THE SAFETY IN SPINE SURGERY PROJECT

Best Practice Guidelines

Consensus recommendations to prevent, diagnose, and treat SSI in high-risk pediatric spine surgery

Recommendation	Consensus (%) Agree	Disagree
Final Consensus Recommendations for Defining High-risk for Surgical Site Infection (SSI) in Pediatric Spine Surgery		
Formal risk severity stratification such as Risk Severity Score (RSS) calculators can be used to define high-SSI risk (Matsumoto et al. 2017).	100	0
Risk of infection > 5% is considered high-risk for SSI.	100	0
Infection risk increases as preoperative coronal Cobb angle increases.	82.4	17.6
Factors associated with high-risk for SSI:		
Syndromic or neuromuscular etiology of scoliosis.	92.9	7.1
BMI < 15	88.2	11.8
BMI > 30	100	0
Preoperative albumin < 3 mg/dl	88.2	11.8
ASA score IV or higher	100	0
A diagnosis of diabetes	100	0
Preoperative steroid use	85.7	14.3
Non-ambulatory status	95.2	4.8
Presence of baclofen pump	71.4	28.6
Presence of VP shunt	71.4	28.6
Urinary/bowel incontinence	100	0
Positive urine cultures	95.2	4.8
Thirteen level fusion or greater	93.3	6.7
Fusion to pelvis	90.5	9.5
Final Consensus Recommendations for Preventing Surgical Site Infection (SSI) in High-risk Pediatric Spine Surgery		
Preoperative:		
Patients should undergo skin antiseptic wiping/washing before arriving to the operating room.	100	0
Patients should receive a preoperative education material on prevention, recognition, and treatment of SSI.	100	0
Patients should receive preoperative IV cephalosporin routinely (if not allergic and no history of MRSA).	100	0
Patients should receive preoperative IV antibiotic against gram negative pathogens routinely *and*	87.5	12.5
IV antibiotic should be given within 30 minutes of incision.	94.1	5.9
If applicable, pulmonary function should be optimized preoperatively.	93.8	6.2
Patients who are incontinent, or at an increased risk of UTI (such as myelomeningocele patients) may have urine cultures performed and treatment prescribed if positive.	100	0
Nutritional status may be assessed preoperatively using BMI for age.	82.4	17.6

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Statements with white background attained consensus after the Delphi round 1.
Those with shaded backgrounds attained consensus after the Delphi round 2.

SSI: Surgical Site Infection I&D: Irrigation and Debridement. UTI: Urinary Tract Infection. VAC: Vacuum-assisted Closure

Recommendation	Consensus (%) Agree	Disagree
Final Consensus Recommendations for Preventing Surgical Site Infection (SSI) in High-risk Pediatric Spine Surgery *(continued)*		
Intraoperative:		
Adherence to intraoperative antibiotic prophylaxis protocol (agent, timing, dosing, redosing, duration) should be systematized.	100	0
Chlorhexidine skin preparation should be used.	92.8	6.2
Alcohol may be used as part of the skin preparation protocol.	100	0
Traffic through the operating room should be limited during surgery.	100	0
Wound irrigation using saline or other wound irrigation agent (e.g., dilute betadine) should be performed.	94.1	5.9
Topical/intrawound vancomycin (or another appropriate antibiotic) should be used routinely.	87.5	12.5
Performing a multi-layered wound closure by plastic surgery or primary team is helpful for preventing SSI.	88.2	11.8
Postoperative:		
The same intraoperative antibiotics should be given postoperatively.	92.9	7.1
Postoperative antibiotics should be given for 24 hours only.	86.7	13.3
Occlusive (or VAC) type dressing should be used postoperatively.	86.7	13.3
Final Consensus Recommendations for Diagnosis of Surgical Site Infection (SSI) in High-risk Pediatric Spine Surgery		
Constitutional symptoms of infection including malaise, increased pain, fever may be used as contributory empiric evidence when diagnosing SSI.	100	0
Blood cultures should be obtained.	100	0
Blood inflammatory markers (CRP, ESR) should be measured.	100	0
Deep wound aspiration (after skin sterilization) is helpful in diagnosing SSI.	70.6	29.4
Intraoperative wound tissue cultures are helpful for the confirmation of SSI.	94.1	5.9
There is no role for imaging (MRI, CT, X-ray, US) for the specific purpose of diagnosing acute SSI.	75	25
Final Consensus Recommendations for Treatment of Surgical Site Infection (SSI) in High-risk Pediatric Spine Surgery		
Antibiotics should be administered early (after cultures are taken).	86.7	13.3
I&D should be performed.	100	0
The entire wound should be opened (vs. partially opened) when I&D is performed.	93.3	6.7
Drains should be used when I&D is performed.	93.3	6.7
Infectious disease specialists should be consulted.	100	0
Wound VAC may be applied if the patient is clinically septic, or the tissues are not healthy appearing after I&D.	100	0
Removal of bone graft is reasonable when I&D is performed.	76.5	23.5
Removal of implants for SSI in the acute setting is NOT recommended as a primary treatment.	100	0
There is a role for postoperative antibiotics in the treatment of SSI.	94.1	5.9

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Reference (Manuscript Publication Pending):

Best Practice Guidelines for Surgical Site Infection in Pediatric Spine Surgery: Definition, Prevention, Diagnosis, and Treatment

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