic white and lowest use in Hispanic and Black children (3). Neurodiverse conditions pose additional obstacles for children who face increased sensitivities to sensory stimuli in the dental OSA, new environments which can induce behavioral challenges, and communication difficulties that may arise in a new child to healthcare provider relationship.

The reason mobile office based anesthesia is growing is because of the need to serve the disproportionately affected pediatric populations and in response to the increased number of dental procedures now being performed in the office. The shift of procedures from hospital to OBS provides benefits such as increased patient satisfaction, efficient procedural schedules, and lower overhead costs (4). As a result, more procedures under anesthesia are being performed in the office with a younger and more diverse pediatric population. It is critical to investigate the access of care in dental practices to provide equitable dental healthcare in this disproportionately affected pediatric population. Since children have low error tolerance and are at high risk for adverse events, the increased complexity in procedures under anesthesia requires special attention to the current benchmarks in safe practices and quality of care (5).

OBJECTIVES

This American Society of Anesthesiologists (ASA) Grant assesses the safety of the practices by providing benchmark templates for disproportionately affected pediatric patients who undergo dental anesthesia OBS. Unlike procedures led by physician anesthesiologist, dental anesthesia OBS do not have established quality and safety benchmark tools (6). National investigations surrounding the need for pediatric dental anesthesia practice guidelines arise from the death of a 6 year old Californian from a tooth extraction, report by Arizona Republic following multiple pediatric OBS ER visits, and Texas investigations citing common errors in dental sedation (7). Potential benchmarks will include:

- Qualified personnel should include an anesthesiologist or certified registered nurse anesthetist and a licensed dentist. Personnel must be present for the entire procedure until the patient has been discharged, documented, and available in the case of advanced resuscitation techniques.
- Comprehensive checklists seen in the World Health Organization and American Association of Nurse Anesthesiology have resulted in reductions of surgical complications while improving cost savings and quality of care (8).
- Avoid common pitfalls such as failure to document vital signs and administered medication, calculate dosages by weight and manufacturer's recommendation, or start and stop times for nitrous oxide, oxygen, and all sedation levels (7).
- Engagement of pediatric patients in shared decision-making should reference ASA's preanesthetic educational decision aids for epidural, spinal, or peripheral nerve blocks. Informed consent for appropriate sedation and additional staff trained to resuscitate pediatric patients. Space should accommodate equipment and include back-up power reliable sources of oxygen, suction, and emergency drugs. Continual monitoring of end-tidal carbon dioxide must be reported.
- OBS should follow the ASA, The Joint Commission on Accreditation of Healthcare Organizations, Accreditation Association for Ambulatory Health Care, American Academy of Pediatric Dentistry, Pediatric Oral Health Research and Policy Center, and American Association for Accreditation of Ambulatory Surgery Facilities Handbook.

Benchmark templates will incorporate these guidelines and identify key metrics in dental pediatric practices to bridge the gaps seen in ambulatory settings and best practice standards. Data analysis through a linear regression will identify vulnerabilities in safety with metrics such as in wait times, procedural conducted and turnaround time, pharmacological interventions, surgical sites, respiratory management, and high risk concerns. Once established, pediatric safety can be improved with healthcare team education, strong leadership, and national guidelines.

TIMELINE & METHODS

AUG - SEP Conduct literature review on safe practices in pediatric dental ambulatory cases. Integrate national guidelines (i.e., ASA, JCAHO, AAAASF). Understand best practices.

OCT - NOV Prepare 1 min. ASA project presentation by November 2024. Visit practices to understand workflow, administer pre-survey, and conduct community health needs assessment.

DEC - JAN Work with analysts to identify benchmarks needed to bring optimal care to OBS.

FEB - MAR Schedule educational sessions to discuss findings and talk through best practices.

APR - JUN Administer post-survey. Analyze data to prepare a 1-page progress report by June 2025 and 5 min. ASA outcomes presentation by November 2025.

COMMUNITY HEALTH NEEDS ASSESSMENT & METRICS

A community health needs assessment (CHNA) would include stakeholders such as dentist, anesthesiologist, nurse anesthetist, office manager, and scheduler from the ambulatory dental practices. The goal of the CHNA would be to determine which adverse events are seen most commonly in disproportionately affected children around the country. The ASA Grant plans to gather data to determine if the most common adverse events include laryngospasm and bronchospasm or if post discharge events include nausea, vomiting, and dizziness (9). Outcome goals would be to develop benchmark templates that are feasible and applicable to the greater healthcare community. These trends are some preliminary metrics the ASA Grant hopes to distinguish in local OBS. It is necessary for healthcare teams to manage dental anxiety and behavior effectively and not resort directly to sedation. Therefore, a discussion with stakeholders will identify key metrics that may impact clinical outcomes in OBS.

BARRIERS

OBS performed in private versus academic dental anesthesia practices may each follow different guidelines. Access to care and representation may be limited for children who come from different racial, ethnic, and neurodiverse backgrounds. Nationally, certain dental injuries and deaths are not required to be reported. Therefore, practice standards should develop screening questionnaires and criteria based on safety checklists, research that works with current ambulatory practices, and adherence to practice guidelines.

GROWTH AND LEADERSHIP IN MENTEE

The ratio of male to female anesthesiologists has decreased over the past decades. However, as a woman with a Hispanic heritage, the cohort is still underrepresented. Additionally, I did not have an anesthesia third year clinical rotation so have accepted a non-funded anesthesia fellowship in between my third and fourth year of medical school at Massachusetts General Hospital and Massachusetts Eye and Ear Hospital to be exposed to the field of clinical anesthesia research in the community. Dr. Shapiro's involvement as the past Chair of ASA Committee on Patient Safety and Education positioned him to lead extensive national and international projects in the field of patient safety in anesthesia and non-operating room anesthesia in both the community and research settings. The ASA CPD Mentoring Grant would provide an invaluable connection as a Kansas City University (KCU) student and a 1983 KCU alumni to pioneer a newfound growth in the mentee's professional enrichment with the support of a leader that advocates for the pediatric community.

ASA COMMITTEE ON PROFESSIONAL DIVERSITY

Despite advances in the field of ambulatory anesthesia, there is a limited amount of primary literature that provides quality and safety standards in children OBS. Children from lower socioeconomic status (SES) experience higher rates of dental caries (10). Concerningly, early childhood caries trigger consequences that include chewing difficulties, insufficient physical development and negative academic performance. Health-associated disadvantages have been seen to transfer from one generation to the next, with effects seen manifesting in prenatal development. Environmental factors play a critical role and deprived support have a strong correlation with higher dental caries. Inclusion of children with conditions such as autism promotes equitable access to dental care without discrimination. Early intervention can give hope to those who are destitute to obtain basic necessities in health. The ASA Grant will give a diverse group of children under anesthesia procedures an equitable chance to establish sustainable oral hygiene and increase the chance of reaching overall well-being in life.

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