Safety in Pediatric Dental Care

Curriculum for Pediatric Dentistry Residency Programs

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Overview

This curriculum is designed to support pediatric dentists – trainees and veterans, individually and collectively – as they strive to create the safest possible environment for dental care delivery to protect the health and well-being of patients, their teams, and themselves as providers. It provides foundational information about safety science and principles of safety, and guidance on fostering a safety culture. It is based on the latest knowledge on safety in healthcare, while also offering resources specific to dentistry.

The curriculum and its content can be tailored to meet the needs of various settings and program types, including those in hospitals, dental schools, and health centers. Users are not expected to master each section or read every recommended resource. Rather, it should be seen as a menu of options for professionals and trainees as they promote safety training and advance safety culture in their work settings.

This curriculum is not intended to replace institutionally required safety training but to supplement existing training with information specific to pediatric dentistry. The curriculum has been developed by experts in safety and reviewed by program directors in pediatric dentistry advanced education programs for relevance and compatibility in both didactic and clinical settings.

CODA Accreditation Standards of Relevance

The Commission on Dental Accreditation (CODA) Accreditation Standards for Advanced Dental Education Programs in Pediatric Dentistry include multiple standards of relevance to this curriculum.

Didactic instruction must be at the in-depth level for the following:

- Recognition, treatment, and management of adverse events related to sedation and general anesthesia, including airway problems (Standard 4-6)
- The development and monitoring of systems for prevention and management of adverse events and medical emergencies in the dental setting (Standard 4-20)
- Exposure to the principles of quality management systems and the role of continuous process improvement in achieving overall quality in the dental practice setting (Standard 4-20)
- Exposure to the principles of ethics and professionalism in dental practice is an integral component of all aspects of this process improvement experience (Standard 4-20)
- Employing principles of quality improvement, infection control, and safety, including an understanding of the mechanisms to ensure a safe practice environment (Standard 4-20)

Additionally, the Accreditation Council for Graduate Medical Education (GME) Program Requirements for GME in Pediatrics include patient safety standards.

Goals and Objectives

Theme	Objective	Key Concepts
1. **Principles of Safety in Healthcare**	Describe the rationale for and use of basic safety tools in healthcare	- Patient safety terminology - Safety event epidemiology - Hazards in healthcare - Safety/systems design
2. **Fostering a Culture of Safety**	Identify the essential components of a culture of safety in healthcare	- Leadership, ethical, and professional challenges - Zero harm - Organizational culture: just culture, learning culture
3. **Communication**	Practice communication strategies with dental teams and patients and families that promote safe environments	- Teamwork - SBAR, AIDET protocols - Time-outs - Blame-free communication
4. **Documentation & Reporting**	Employ tools for preventing, documenting, and reporting adverse events and near misses in the clinical setting	- Checklists - Trigger tools - Focused chart reviews - Medication calculations - Adverse event reporting and analysis
5. **Safety in Clinical Practice**	Demonstrate the ability to self-assess current safety practices at the individual, team, and organizational level	- Situational awareness - Safety protocols for procedures - Decision making - Root cause analysis/incident analysis - Morbidity and mortality conferences - Continuous quality improvement activities

Resident Clinical Log (RCL)

Residents are encouraged to document the didactic and clinical activities pertaining to safety offered by their program in the Resident Clinical Log for ongoing educational and professional development purposes. Suggested entries may include resident/program use of PDSA cycles, QI projects, M&M conference participation, case studies of adverse events, and use of procedural checklists.

Feedback?

Please contact the AAPD Safety Committee within the Research & Policy Center with any questions, comments, or suggestions for improvement at *RPC@aapd.org*.

Evaluation

Variation in the implementation of this curriculum across residency programs is expected; it is designed to be flexible. Resident performance should meet or exceed institutional requirements for successful attainment of specialty skills. Didactic coursework and clinical application in safety should be evaluated consistent with other professional competencies, including the assignment of grades, competency assessments, or pass/fail scoring. At a minimum, programs are encouraged to evaluate residents on their achievement of the following objectives:

1. Describe the rationale for and use of basic safety tools in healthcare
2. Identify the essential components of a culture of safety in healthcare
3. Practice communication strategies with dental teams and patients and families that promote safe environments
4. Employ tools for preventing, documenting, and reporting adverse events and near misses in the clinical setting
5. Demonstrate the ability to self-assess current safety practices at the individual, team, and organizational levels

Recommended Readings & Resources

1. Principles of Safety

Title	Description
Systems and Safety in Dentistry	Perspective piece on safety in dentistry by Charles Czerepak, DMD, MS
Adverse Events in Pediatric Dentistry: An Exploratory Study	A foundational study of adverse event occurrence in pediatric dentistry that catalogues type and severity of dental adverse events from a survey of pediatric dentists.
Detection of Safety Hazards	This PSNet Patient Safety Primer outlines basics for how to recognize hazards in healthcare.
Lessons Learned from Dental Patient Safety Case Reports	A retrospective study that reviews case reports found in the literature. Alerts readers to the nature of adverse events that occur in dentistry and recommends several methods for improvement.
Little Patients, Large Risks: An Overview on Patient Safety Management in Pediatrics Settings	A review of the child-specific attributes, including family interactions and pediatric settings, that impact safety in healthcare.
National Patient Safety Goals®	Standards for improving patient safety. Includes rationale for using time outs and elements of the time out in a checklist format.
Principles of Pediatric Patient Safety: Reducing Harm Due to Medical Care	From the American Academy of Pediatrics' Council on Quality Improvement and Patient Safety, Committee on Hospital Care, this policy statement describes the unique attributes of pediatric patient safety and provides several broad strategies to create healthcare that protects young patients.
What Exactly is Patient Safety?	Defines patient safety and provides a brief history of safety science adapted to healthcare environment.

2. Culture of Safety

Title	Description
11 Tenets of a Safety Culture	Eleven key actions for adoption of safety culture.
ADA Principles of Ethics and Code of Conduct	Outlines ethical considerations in dentistry. Describes professional standards and covers sections on the guiding ethical principles for the profession: patient autonomy, non-maleficence, beneficence, justice, and veracity.
Error, Stress, and Teamwork in Medicine and Aviation: Cross Sectional Surveys	A survey of clinical staff's perceptions of stress and fatigue on performance. Additionally, a team of observers recorded teamwork in action. The authors compare results with aviation crews who have been targets of high reliability training and note key differences.

Improved Safety Culture and Teamwork Climate Are Associated with Decreases in Patient Harm and Hospital Mortality Across a Hospital System	A reading on the impact of measuring safety culture in the children's hospital setting that resulted in improved safety culture and teamwork climate across the entire hospital.
OSH Act of 1970	Labor law created to establish safe and "healthful" workplaces, includes written standards used to guide enforcement of worker protections.
PSNet Patient Safety Primer: Culture of Safety	Provides a definition of safety culture and key features of safety culture. Links to promising clinical activities such as teamwork training, clinical walkarounds, rapid-response teams, and the SBAR method.

3. Communication

Title	Description
Approach to Improving Patient Safety: Communication	A short reading on why communication errors occur in healthcare and shares tips on improvement strategies, and examples of communication techniques used in healthcare teams.
Challenging Authority and Speaking Up in the Operating Room Environment: A Narrative Synthesis	This paper explores transparency, power hierarchies, and interpersonal communication and dynamics in healthcare and the need for psychological safety and respectful environment to enable speaking up behavior to ask questions and raise concerns in the clinical setting.
Evaluation of Staff Satisfaction After Implementation of a Surgical Safety Checklist in the Ambulatory of an Oral and Maxillofacial Surgery Department and its Impact on Patient Safety	This investigation into the use of a surgical safety checklist found that staff who used the checklist reported higher satisfaction, better communication, and less stress during the procedure. The group who used the checklist also reported fewer adverse incidents.
Improving Patient Safety with a Timeout Policy	Provides brief background on the time-out protocol and encourages its implementation for dental practices.
Team Training and Resource Management in Health Care: Current Issues and Future Directions	A background on communication techniques in healthcare, stemming from roots in aviation and describes barriers to effective use among healthcare teams. Authors outline recommendations for safe care.
The Human Factor: The Critical Importance of Effective Teamwork and Communication in Providing Safe Care	Examples of high reliability activities at Kaiser Permanente health system with a focus on teamwork and communication. Authors highlight SBAR as an effective tool, standardized critical language, situational awareness, and debriefing.

4. Documentation & Reporting

Title	Description
The Case for Checklists in Dentistry	Perspective piece by Travis Nelson, DDS, MSD, MPH and Tonya Martino, RD, BSN, ND
Adaptation of Airline Crew Resource Management Principles to Dentistry	Describes the development of a tailored checklist that divides dental activity checkpoints to enhance error detection.
The Adaption and Implementation of the WHO Surgical Safety Checklist for Dental Procedures	Examines how the WHO surgical safety checklist can be used in dentistry. Demonstrates improvements in patient safety with use through a reduction in human error and by encouraging teamwork.
An Adverse Event Trigger Tool in Dentistry: A New Methodology for Measuring Harm in the Dental Office	To monitor patient safety in practice, a trigger tool for identifying adverse events compares the practice of monitoring for adverse events through random chart review.
Developing a Reporting Culture: Learning from Close Calls and Hazardous Conditions	An article that describes the conditions that are nurturing to reporting culture/speaking up. Outlines essential actions to encourage trust, reporting and accountability in health care settings.
Patient Safety and Reporting Adverse Events	Overview of an anonymous reporting system in health care with a focus on learning culture. Encourages reporting of errors and near misses.
Reporting Patient Safety Events	Describes the key components of an effective event reporting system.

5. Safety in Pediatric Dental Practice

Title	Description
Guidance for Performing Root Cause Analysis (RCA) with Performance Improvement Projects (PIPs)	Includes table of steps needed to do a root cause analysis, followed by "helpful tips" for each step.
How to Improve	Outlines a model for improvement using the PDSA (Plan, Do, Study, Act) cycle.
Huddling for High Reliability and Situation Awareness	Authors examine teams that utilize the huddle method and observe five main themes protective of patient safety across a hospital.
High-Reliability Health Care: Getting There from Here	Describes a framework for change toward high reliability in health care within three domains: leadership, safety culture and robust process improvement.
Dental Patient Safety in the Military Health System: Joining Medicine in the Journey to High Reliability	Describes use of evidence-based high reliability practices in Army Dentistry, such as daily safety briefs, unit-based huddles, and leadership walking rounds. Describes the military dentistry responsibility toward patient safety and dedication to becoming a high reliability organization.
Using Patient Safety Morbidity and Mortality Conferences to Promote Transparency and a Culture of Safety	Explains M&M process as an open interdisciplinary discussion of patient safety issues to promotes transparency and reinforce a non-punitive environment ultimately to enhance patient safety.

Library of Additional Resources on Safety in Healthcare & Dentistry

1. Principles of Safety in Healthcare

Title	Description	Type
Assessing the Safety of Deep Sedation in Outpatient Pediatric Oral Health Care	A study that investigating adverse events in pediatric deep sedation, finding one adverse event (minor or major) occurring every twelve deep sedation cases.	Article
Classifying Adverse Events in the Dental Office	Without an adverse event (AE) classification system in dentistry there would be no way to report incidents in a standardized manner to monitor patient safety events. The authors of "Classifying adverse events in the dental office" propose a classification system.	Article
Crossing the Quality Chasm: A New Health System for the 21st Century	A report that builds on the notion that a systems redesign is needed to remedy the incidence of adverse events and medical errors perpetuated by complex systems and microsystems related to healthcare delivery.	Report
The Dangers of Dental Devices As Reported in the FDA MAUDE Database	Authors investigate the frequency of adverse events associated with dental devices reported to the Manufacturer and User Facility Device Experience (MAUDE) database.	Article
Human Error	This book examines cognitive biases and the way humans frame them that affects their decision-making in situations that carry latent risk - ultimately leading to preventable errors and accidents. It suggests that safety relies on systems that have addressed cognitive leanings.	Book
Human Error: Models and Management	Differentiates the person approach from the systems approach to error and notes high reliability organizations as notable examples of the systems approach to safety.	Article
Making Healthcare Safe: The Story of the Patient Safety Movement	A history of the patient safety movement in the U.S. Explains how and why human and system errors in healthcare delivery, covers principles and practices in patient safety, key issues to tackle to improve patient safety and how to create a culture of safety.	Book
Medication Administration Errors and the Pediatric Population: A Systematic Search of the Literature	Reviews incidence of medication errors in pediatric population.	Article
Patient Safety Incidents and Adverse Events in Ambulatory Dental Care: A Systematic Scoping Review	Reviews adverse events found in dental safety literature.	Article
Preventing Pediatric Medication Errors: Sentinel Event Alert 39	Updated in 2021, this sentinel event alert describes incidences of medication errors in the pediatric population and highlights key recommendations to for safe processes and use.	Bulletin

To Err is Human: Building a Safer Health System	Catalyst report on the high incidence of adverse events and error in medicine. Authors depict complex systems and microsystems that inadvertently promote harm in health-care delivery and deny open learning systems that allow for the ability to learn from mistakes, prevent future adverse events, and achieve safety culture in clinical settings. Key recommendations to improve patient safety are included. A Comprehensive Approach to Improving Patient Safety.....17 Errors in Healthcare: A Leading Cause of Death and Injury.....26 Why Do Errors Happen?.....49 Building Leadership and Knowledge for Patient Safety.....69 Error Reporting Systems.....109 Setting Performance Standards and Expectations for Patient Safety...132 Creating Safety Systems in Healthcare Organizations.....155	Book

2. Fostering a Culture of Safety

Title	Description	Type
AHRQ Surveys on Patient Safety Culture	Validated survey for clinical team on safety culture and quality improvement characteristics of their practice. Intended for use to assess safety culture.	Survey
Assessing the Patient Safety Culture in Dentistry	A survey of dental institutions on patient safety culture. Highlights strong organizational learning and teamwork in dentistry, but high heterogeneity across the profession and room for improvement.	Article
Dental Ethics	A reading that examines ethics in dentistry through case studies.	Book
Essential Role of Leadership in Developing a Safety Culture	Fundamental safety culture concepts with key actions for establishment and improvement of safety culture.	Bulletin
Ethics Handbook for Dentists: An Introduction to Ethics, Professionalism, and Ethical Decision Making	Outlines ethical decision-making principles and elements, includes decision-making models for ethical situations and a list of prompts to help guide dentists through ethical quandaries (ACD test).	Book
Ethics Report: The New Professionalism	A review of ethics in dentistry.	Report
From Good to Better: Toward a Patient Safety Initiative in Dentistry	An editorial appeal to dentists to join the patient safety movement. The article describes four key elements needed to drive the profession toward patient safety and lists several tools that can be implemented in dentistry.	Article

Leading a Culture of Safety: A Blueprint for Success	Safety culture guidance for organizational leaders. High-level view that includes summaries of overarching strategies for leaders as well as recommended tactics for adoption and maintenance of organizational safety culture. Includes checklists to assess implementation and measure progress in six domains to promote organizational safety culture.	Report
Promoting a Culture of Safety as a Patient Safety Strategy	A review of the evidence on interventions that evaluate the outcomes of improved safety culture.	Article
Surgical Innovation: The Ethical Agenda	An article that investigates the question "what are the main ethical aspects of surgical innovation?" Authors propose the use of learning health systems to guide surgical innovation.	Article
Zero Harm: How to Achieve Patient and Workforce Safety in Healthcare	The modern healthcare system standard for patient safety goals, Zero Harm aims to deliver on its promise to "do no harm". Chapter 4: An Introduction to HRO Leadership Skills Chapter 7: Just Culture Chapter 9: Learning Systems Chapter 10: Workforce Safety	Book

3. Communication

Title	Description	Type
A String of Mistakes: The Importance of Cascade Analysis in Describing, Counting, and Preventing Medical Errors	A study examining patient safety incidents through chains of errors, finding that 80% of the initial errors in error cascades stem from initial mistakes in communication.	Article
Disclosure Toolkit and Disclosure Culture Assessment Tool	Includes two resources: 1. A table of key principles used to guide disclosure processes, and 2. A checklist to help assess the culture of disclosure in a practice.	Toolkit
Directly Comparing Handoff Protocols for Pediatric Hospitalists	Authors investigate effectiveness of using Flex II and SBAR communication methods.	Article
Enhancing Communication to Improve Patient Safety and to Increase Patient Satisfaction	Explains that communication is a major contributor to medication errors, adverse events and sentinel events in medicine, and highlights a couple of methods with strong records for improving effectiveness of communication in delivery of health care, SBAR and Acknowledge-Introduce-Duration-Explain-Thank (AIDET) protocols.	Article
Make Time for a Time Out	Recommended tactics for effective use of time-outs based on lessons learned.	Blog
SBAR Tool: Situation-Background-Assessment-Recommendation (IHI)	A technique used to communicate between team members about a patient's condition. The framework is a way to focus the conversation on critical elements surrounding clinical care in urgent situations: Situation, Background, Assessment and Recommendation.	Tool

TeamSTEPPS 3.0	A multiprofessional safety curriculum for health care settings with a subject matter focus on teamwork, leadership, mutual support, communication, and situation monitoring. Includes a curriculum, videos, training guides and other resources for healthcare professionals.	Modules
WHO Patient Safety Curriculum	A guide to help universities and residency programs implement safety teachings into their curriculums. It touches on eleven safety topics, most of which can be adopted into dentistry programs.	Training

4. Documentation and Reporting

Title	Description	Type
Checklist Manifesto	Explores the nature of complex undertakings by people, namely surgeons and other experts in high stakes, high hazard fields, and how despite their expertise they need some guidance through mechanisms like checklists.	Book
Comparing Rates of Adverse Events Detected in Incident Reporting and the Global Trigger Tool: A Systematic Review	Authors compare the effectiveness of using the Incident Reporting System versus the Global Trigger Tool.	Article
Enhancing Safety Culture through Improved Incident Reporting: A Case Study in Translational Research	A study that investigated adverse incidents reporting and parallel interventions (related to continuous learning) in a large academic healthcare system. Includes descriptions of interventions and reporting systems.	Article
Implementation of a Modified WHO Pediatric Procedural Sedation Safety Checklist and Its Impact on Risk Reduction	Describes implementation of the WHO pediatric procedural sedation safety checklist in a children's hospital. Explains potential barriers to effective use of procedural sedation safety checklist. Demonstrates that the checklist improved process adherence and documentation of "critical safety elements."	Article
Speak-Up: Adapted from the Universal Protocol for Preventing Wrong Site, Wrong Procedure, and Wrong Person Surgery	Covers the Universal Protocol and outlines the 3 main components and their core elements: Conduct a pre-procedure verification process, mark the procedure site, and perform a time-out.	Tool
Patients' Views of Adverse Events in Primary and Ambulatory Care: A Systematic Review to Assess Methods and the Content of What Patients Consider to be Adverse Events	A systematic review of research on the patient's contribution to patient safety.	Article
Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population	Describes a large study on the implementation of the WHO surgical safety checklist. Highlights the reduction of death and complications with use of the checklist. Includes a table of process measures at the sites before and after its implementation.	Article

Have feedback on this Safety Curriculum? Please share with us at *RPC@aapd.org.*

The WHO Safer Surgery Checklist Time Out Procedure Revisited	Describes the time-out protocol for safe surgery as well patterns of incorrect time-out procedure. Explains that, while issues around time-outs have been revealed as a key contributor to surgical adverse events, compliance is variable.	Article
WHO Surgical Safety Checklist	A 3-stage checklist template that offers a protocol to improve teamwork and communication in surgical teams.	Tool

5. Safety in Pediatric Dental Practice

Title	Description	Type
AAPD Policy on Patient Safety	A policy statement of AAPD Reference Manual aimed at promoting patient safety in pediatric dentistry outlining a range of considerations in protecting patients during clinical care.	Policy Statement
Guidelines for Monitoring and Management of Pediatric Patients Before, During, and After Sedation for Diagnostic and Therapeutic Procedures	Report developed through a collaborative effort of the American Academy of Pediatrics and the American Academy of Pediatric Dentistry to offer pediatric providers updated information and guidance in delivering safe sedation to children.	Best Practice
Impact of Electronic Health Record Systems on Prescribing Errors in Pediatric Clinics	Describes variability in EHR systems that could impact prescribing errors in pediatrics. Finds the EHRs in three pediatric practices were out of compliance with AAP recommendations for prescribing.	Article
Root Cause Analysis: PSNet Patient Safety Primers	This Patient Safety Primer from PSNET describes a method of analyzing adverse events to understand where error has occurred.	Article
PDSA Cycle Template	Template that walks you through three key questions for improvement and then each PDSA component: Plan, Do, Study, Act.	Tool
Systematic Review of Patient Safety Interventions in Dentistry	A systematic review that explores how patient safety interventions are used in dentistry. At the time of review, the only tool used was surgical safety checklists.	Article
Thinking About In-Office GA? 10 Things to Think About	Perspective piece by Jade Miller, DDS, FAAPD, FRSCI and Dr. Christine Quinn, DDS, MS	Article
Fire During Deep Sedation and General Anesthesia—Urban Myth or Real Nightmare?	Perspective piece by Jung-Wei "Anna" Chen, DDS, MS, PhD	Article
Staying Safe and Sedating with a Smile	Perspective piece by S. Thikkurissy, DDS, MS	Article
Addressing Hidden Dangers for Children	Perspective piece by Paul Casamassimo, DDS, MS, Andrew Vo, DDS, MS, and Maureen Casamassimo, BA, MA	Article
Naloxone Belongs in Every Emergency Kit	Perspective piece by Travis Nelson, DDS, MSD, MPH	Article