

## Selected Best Practices and Suggestions for Improvement

### PDI 01: Accidental Puncture or Laceration

#### Why focus on accidental puncture and laceration in children?

- Pediatric surgery, due to the patients’ smaller anatomy, is often technically more complex than adult surgery and may carry a higher risk of accidental puncture or laceration to patients.<sup>1</sup>
- Rates in children are high, ranging anywhere from 0.64 to 2.2 incidents per 1,000 pediatric discharges, depending on the study.<sup>2-4</sup>
- One study found that accidental puncture and laceration is associated with higher mean length of stay for children (by 7.7 days) and mean charges per stay (by \$41,204) compared with those without this complication. Children with this complication also had higher odds of in-hospital mortality (2.7 times the odds of children without the complication), even after adjusting for numerous other risk factors.<sup>4</sup>

<b>Recommended Practice</b>	<b>Details of Recommended Practice</b>
Use appropriate safety techniques during the perioperative period.	Use appropriate safety measures to protect pediatric patients and staff from accidental punctures and lacerations during the perioperative period.
At close of surgery, appropriately dispose of all sharps.	Dispose of all needles and other sharps in appropriate containers after the completion of surgery.

#### Best Processes/Systems of Care

##### *Introduction: Essential First Steps*

- Engage key nurses, physicians and other providers, and surgical technicians from the operating room; and representatives from quality improvement, radiology, and information services to develop time-sequenced guidelines, care paths, or protocols for the full continuum of care.<sup>5</sup>

##### ***Recommended Practice: Appropriate safety techniques during the perioperative period***

- Use appropriate equipment selection methods.<sup>5-7</sup>
  - Use scalpel blades with safety blades.
  - Use mechanical/instrument tissue retraction.
  - Use blunt surgical instruments.
  - Use alternative cutting methods (e.g., cautery, harmonic scalpel).
- Keep used needles on the sterile field in a disposable puncture-resistant needle container.
- Adopt a hands-free technique of passing suture needles and sharps between perioperative team members.<sup>5,8</sup>
- Use a one-handed or instrument-assisted suturing technique to avoid finger contact with needles.
- Use control-release or pop-off needles.
- Double glove.<sup>7</sup>
- Do not bend, break, or recap contaminated needles.<sup>8</sup>

**Recommended Practice: Appropriate sharps disposal**

- Use closable orange or red, leak-proof puncture-resistant disposable containers.<sup>6</sup>
- Place disposal containers close to the point of use.<sup>6</sup>
- Empty routinely and do not allow to overfill.<sup>6</sup>
- Use mounted, upright containers, either floor or wall.<sup>6</sup>

**Educational Recommendation**

- Plan and provide education on protocols and standing orders to physicians and other providers, nurses, and all other staff involved in accidental puncture and laceration prevention and care. Education should occur upon hire, annually, and when this protocol is added to job responsibilities.<sup>9</sup>

**Effectiveness of Action Items**

- Track compliance with elements of established protocol steps.
- Evaluate effectiveness of new processes, determine gaps, modify processes as needed, and reimplement.
- Mandate that all personnel follow the protocol and develop a plan of action for staff in noncompliance.
- Provide feedback to all stakeholders (physicians and other providers, nursing, and ancillary staff; senior medical staff; and executive leadership) on level of compliance with process.
- Monitor and evaluate performance regularly to sustain improvements achieved.

**Additional Resources**

**Systems/Processes**

- Centers for Disease Control and Prevention. Workbook for Designing, Implementing, and Evaluating a Sharps Injury Prevention Program  
<http://www.cdc.gov/sharpsafety/resources.html>
- ECRI Institute. Patient Safety E-Alerts: At the Sticking Point. When Sharps Safety Features Fail to Protect  
[https://www.ecri.org/components/PSOCore/Pages/E-alert\\_020314.aspx?tab=2](https://www.ecri.org/components/PSOCore/Pages/E-alert_020314.aspx?tab=2)
- OSHA Needlestick/Sharps Injuries  
<https://www.osha.gov/SLTC/etools/hospital/hazards/sharps/sharps.html>
- American Nurses Association Needlestick Prevention Guide  
<http://www.nursingworld.org/safeneedles>

**Tools**

- WHO Needlestick Injury Prevention Assessment Tool  
[http://www.who.int/occupational\\_health/activities/2needlest.pdf](http://www.who.int/occupational_health/activities/2needlest.pdf)

**Staff Required**

- Surgeons
- Pediatricians and other providers who care for children
- Perioperative nurses

- Pediatric nurses
- Surgical technologists

**Equipment**

- Personal protective equipment
- Sharps containers

**Communication**

- Systemwide education on protocol
- Communication between surgeon and surgical nurse/surgical technician on agreed upon neutral zone

**Authority/Accountability**

- Senior leadership mandating protocol for all providers

**References**

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