

Selected Best Practices and Suggestions for Improvement

PDI 11: Postoperative Wound Dehiscence

Why focus on postoperative wound dehiscence in children?

- Like adults, children can experience wound dehiscence as a postoperative complication; children under 1 year of age may be at particularly high risk due to impaired wound healing.
- Postoperative wound dehiscence occurs in about 8 per 10,000 pediatric surgical discharges.¹
- The reported mortality rate for children with postoperative wound dehiscence is between 8 percent and 45 percent.²
- In addition to causing significant morbidity and mortality, wound dehiscence also results in an excess hospital length of stay of 21.1 days, along with \$76,737 in excess charges.¹
- Proper identification of patients at risk, prevention of surgical site infections, and appropriate postsurgical wound assessment help decrease the incidence of postoperative wound dehiscence. Although many risk factors are nonmodifiable (e.g., emergency surgery), some factors can be addressed by hospitals, such as improving nutritional status and decreasing surgical error.

Recommended Practice	Details of Recommended Practice
Assess for risk of wound dehiscence.	Determine risk factors for postoperative wound dehiscence and identify pediatric patients at risk. ²⁻⁵
Reduce the incidence of surgical site infections.	Administer timely and appropriate antibiotics preoperatively and postoperatively. ^{3,4} Use appropriate wound dressings as determined by the type of closure. ⁵
Conduct postoperative wound assessment.	Assess the surgical wound postoperatively and document any findings of wound dehiscence. ³⁻⁵

Best Processes/Systems of Care

Introduction: Essential First Steps

- Engage key nurses, physicians and other providers, hospitalists, respiratory therapists, dietitians, and pharmacists from infection control, intensive care, and inpatient units, including 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.

Recommended Practice: Assess for risk of wound dehiscence

- Complete a preoperative assessment to identify factors that could increase the risk of postoperative wound dehiscence in the pediatric population.^{2,6}
 - Wound infections
 - Age <1 year
 - Emergency surgery
 - Mechanical ventilation
 - Median or vertical incisions

- Malnutrition
- When possible, eliminate or mitigate risk factors.
- Educate patients and caregivers about the importance of compliance with postoperative instructions.
- Optimize nutrition before surgery, especially increased protein.^{3,4}
- Eliminate smoking products before surgery. Be mindful that smoking poses an increased risk of postoperative wound dehiscence. Therefore, particularly among adolescent patients, encourage elimination of tobacco products prior to surgery, where relevant.^{3,4}

Recommended Practice: Reduce the incidence of surgical site infections

- Consider chlorihexidine bathing preoperatively for infants 2 months of age and older.⁴
- If removing hair prior to surgery, use the following appropriate techniques^{7,8}:
 - Hair removal with clippers, depilatory, or no hair removal at all
- Ensure that prophylactic antibiotics are administered within 1 hour prior to surgical incision.^{3,4,8}
- Administer appropriate antibiotic selection based on evidence-based guidelines.^{3,4,8}
- Use appropriate wound dressings determined by the type of closure⁵:
 - Primary: Dry, sterile cover dressing for 24-48 hours
 - Secondary and Chronic: Dressings that provide a moist wound healing environment while preventing it from becoming too wet
- Perform routine pain assessments to ensure early identification of delayed wound healing.^{3,4}

Recommended Practice: Conduct postoperative wound assessment

- Documentation of the surgical wound should occur 48 hours after surgery to establish a baseline.³⁻⁵
- Repeat assessment should occur every shift thereafter.^{3,5}
- Symptoms of wound dehiscence should be elicited, including^{3,4}:
 - Bleeding.
 - Reported pain (if old enough to verbalize) or increased heart rate not accounted for by other factors.
 - Crying and agitation.
 - Swelling.
 - Redness.
 - Fever.
 - Broken sutures.
 - Open wound.
 - Pulling or ripping sensation reported by patient (if old enough to verbalize).

Educational Recommendation

- Plan and provide education on protocols and standing orders to physicians and other providers, nurses, and all other staff involved in postoperative care. Education should occur upon hire, annually, and when this protocol is added to job responsibilities.⁴

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 wound dehiscence 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

- Agency for Healthcare Research and Quality. Universal ICU decolonization: an enhanced protocol
http://www.ahrq.gov/professionals/systems/hospital/universal_icu_decolonization/index.html
- Centers for Disease Control and Prevention (CDC). Surgical Site Infection (SSI)
<http://www.cdc.gov/hai/ssi/ssi.html>

Policies/Protocols

- WHO Surgical Care at the District Hospital, 2003
<http://www.who.int/surgery/publications/en/SCDH.pdf>

Tools

- CDC Surgical Site Infection Toolkit http://www.cdc.gov/HAI/pdfs/toolkits/SSI_toolkit021710SIBT_revised.pdf
- WHO Surgical Safety Checklist http://www.who.int/patientsafety/safesurgery/tools_resources/SSSL_Checklist_finalJun08.pdf

Staff Required

- Pediatric surgeons
- Perioperative and postoperative nursing

Equipment

- Dressing supplies
- Appropriate antibiotics

Communication

- Systemwide education on policy/protocol of monitoring postoperative pediatric patients

Authority/Accountability

- Senior leadership mandating protocol for all providers

References

1. Miller MR, Zhan C. Pediatric patient safety in hospitals: a national picture in 2000. *Pediatrics* 2004;113(6):1741-6.
2. Van Ramshorst G, Salu N, Lange J, et al. Risk factors for abdominal wound dehiscence in children: a case-control study. *World J Surg* 2009 Jul;33(7):1509-13.
3. Hahler B. Surgical wound dehiscence. *MEDSURG Nurs* 2006;15(5):296-301.
4. Orstod H, Koast DK, Kuhnko J, et al. Best practice recommendation: prevention and management of open surgical wounds. *Wound Care Canada* 2010;8(1):6-32.
5. Beattie S. Bedside emergency: wound dehiscence. *Modern Medicine*: 2007 June 1. <http://www.modernmedicine.com/content/bedside-emergency-wound-dehiscence> . June 1, 2007. Accessed May 17, 2016.
6. Khan M, Khan K, Imran M, et al. Dehiscence of laparotomy wounds in children. *J Postgrad Med Instit (Peshawar - Pakistan)* 2011;23(4):318-21. <http://www.jpmi.org.pk/index.php/jpmi/article/viewFile/273/185>. Accessed May 17, 2016.
7. Van Ramshorst G, Nieuwenhuizen J, Lange J, et al. Abdominal wound dehiscence in adults: development and validation of a risk model. *World J Surg* 2010 Jan;34(1):20-27.
8. Specifications manual for national hospital inpatient quality measures, version 4.3. Oakbrook Terrace, IL: The Joint Commission; 2014. http://www.jointcommission.org/specifications_manual_for_national_hospital_inpatient_quality_measures.aspx (January 16, 2014). Accessed May 17, 2016.