



Unscheduled Procedural Sedation Multidisciplinary Delphi Consensus Guidelines, Part 1: Principles, Oversight, and Quality Monitoring

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These guidelines have been organized by the American College of Emergency Physicians and have been endorsed by the American Academy of Pediatric Dentistry, American College of Medical Toxicology, American Society for Gastrointestinal Endoscopy, International Committee for the Advancement of Procedural Sedation, Society of Critical Care Medicine, Society of Interventional Radiology, and Society for Pediatric Sedation, strongly supported by the American Association of Oral and Maxillofacial Surgeons, and endorsed by the following emergency medicine organizations: American Academy of Emergency Medicine, American College of Osteopathic Emergency Physicians, Association of Academic Chairs of Emergency Medicine, Canadian Association of Emergency Physicians, Emergency Medicine Residents' Association, Emergency Nurses Association, and the Society for Academic Emergency Medicine.

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ABSTRACT

This is Part 1 of an update to the 2019 multidisciplinary clinical guidelines for unscheduled procedural sedation. Time-sensitive sedation differs in important ways from scheduled, elective procedural sedation. This document aims to be a resource for all practitioners who perform unscheduled procedural sedation, applicable across all clinical settings and patient age groups. Part 1 addresses the underlying principles and issues relating to competencies, privileging, and quality monitoring, while Part 2 addresses clinical practice.

INTRODUCTION

Providing sedation and analgesia to facilitate the humane performance of painful and anxiety-provoking

procedures is now a widespread and integral practice across specialties. The safety of procedural sedation is supported by a large and robust body of literature, with serious adverse events being extremely rare.¹⁻¹⁵ The multidisciplinary field of procedural sedation has fostered a strong safety culture following many decades of close attention to practitioner training, patient evaluation, physiologic monitoring, and other critical safeguards.¹⁻¹³

Various specialty societies, including the American College of Emergency Physicians (ACEP), have developed guidelines that outline core principles of procedural sedation while addressing specialty-specific needs, challenges, and patient populations.^{1,3,16} However, many existing guidelines primarily focus on scheduled, elective sedation where resources such as time, space, and

personnel are not limited. In contrast, many patients across various clinical settings require procedural sedation for urgent or emergent procedures (Figure 1),¹⁷ where patient management must differ from elective sedation (Figure 2).¹ While unscheduled and elective sedation guidelines have minor differences, they complement each other and encourage discussion, innovation, and research.

This document represents an update of the 2019 multidisciplinary clinical guidelines for unscheduled procedural sedation¹ in order to incorporate new advances in evidence and practice. Part 1 of these guidelines addresses the underlying principles and issues relating to competencies, privileging, and quality improvement, while Part 2 addresses clinical practice. Figure 3 highlights the key changes in this portion of the guidelines.

SCOPE OF GUIDELINES

The aim of this document is to provide guidance on both the oversight (Part 1) and clinical practice (Part 2) for all practitioners performing unscheduled procedural sedation regardless of location, patient age, or clinical discipline. Given that all emergency department (ED) sedation is unscheduled, ACEP has organized these guidelines to serve as a comprehensive reference source for emergency physicians and the many other practitioners of unscheduled procedural sedation.

These guidelines do not address the practice of general anesthesia, which targets an unarousable state in which airway intervention is often required and spontaneous

ventilation is frequently inadequate.¹⁸ They do not address the administration of pharmacological agents to achieve analgesia, anxiolysis, or sedation when there is not a concurrent diagnostic or therapeutic procedure, e.g., agitation or behavioral disturbance. They do not address the state referred to as “minimal sedation” (see Figure 2 in Part 2) given its negligible patient risk.¹

METHODS

We adhered to generally accepted principles and methodology for the development of clinical practice guidelines using both evidence and consensus.¹⁹⁻²³ ACEP organized and oversaw this project. There were no external sources of financial support. Our recommendations are based on a rigorous systematic review and synthesis of the published medical literature.

Steering committee

ACEP appointed a steering committee of two general emergency physicians and three pediatric emergency physicians. Each committee member had extensive experience with procedural sedation practice, research and policy management, a comprehensive understanding of the related literature, and no potential financial or other conflicts of interest.

Literature searches and review

A medical librarian searched MEDLINE and Scopus databases. Searches were limited to human studies from

Unscheduled Procedural Sedation

Unscheduled procedural sedation is provided to facilitate time-sensitive (e.g., emergent, urgent) diagnostic or therapeutic procedures that, to optimize patient outcomes, must be performed within a short timeframe unsuitable for elective procedure scheduling.^a

Procedural Sedation^b

The practice of procedural sedation is the administration of one or more pharmacological agents to facilitate a diagnostic or therapeutic procedure while targeting a state during which airway patency, spontaneous respiration, protective airway reflexes,^c and hemodynamic stability are preserved,^d while alleviating anxiety and pain.

Notes:

- Examples of unscheduled procedures that can be time-sensitive include, but are not limited to: cardioversion, tube thoracostomy, central venous line placement, imaging, fracture and dislocation reduction, cardiac catheterization, upper endoscopy, arthrocentesis, abscess incision and drainage, lumbar puncture, laceration repair, care of contaminated wounds, and foreign body removal.
- Definition from the *International Committee for the Advancement of Procedural Sedation*; see: www.proceduralsedation.org
- For procedures such as bronchoscopy, procedural sedation may occur with concurrent blunting of airway reflexes with local anesthesia.
- Sedation states within the purview of the above definition include minimal sedation, moderate sedation, dissociative sedation and deep sedation. The practice of procedural sedation differs from the practice of general anesthesia, which targets an unarousable state in which airway intervention is often required and spontaneous ventilation is frequently inadequate; see: <https://www.asahq.org/standards-and-guidelines/continuum-of-depth-of-sedation-definition-of-general-anesthesia-and-levels-of-sedationanalgesia>

Figure 1. Definitions.

Clinical Considerations:

- Unscheduled procedural sedation often occurs in settings with resource constraints, e.g., time, personnel, workspace.
- Unscheduled procedures must often be performed while patients are in dynamic physiological states.
- Unscheduled procedures must often be performed before a definitive diagnosis has been reached.
- Sedation practitioners must manage the sedation as well as the acute pain, anxiety, and circumstances related to the patient's condition.
- Most unscheduled procedures cannot be unduly delayed without risking more harm than benefit with respect to the underlying condition prompting the procedure.
- Fasting is neither required nor reasonable for many time-sensitive procedures, as delays for fasting are likely to cause more harm than benefit.

Patient-Centered Care:

- Most unscheduled procedures cannot be unduly delayed without risking exacerbation of pain and emotional distress for patients and their caregivers.
- Unscheduled procedures must often be performed expeditiously to maximize patients' physical, mental, and social well-being.
- Even for non-emergent cases, timely unscheduled sedation may be necessary to uphold the quality care principles of patient-centeredness, timeliness, efficiency, and equitability as outlined in the Institute of Medicine domains of healthcare quality.^a

Note:

- a. Reference: Institute of Medicine Committee on Quality of Health Care in America. *Crossing the Quality Chasm, A New Health System for the 21st Century*. Washington, DC: National Academy Press. 2001.

Figure 2. Differences between unscheduled and elective sedation.

English-language sources published between August 10, 2018 (the cut-off date for the earlier version) and February 7, 2026.

These guidelines encompass a wide range of topics in unscheduled sedation practice, requiring multiple searches rather than a single approach. Searches used combinations and variations of the following keywords and phrases: sedation, unscheduled sedation, procedural sedation, conscious sedation, dissociative sedation, moderate sedation, deep sedation, presedation, urgent, emergent, emergency medicine, pediatric emergency medicine, ketamine, propofol, dexmedetomidine, midazolam, skill set, professional skills, privileging, credentialing, support personnel, equipment, supplies, patient evaluation, oral intake, nil per os (NPO), fasting, adjunctive, regimen, supplemental oxygen, capnography, end-tidal CO₂, and recovery.

Members of the steering committee screened titles and abstracts of all identified articles, with full text review of reports pertinent to the guideline. They reviewed the reference lists of identified publications and consulted content experts to identify additional reports. They compiled and emphasized pertinent systematic reviews ([Supplemental Figure 1](#)).

Multidisciplinary review panel

It has been recommended that guideline development panels include representation from all relevant professional groups.¹⁹⁻²¹ We identified specialties beyond emergency medicine that regularly perform unscheduled procedural sedation ([Figure 4](#)) and invited each to appoint a representative to review and provide input on sequential iterations of these guidelines. Representatives were

Delphi sequential review consensus methodology with grading of the quality of the evidence

More accurate definition of procedural sedation

Competencies to perform procedural sedation derived by multidisciplinary consensus using the principles and framework of Competency-Based Medical Education.

Figure 3. Notable changes in Part 1 of this update.

American College of Emergency Physicians, project organizer
 American Academy of Emergency Medicine
 American Academy of Pediatric Dentistry
 American Academy of Pediatrics Committee on Pediatric Emergency Medicine
 American Association of Nurse Anesthesiology
 American Association of Oral and Maxillofacial Surgeons
 American College of Cardiology
 American College of Medical Toxicology
 American College of Osteopathic Emergency Physicians
 American Society for Gastrointestinal Endoscopy
 Association of Academic Chairs of Emergency Medicine
 Canadian Association of Emergency Physicians
 Emergency Medicine Residents' Association
 Emergency Nurses Association
 International Committee for the Advancement of Procedural Sedation
 Society for Academic Emergency Medicine
 Society for Pediatric Sedation
 Society of Critical Care Medicine
 Society of Interventional Radiology

Figure 4. Organizations involved in the development of this guideline.

required to be practicing members of their primary specialty experienced with unscheduled procedural sedation, and to be free from potential financial or other conflicts of interest (disclosures shown in the [Supplemental Figure 2](#)). The characteristics of our 22-member panel are shown in [Table 1](#). Panel members received no compensation or gifts. SMG served as the project methodologist.

Organization

In accordance with the typical Delphi process initiation, we first sought unstructured input from new and previous participating individuals and organizations using Nominal Group Technique principles.²¹ The steering committee reviewed new evidence from the literature reviews, and matched update suggestions and articles to relevant topic sections. Following review and discussion, we drafted updates, making full text articles available to the panel.

We assessed and considered patient perspectives through use of a specific systematic review on this topic,²⁴ related survey research,^{25,26} and a lay person survey (details and results in the [Appendix](#)), in accordance with the GRIPP2 checklist.²⁷

We combined systematic review with consensus methods as unscheduled procedural sedation practice encompasses a wide range of issues and decision-making based on different levels of evidence, ranging from high-certainty to moderate, and to emerging or low-quality.²⁸ Further, even high-certainty evidence often requires interpretation considering community preferences, priorities, resources, and/or equity considerations.²¹

Consensus process

We used the anonymous Delphi Method for sequential review and consensus generation.²¹ We divided the draft document into nine sections for independent evaluation. Panel members received draft section updates via email and provided unrestricted, critical feedback in free text format. The steering committee moderated the Delphi process, evaluating collected responses inductively to identify recurring themes and concepts. They revised the descriptions and recommendations from each section to enhance consensus where possible. After each round, all responses were anonymously shared with the full panel. Members could consider this collective feedback when providing their subsequent comments, without knowing which comments came from which member. This process was then repeated for each section until no material differences remained.

Quality assessment

We assigned presumptive quality ratings to statements assessing bodies of evidence using Grading of Recommendations Assessment, Development, and Evaluation (GRADE) methodology ([Figure 5](#)): Very low ($\oplus$), Low ($\oplus\oplus$), Moderate ($\oplus\oplus\oplus$), or High ($\oplus\oplus\oplus\oplus$).²⁸ No such ratings are applicable for statements based upon theory, tradition, clinical experience, and/or panel consensus in the absence of direct evidence. Members of the full panel with active project participation (defined as responding in a timely fashion to >80% of the Delphi review tasks) rated document sections using a 5-point Likert scale: Strongly Disagree, Disagree,

Table. Characteristics of our steering committee and review panel members (n=22).

Characteristic	Number
Age (years)	median 53, range 34 to 72
Gender	
Male	15
Female	5
Prefer not to say	2
Specialties	
Acute Care Nurse Practitioner / Emergency Nurse Practitioner	1
Anesthesia, Pain Management, Tactical Medicine	1
Anesthesiology / Critical Care Medicine	1
Anesthesiology / Oral and Maxillofacial Surgery	1
Cardiology / Interventional cardiology	1
Emergency Medicine	4
Emergency Medicine/ Emergency Medical Services	1
Emergency Medicine / Internal Medicine / Hyperbaric Medicine	1
Emergency Medicine / Medical Toxicology	2
Gastroenterology / Therapeutic Endoscopy	1
Interventional Radiology	1
Pediatric Dentistry	1
Pediatrics / Pediatric Emergency Medicine	6
Nationality	
Canada	3
India	1
United States	18
Years of professional experience	median 19, range 3 to 40
Type of hospital	
Private	6
Public	16
University hospital	
No	7
Yes	15
Academic appointment	
Assistant Professor	5
Associate Professor	8
Professor	8
Other or no	1
Location type	
Suburban	3
Urban	19
Personal research experience	
No	3
Yes	19

Neither agree nor disagree, Agree, or Strongly Agree. Consensus agreement was defined as at least 80% of members choosing “Agree” or “Strongly Agree,” while strong consensus required at least 90%. Two panelists were unable to maintain active participation, reducing our panel size to 20. When consensus agreement was not achieved on such ratings, the text was revised to address disagreement and the Delphi process resumed.

External review

ACEP leaders and committees (Clinical Policies, Emergency Medicine Practice, Quality & Patient Safety) reviewed the document. After addressing their feedback, the manuscript underwent additional Delphi review rounds until each section was reaffirmed for quality and consensus. All participating organizations then reviewed the final document, with revisions following the same process used for ACEP review.

The guideline development process spanned 15 months. We describe specific details for each of the steps in [Supplemental Table 1](#).

We recommend updating these guidelines in six to eight years, or sooner if significant changes in the literature warrant earlier revision.

PROCEDURAL SEDATION COMPETENCIES (STRONG CONSENSUS)

Background

The question of who is competent to provide procedural sedation has a long, contentious history and remains a source of inter-specialty discord.²⁹⁻³³ Many disciplines have incorporated sedation training into their residency and fellowship curricula, developed specialty-specific guidelines, and taken leadership roles in advancing the field.

Various disciplines have engaged in sedation research and have performed large observational studies to establish safety profiles. Those with such safety series include cardiologists,³⁴ dentists,³⁵ emergency physicians (general and pediatric),^{6,11,36-39} gastroenterologists,⁴⁰⁻⁴⁷ intensivists (adult and pediatric),^{39,48,49} oral and maxillofacial surgeons,^{33,50} pediatric hospitalists,^{39,51-54} and radiologists,^{55,56} as well as multi-specialty teams.^{9,57,58}

Emergency physicians (general and pediatric) have well-established procedural sedation skills. As acknowledged by the United States Centers for Medicare & Medicaid Services: “The ED is a unique environment where patients present on an unscheduled basis with often very complex problems that may require several emergent or urgent

<i>Quality level</i>	<i>Definition</i>
Very low (⊕)	We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect
Low (⊕⊕)	Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Moderate (⊕⊕⊕)	We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
High (⊕⊕⊕⊕)	We are very confident that the true effect lies close to that of the estimate of the effect.

Figure 5. GRADE methodology for rating the quality of a body of evidence^a. Note. ^aGRADE = Grading of Recommendations Assessment, Development, and Evaluation.

interventions to proceed simultaneously to prevent further morbidity or mortality.”⁵⁹ They further note: “... emergency medicine-trained physicians have very specific skill sets to manage airways and ventilation that is necessary to provide patient rescue. Therefore, these practitioners are uniquely qualified to provide all levels of analgesia/sedation.”⁵⁹

Applications for procedural sedation continue to expand to meet patient care needs. Procedural sedation is increasingly administered by physician assistants, nurse practitioners, and specially trained nurses in formal sedation units, and most recently by specially trained pediatric residents.^{39,42,60-68} The use of specially trained, gastroenterologist-supervised nurses to administer propofol during gastroenterology procedures is a common and long-standing practice.^{43-45,69-72}

Task, not specialty

Historically, there have been no generally accepted standards for who is competent to provide procedural sedation. A systematic review found no controlled trials comparing different levels of professional competence with sedation outcomes.⁷³ In the absence of direct evidence, various specialty societies have issued sedation guidelines and policy statements with inconsistent recommendations—often based merely on classification as a so-called “nonanesthesiologist.”^{1,3,16,29,74,75}

Given the above ample evidence that procedural sedation can be learned and safely practiced by a variety of specialists irrespective of specialty training, the provision of procedural sedation should not be considered a fixed part of any single specialty, but rather endorsed as its own multidisciplinary field.

Competency-based medical education

Over the last decade, competency-based medical education (CBME) has become the benchmark framework for developing and assessing foundational competencies

in medical training. This outcomes-focused approach emphasizes demonstrable abilities over time-based progression, using defined competency frameworks with assessment through observation of goal-oriented clinical practice with immediate feedback, and formal entrustment decisions.⁷⁶⁻⁸⁰ Within the CBME framework, procedural sedation constitutes a set of Entrustable Professional Activities (discrete clinical activities that are observable and measurable in process and outcome, which competent practitioners will ultimately practice independently).^{76-78,80}

An international, multidisciplinary team of sedation researchers used the CBME framework with an iterative Delphi Method to delineate through consensus four essential domains of procedural sedation competence:

- Patient safety: prevention of harm and mitigation of risks
- Clinical effectiveness: optimal procedural outcomes and patient comfort
- Psychological safety: maintaining emotional well-being and avoiding procedural distress
- Deliberate practice: sustained engagement in continuous learning and improvement activities in order to develop and maintain expertise⁷⁶

Specific competencies within each domain are divided into knowledge, skills, and attitudes.

Procedural sedation competencies

These CBME recommendations (Figure 6) indicate the minimum required knowledge, skill, and attitudes to perform procedural sedation safely and effectively. They provide a rigorous, standardized, and reproducible framework for competency-based curricula and inform guidelines and regulations regarding training, privileging, and credentialing of procedural sedation practitioners.

The most common and important rescue interventions required during procedural sedation are airway repositioning and bag mask ventilation.^{36,40,41,81,82} These

Procedural Sedation Competencies



ICAPS
International Committee
for the Advancement of
Procedural Sedation

Taken from Leroy, Krauss, et al: *British Journal of Anaesthesia* 2025; 134:817-829
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www.proceduralsedation.org

Clinical Core Competencies				Deliberate Practice Core Competencies
The competencies outlined below are indicative of procedural sedation competence, i.e., the minimum required knowledge, skill, and attitudes to perform procedural sedation effectively and safely. These competencies must be demonstrably present during the performance of procedural sedation and encompassed by the sedation team, and need not necessarily be covered by a single practitioner. In many circumstances, the sedation practitioner assuming responsibility for oversight of the sedation encounter will be assisted by a second practitioner whose primary duty is continuous patient monitoring and documentation. When the primary practitioner delegates some of their duties to an assisting practitioner, they remain responsible for ensuring that all necessary competencies are present during the full sedation encounter. Assisting professionals should possess all necessary competencies required for the tasks to which they are entrusted.				The competencies outlined below are indicative of deliberate practice, i.e. knowledge, skills and attitudes for ongoing learning and improving.
KNOWLEDGE	Physical Safety	Effectiveness	Psychological Safety	Deliberate Practice
	Avoiding physical harm and minimizing sedation-related risk	Procedural success, patient comfort, and time efficiency	Patient emotional and psychological well-being	Continual improvement of skills to develop and maintain competence
	Must demonstrate the understanding of: - the principles of pre-sedation evaluation and risk assessment - the procedure to be performed and how it might impact the course of sedation or risk - the scope of procedural sedation and when referral for care by an anaesthesia practitioner is appropriate - airway, respiratory, and cardiovascular physiology and pathophysiology - the function and interpretation of continuous monitoring of cardiac rhythm*, oxygenation (pulse oximetry), and ventilation (capnography*) - Opioid and sedative agonist and antagonist pharmacology (pharmacokinetics, pharmacodynamics, dosing, administration, contraindications, adverse event profiles, drug interactions) - recognition of adverse events and when intervention is required - the principles of post-sedation recovery, discharge criteria, and outcome evaluation and documentation - principles of ongoing quality improvement audit in accordance with local and national recommendations	Must demonstrate the understanding of: - the correct indication for a procedure and the balance between indication and risks - the procedure to be performed and how it impacts the sedation strategy, resources, and personnel - how individual patient characteristics impact the sedation strategy - principles and safe application of procedural analgesia (topical, local, regional and systemic)	Must demonstrate the understanding of: - the patient's fundamental right to be involved in medical decision-making and to be treated respectfully and according to personal preferences and choices - a patient's preprocedural/anticipatory fear/anxiety and expectations and how they impact sedation needs - short- and long term adverse events (e.g. awareness, agitation, delirium, nausea, vomiting, behavioral changes, sleep disturbance) - importance of parental, family or caregiver presence for children, highly anxious patients, and patients with special needs or psychiatric conditions - the meaning of establishing trust, and modes of communication for creating positive or negative expectations	Must demonstrate the understanding of: - how personal performance is enhanced by repeated practice that is used for ongoing learning and improvement - the importance of repeated self and peer-assessment for learning - the importance of keeping up to date knowledge of new drugs and techniques
	Physical Safety	Effectiveness	Psychological Safety	Deliberate Practice
SKILLS	Avoiding physical harm and minimizing sedation-related risk	Procedural success, patient comfort, and time efficiency	Patient emotional and psychological well-being	Continual improvement of skills to develop and maintain competence
	Must be able to: - perform a structured risk assessment, taking patient and procedural characteristics into account - perform an assessment of airway and fasting status - monitor airway patency and recognize abnormal ventilatory patterns including: respiratory depression, partial and complete airway obstruction, central apnea, and appropriate use of continuous observation of chest wall motion supplemented with pulse oximetry and capnography* - monitor cardiovascular stability using cardiac rhythm* and, when appropriate, blood pressure monitoring* - manage adverse events such as nausea, vomiting, agitation, delirium - manage airway obstruction through appropriate application of airway alignment maneuvers (head tilt, chin lift, jaw thrust) or placement of nasal or oral airway, or a supraglottic airway device* - distinguish central and obstructive apnea* - assemble a self-inflating or free-flow inflating bag, and perform bag-mask ventilation* - recognize and manage a patient who is over sedated, with or without intervention as appropriate - identify and manage hypoxia, hypotension, bradycardia, anaphylaxis, seizure, and cardiac arrest* - summon additional resuscitation assistance, if required - decide when a patient is ready and safe for discharge from monitored recovery	Must be able to: - apply a sedation strategy (drug regimen, depth, and duration) that matches procedure-specific requirements, procedural timing, and individual patient needs - recognize when a patient is inadequately sedated - anticipate, recognize, and effectively manage procedural pain	Must be able to: - recognize and respect a patient's emotional or psychological needs and personal preferences - establish a trusting relationship with a patient - employ effective comfort measures (e.g. distraction, comfort-directed suggestive language) - create a comfortable and calm environment throughout the sedation process	Must be able to: - Use deliberate practice as part of ongoing medical education - participate in ongoing medical education including ideally observed performance and peer feedback (in-person or simulated)
	Physical Safety	Effectiveness	Psychological Safety	Deliberate Practice
	Avoiding physical harm and minimizing sedation-related risk	Procedural success, patient comfort, and time efficiency	Patient emotional and psychological well-being	Continual improvement of skills to develop and maintain competence
ATTITUDES	Must show: - vigilance and commitment to safety throughout the sedation process - effective team communication and interprofessional collaboration - commitment to clear documentation of sedation outcomes, including adverse events and complications - accountability for ongoing quality improvement by engaging in an audit program, including discussing safety outcomes, analyzing critical incidents, and participating in formal safety audits	Must show: - commitment to choosing individualized sedation strategies that result in procedural success, patient comfort and time-efficiency - effective team communication and interprofessional collaboration - commitment to documentation of sedation effectiveness - accountability for ongoing quality improvement by engaging in an audit program, including discussing procedural success, patient comfort, and time efficiency	Must show: - commitment to assuring patient emotional and psychological well-being throughout the sedation process - effective team communication and interprofessional collaboration - commitment to documentation of the impact of the sedation on patients' emotional and psychological well-being - accountability for ongoing quality improvement by engaging in an audit program, including discussing outcomes related to patient's emotional and psychological well-being	Must show: commitment to ongoing improvement of practitioner and team performance
	Physical Safety	Effectiveness	Psychological Safety	Deliberate Practice
	Avoiding physical harm and minimizing sedation-related risk	Procedural success, patient comfort, and time efficiency	Patient emotional and psychological well-being	Continual improvement of skills to develop and maintain competence

*Competencies indicated with an asterisk are less relevant for practitioners performing minimal sedation in low risk patients.

Figure 6. Procedural sedation competencies as structured using Competency-Based Medical Education theory.

skills, including the placement of oral and nasal airways, should be the primary focus of rescue training and practice. Procedural sedation practitioners should be competent and prepared to perform these interventions in

all age groups relevant to their clinical practice. Although core training and practice for some physicians (including emergency medicine) includes advanced airway techniques such as endotracheal intubation and laryngeal airway

placement, such skills should not be obligatory for practitioners who are not expected to attain or maintain competence in these techniques.

Nurse-administered sedation is subject to local regulations regarding entrustment, independent practice, and degree of supervision. However, specially trained nurses, working within a well-organized and supervised safety network, should be able to administer safe and effective sedation if the competencies in Figure 6 are met.⁷⁶

Attaining competency

Practitioners can become competent in procedural sedation either through a suitable curriculum during specialty training or later through a structured training program.^{68,83} A comprehensive procedural sedation curriculum should include various educational modalities:⁷⁶

- Knowledge acquisition through self-study or didactic instruction (e.g. lectures, videos, demonstrations, third-party training modules)
- Application of knowledge
- Demonstration of clinical skills through simulation modeled as an Objective Structured Clinical Examination
- Supervised sedation

This training should provide exposure to different patient morbidities and the full range of procedures that the future practitioner is expected to manage. Each educational format should incorporate structured feedback and include a mechanism to document and monitor the learner's progression towards proficiency.

Clinical application

All procedural sedation competencies must be demonstrably present during its performance and may be distributed across the sedation team rather than necessarily encompassed by a single practitioner. It is highly recommended that the practitioner responsible for oversight of the sedation encounter be assisted by a second practitioner (e.g., nurse, respiratory therapist) whose primary duty is continuous patient monitoring and documentation. When the primary practitioner delegates duties to an assisting practitioner, they remain responsible for ensuring that all necessary competencies are present throughout the sedation encounter. Assisting practitioners must possess all necessary competencies required for their entrusted tasks.

When performing unscheduled sedation, the sedation practitioner may also perform the procedure, provided the procedure can be immediately halted should an adverse event require urgent attention.^{1,2,8,13,34} Many settings consider it optimal during deep sedation to have a separate

practitioner fully dedicated to sedation management and uninvolved in the procedure.³ However, there is a longstanding track record of sedation practitioners performing short, unscheduled, interruptible procedures themselves, while trained assistants carry out specific delegated tasks within their competencies. This practice has been shown to be safe, with no evidence of increased frequency of clinically important adverse events or outcomes.^{40-43,46,47,84-88}

Furthermore, any rigid stipulation for separate practitioners during deep sedation would effectively prohibit compassionate sedation care for patients who require time-sensitive procedures in settings lacking the timely availability of a second practitioner. Examples include patients who promptly require tube thoracostomy, central line placement, cardioversion, or hip relocation when, as is typical in most locations, only a single intensivist or emergency physician is on duty. In these circumstances, the benefits of proceeding without delay generally outweigh the risks, if the practitioner can immediately halt the procedure and attend to the patient should an adverse event require prompt attention.

Nurse administration of sedatives

In some settings the registered nurses supporting sedation practitioners are not permitted to administer sedative agents based upon state and nursing board regulations that either restrict such administration or are locally interpreted to do so. These limitations lack supporting evidence and are paradoxical, as the same nurses, for example, routinely administer sedatives and paralytics for intubation in emergency departments and critical care settings under direct physician supervision. Qualified nurses should be permitted to administer all medications used for unscheduled procedural sedation while under the direct bedside supervision of the ordering practitioner, with the ordering practitioner specifying the dosing and timing.

PROCEDURAL SEDATION OVERSIGHT (STRONG CONSENSUS)

Procedural sedation performed in hospitals requires institutional oversight in accordance with regulatory guidance and local policies. Sedation performed outside hospitals should maintain similar rigorous monitoring.

Hospital-wide sedation committees

An institutional or system-wide procedural sedation committee is the most common and optimal format for hospital oversight. As procedural sedation leadership spans

multiple specialties with a unified commitment to safety, institutional oversight should be collaborative and multidisciplinary.^{30,32,89-91} While a single individual may chair such a committee, there should be broad inclusion of stakeholders such that all procedural sedation practitioners have sufficient representation. This will promote full consideration of evidence-informed practices and advances. When unmet procedural sedation needs arise, the collaborative multidisciplinary sedation leadership must help develop solutions.

Outdated regulatory guidance

Current sedation practice guidelines often focus on scheduled, elective sedation, while existing regulatory guidance in the United States and other countries inadequately addresses the special needs of unscheduled procedural sedation. ACEP has previously described that guidance from the Centers for Medicare & Medicaid Services and The Joint Commission contain contradictory, confusing, and outdated elements.⁹⁰ Consequently, hospital procedural sedation policies vary widely between institutions despite similar settings and resources, potentially compromising patient access to safe, effective, and appropriate care. Many hospitals, to assure regulatory compliance, adopt conservative policies that are inconsistent with evidence-based guidance.⁹⁰ For example, a 2018 survey found restrictions on key aspects of sedation practice in 43% of California emergency departments, with deep sedation prohibited in 18%.⁹² Additionally, such limitations were seven times more frequent in pediatric-only emergency departments compared to general emergency departments.⁹²

PRACTITIONER PRIVILEGING (STRONG CONSENSUS)

Oversight of individual procedural sedation practitioners in hospitals is often delegated to department medical directors in accordance with policies set by the hospital-wide sedation committee. Sedation performed outside hospitals should maintain similar oversight.

Privileging

Privileging refers to the formal decision that the practitioner can be entrusted to perform procedural sedation independently. Such a decision should be based on documented competence at the necessary performance levels for all relevant Entrustable Professional Activities (as detailed in the prior competencies section) and not based upon specialty or discipline. Although the exact conditions for privileging can vary between institutions, they should

acknowledge completion of a suitable curriculum that covered all essential competencies (Figure 6) and that used a multi-source assessment to verify that the necessary performance levels are met. For multiple specialties (e.g., emergency medicine, pediatric emergency medicine, critical care, oral and maxillofacial surgery) such training is included in the core curricula of residency and fellowship programs accredited by the Accreditation Council for Graduate Medical Education (in Canada, the Royal College of Physicians and Surgeons of Canada and the College of Family Physicians of Canada, and their equivalents in other countries). For others not receiving such training during their residency or fellowship, such a structured training program may occur after formal specialty training.

Such privileges may be comprehensive (i.e., all sedation levels for all types of patients), as is necessary for most emergency physicians and critical care physicians. For other practitioners, their sedation practice may be focused based on factors such as patient age (e.g., children), procedure type (e.g., dental), or targeted sedation depth (e.g., moderate sedation). Such training and privileges should be applicable to the different patient morbidities and the full range of procedures that the practitioner is expected to manage.

Renewal

As with other aspects of medical or dental practice, ongoing competencies are monitored through quality improvement processes (next section). Privileges should be periodically reviewed and renewed in accordance with requirements set by the institution and regulatory bodies. Renewals should be based on an individualized evaluation of a practitioner's level and quality of clinical exposure, established performance, and engagement in continuous professional development. Practitioners who regularly perform procedural sedation without identified deficiencies should expect renewal of privileges. Should deficiencies be identified, specific sedation level privileges may be withdrawn or withheld pending focused training and/or proctoring.

Short Courses

Although short courses such as *Advanced Cardiac Life Support* and *Pediatric Advanced Life Support* have educational merit, their completion does not assure appropriate sedation competencies (Figure 6). For some specialists—including emergency medicine and critical care—residency or fellowship training offers a higher level of knowledge and skill acquisition than these courses and

supersedes them.⁹³ ACEP is a member of the Coalition to Oppose Medical Merit Badges,⁹⁴ which includes all major emergency medicine organizations. These organizations oppose credentialing or privileging based on brief, episodic courses for physicians who are already maintaining certification by the American Board of Emergency Medicine, the American Board of Pediatrics, or the American Osteopathic Board of Emergency Medicine; maintenance of certification goes well beyond short courses designed to be taken by paramedics, nurses, and other practitioners.^{93,94} For other specialties, periodic short courses may be a helpful component of training, and skills maintenance.

QUALITY MONITORING (STRONG CONSENSUS)

Structure

Each practitioner should be accountable to an organized quality assurance and improvement program (departmental, institution-wide) that monitors procedural sedation practice, tracks adverse events, ensures satisfactory documentation and compliance with this guideline or local protocols, and identifies opportunities for improvement.⁴

Intervention-oriented definitions for adverse events

Recent consensus for evaluating procedural sedation adverse events in quality improvement research has shifted from event and threshold-based definitions (e.g., apnea for >30 s) to an intervention-based orientation (e.g., assisted ventilation for apnea).^{4,7} Performing an intervention is typically unambiguous and more likely to be documented in a standardized, reproducible fashion. Intervention-based definitions better reflect clinical importance, as events requiring no intervention may be clinically insignificant.^{4,7}

Quality improvement tool

Many quality improvement structures are locally generated and have variable content. The TROOPS tool (Tracking and Reporting Outcomes Of Procedural Sedation),⁴ offers a standardized alternative. Developed through rigorous multidisciplinary consensus (Figure 7), TROOPS is suitable for sedation practitioners in all venues and patients of all ages. This practical tool focuses on a limited number of clinically important interventions and events, excluding routine and expected actions (e.g. airway repositioning). A structured evaluation found TROOPS to be “feasible and reliable” with completion time under one minute.⁹⁵

Widespread adoption of a standardized quality-improvement tool such as TROOPS would create a common language for procedural sedation outcome

monitoring, enabling more reliable comparisons of practice patterns across institutions, regions, and individuals.

THE FUTURE (STRONG CONSENSUS)

We propose key steps for future improvement of procedural sedation oversight and quality.

Simulation

Critical adverse events during procedural sedation are rare enough that many practitioners never encounter them in their careers. To prepare for such high acuity, low occurrence events, simulation appears essential for training practitioners to rapidly identify and manage such complications.⁹⁶ Research is needed to determine optimal simulation formats and curricula, specifically addressing which sedation competencies are best taught or enhanced through simulation-based training.

Improving outcomes

Given that the safety and efficacy of procedural sedation practice across various specialties is now well established, research should focus on patient-centered outcomes. In what ways can we improve the quality of the experience for patients and their families, optimize sedation conditions, increase patient satisfaction, and explore whether procedural sedation can be accomplished more quickly or cost-effectively without compromising safety or efficacy?

Workforce

Referrals for elective sedation are limited in the United States and other locations by anesthesia workforce shortages.^{97,98} In the USA, hospitals frequently hire intensivists, emergency physicians, hospitalists, and nurse practitioners to staff elective sedation services.⁹⁹ For patient safety and comfort, it is important to improve access to both elective sedation and, when needed, unscheduled sedation.

Nurse-led sedation

There is increasing use of nurses and nurse practitioners to provide procedural sedation in formal pediatric sedation units, gastroenterology suites, and other settings.^{39,42,60-62,65-67} While nurse anesthetists are qualified based upon the competencies inherent to their training, further research is needed to better define optimal training requirements, appropriate supervision models, and the degree of practice independence for other nurses.



Tracking and Reporting Outcomes Of Procedural Sedation (TROOPS)

A standardized quality improvement tool from the
International Committee for the Advancement of Procedural Sedation^a
www.ProceduralSedation.org



☐ No adverse events during sedation or recovery. *(form completed)*
☐ Yes, unplanned interventions or outcomes occurred. *(check all that apply below)*

	Intermediate	Sentinel	Suspected Etiology
Airway / Breathing	☐ Positive pressure ventilation ^b ☐ Naloxone or flumazenil ☐ Oral airway	☐ Tracheal intubation ☐ Neuromuscular blockade ☐ Pulmonary aspiration ^c	☐ Apnea ^d ☐ Respiratory depression ^e ☐ Upper airway obstruction ^f ☐ Laryngospasm ^g
Circulation	☐ Bolus IV fluids	☐ Vasoactive drug administration ☐ Chest compressions ☐ Death	☐ Hypotension ☐ Bradycardia ☐ Cardiac arrest
Neuro	☐ Anticonvulsant administration	☐ Neurological deficit	☐ Seizure or seizure-like movements
Sedation Quality & Patient Experience	☐ Sedation insufficient ☐ Escalation of care or hospitalization ^h ☐ Provider dissatisfied ☐ Patient/family dissatisfied		☐ Patient active resistance or need for restraint ⁱ ☐ Sedation complication ☐ Paradoxical response ^j ☐ Unpleasant recovery reaction/agitation ^k ☐ Unpleasant recall
☐ OTHER _____			☐ OTHER _____

INTERMEDIATE items can endanger patients if not promptly managed, or reflect suboptimal sedation quality or patient experience and warrant timely reporting with peer scrutiny.

SENTINEL items are life-threatening and warrant immediate reporting and the highest level of peer scrutiny.

FOOTNOTES / DEFINITIONS

a. The goal of the Tracking and Reporting Outcomes Of Procedural Sedation (TROOPS) form is to provide a standardized and practical tool intended for daily use to record procedural sedation adverse events, interventions, and outcomes relevant to the continuous assessment of patient safety and quality of care. This tool is intended for use by all types of sedation providers in all locations and for patients of all ages. It was developed by multidisciplinary consensus from the International Committee for the Advancement of Procedural Sedation (www.proceduralsedation.org). Its elements can readily be incorporated into electronic medical records. TROOPS intentionally excludes timed event durations and specific thresholds (e.g., vital signs, oxygen desaturation, capnography) in favor of interventions and outcomes, which are more objective, clinically relevant, and more reliably recorded.

b. Positive pressure ventilation (PPV) includes bag-mask ventilation (BMV), bilevel positive airway pressure (BiPAP), continuous positive airway pressure (CPAP) and laryngeal mask airway (LMA).

c. Pulmonary aspiration is inhalation of oropharyngeal or gastric contents into the trachea during sedation or recovery and the appearance of new respiratory signs and symptoms.

d. Apnea is cessation of ventilatory effort.

e. Respiratory depression is decrease in ventilatory effort.

f. Upper airway obstruction is partial or complete obstruction of the upper airway responsive to airway positioning or oral/nasal airway placement.

g. Laryngospasm is partial or complete closure of the vocal cords that is not responsive to airway repositioning or oral/nasal airway placement.

h. Escalation of care includes significant prolongation of clinical care (including delayed discharge) or hospitalization due to sedation factors, including transfer to a higher level of care.

i. Need for restraint is more than minor physical restraint on more than one, brief occasion.

j. Paradoxical response is an unanticipated restlessness or agitation in response to sedatives.

k. Unpleasant recovery reaction/agitation is abnormal behaviors during the recovery stage of sedation (e.g., agitation, delirium, hallucinations) which are distressing to the patient or providers.

*Used with permission. Full article available at: <https://proceduralsedation.org/troops-overview/>

Figure 7. The standardized procedural sedation quality improvement tool TROOPS (Tracking and Reporting Outcomes Of Procedural Sedation)*.

Update regulatory guidance

Hospital procedural sedation policies in the USA vary widely between institutions despite similar settings due, in part, to contradictory, confusing, and outdated

guidance from the Centers for Medicare & Medicaid Services and The Joint Commission.^{90,92} This variability compromises patient access to safe, effective, and appropriate care.⁹² These regulatory documents should

be updated to reflect current evidence and best practices in procedural sedation.

Practice limitations

Many hospital settings, to ensure regulatory compliance, adopt conservative restrictions on evidence-based sedation practices based on outdated regulatory guidance. For example, qualified practitioners are denied access to propofol and ketamine in many settings, forcing them to use alternative agents that are less effective and less safe.⁹² Hospitals should refocus sedation practitioner credentialing and privileging on specific competencies (Figure 6), as outlined in this document.

Nurse drug administration

In settings where they exist, local restrictions (e.g., state-based nursing regulations) should be amended to permit qualified registered nurses supporting qualified sedation practitioners to administer all medications used for unscheduled procedural sedation while under the direct supervision of the ordering practitioner.

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