2.15 PROCEDURAL SEDATION

Introduction

Sedation is used in conjunction with nonpharmacological interventions to minimize procedural pain and to provide decreased motion for successful completion of studies and interventions. Control of pain, anxiety, and memory can minimize negative psychological responses to treatment and lead to a higher success rate for diagnostic testing or therapy administration. Safe attainment of these goals requires careful preparation and clinical decision-making prior to the procedure, meticulous monitoring during the procedure, and skillful application of techniques to avoid or treat the complications of sedation. This may include the need to rescue patients from a deeper level of sedation than intended. While not all pediatric hospitalists will need to perform procedural sedation in their daily work, those who do must adhere to high standards of quality. With appropriate training and experience, pediatric hospitalists can safely provide a range of sedation services for pediatric patients.

Knowledge

Pediatric hospitalists should be able to:

- Discuss the goals of sedation, such as pain control, anxiolysis, amnesia, and motion control.
- Compare and contrast the definitions of minimal, moderate, and deep sedation, and general anesthesia, as established by the American Society of Anesthesiologists (ASA), American Academy of Pediatrics (AAP), and The Joint Commission (TJC).
- Define the ASA Physical Status Classification System and the Mallampati score to predict ease of endotracheal intubation.
- Discuss the pharmacology and effects of commonly used sedation medications (such as propofol, ketamine, midazolam, fentanyl, dexmedetomidine, nitrous oxide, and others), including planned effects and potential side effects.
- List commonly used single or combination medications and describe how each achieves the desired goal while minimizing the risk of complications and side effects.
- Discuss the establishment of a safe sedation plan that is developmentally tailored for children and adolescents of various ages.
- Discuss the proper level of monitoring and personnel needed to maximize the likelihood of a safe sedation outcome.
- Describe the use of nonpharmacologic interventions (such as bundling, glucose water pacifiers, presence of the family/caregivers, visual imagery, deep breathing, music, and others) as adjuncts to medications, to mitigate the perception of pain and anxiety.
- Discuss the inherent risks of administering sedating medications and apply the proper monitoring necessary to avoid and promptly recognize instability.
- Describe how age, disease process, and anatomy may increase the risk of sedation complications.
- Review indications for use of common reversal drugs, including anticipated results and duration of rescue effects.
- Identify the indications for consultation with subspecialists, such as anesthesiologists, intensivists, child life specialists, and others, when appropriate.

Skills

Pediatric hospitalists should be able to:

- Perform a pre-sedation evaluation, appropriately assigning ASA physical classification and Mallampati score, identifying anatomical risk factors, and delineating other patient-specific risks.
- Identify patients at higher risk for complications and efficiently refer to an anesthesiologist as appropriate.
- Review home medications and anticipate impact of these on the sedation plan.
- Communicate effectively with patients and the family/caregivers regarding the indications for, risks, benefits, and steps of sedation.
- Obtain informed consent from the family/caregivers prior to the sedation.
- Develop a sedation plan that is based on the pre-sedation evaluation and incorporates goals for the sedation and any patient-specific risks.
- Communicate effectively with the healthcare team before, during, and after the sedation to ensure accurate handoffs and safe, efficient care.
- Obtain intravenous access according to patient needs.
- Manage the airway at all levels of sedation, whether the level of sedation achieved was intended or unintended.
- Perform airway interventions and pediatric advanced life support as needed, in case of sedation complications.
- Identify side effects and complications of sedation and respond with appropriate actions.
- Select appropriate monitoring and correctly interpret monitor data.
- Identify when recovery criteria are met and initiate an appropriate discharge/transfer plan.

Attitudes

Pediatric hospitalists should be able to:

- Recognize the importance of effective collaboration with hospital staff and subspecialists to ensure coordinated planning and performance of sedation.
- Role model effective communication with patients and the family/caregivers about sedation indications, risks, benefits, and steps.

Systems Organization and Improvement

In order to improve efficiency and quality within their organizations, pediatric hospitalists should:

- Lead, coordinate, or participate in the development and implementation of cost-effective, safe, evidence-based procedures and policies for performance of sedation for children.
- Lead, coordinate, or participate in the development and implementation of a system for review of family/caregiver and healthcare provider satisfaction with sedation services.

- Collaborate with hospital staff and subspecialists to develop and implement management strategies for sedation.
- Lead, coordinate or participate in the establishment and maintenance of a process for obtaining sedation privileges, including demonstration of adequate knowledge and skill.
- Lead, coordinate or participate in the development and implementation of a system for review of the efficacy, efficiency and outcomes of procedures involving sedation.

References

1. Coté CJ, Wilson S, American Academy of Pediatrics, American Academy of Pediatric Dentistry. Guidelines for monitoring and management of pediatric patients before, during, and after sedation for diagnostic and therapeutic procedures: Update 2016. *Pediatrics*. 2016;138(1): e20161212. https://pediatrics.aappublications.org/content/138/1/e20161212.long. Accessed August 28, 2019.
2. Roback MG, Carlson DW, Babl RE, Kennedy RM. Update on pharmacological management of procedural sedation for children. *Curr Opin Anaesthesiol*. 2016;29 Suppl 1: S21-S35. https://doi.org/10.1097/ACO.0000000000000316.