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**Literature search results**

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**Search details**

IVAAbx vs antimicrobial dressings as prophylaxis for SSI prevention in orthopaedic surgery.

**Resources searched**

NHS Evidence; TRIP Database; Cochrane Library; BNI; CINAHL; EMBASE; MEDLINE; Google Scholar

**Database search terms:** IVAAbx; intravenous* adj2 antibiotic*; exp ANTIBIOTIC PROPHYLAXIS; exp ADMINISTRATION, INTRAVENOUS; antibiotic*; anti-biotic*; intravenous*; exp ANTIBIOTICS; prophyla*; orthopaed*; orthoped*; exp ORTHOPEDICS; bone*; joint*; fracture*; arthroplast*; antimicrobial* adj2 (dressing* OR topical* OR bandage* OR film* OR gel* OR gauze* OR fabric* OR colloid* OR material*); exp ANTIMICROBIAL DRESSINGS; exp PROPHYLAXIS; exp ANTIINFECTIVE AGENT; surg*; exp SURGICAL INFECTION; (surgery OR sugical) adj2 infection*; SSI*

**Evidence search string(s):** (SSI OR SSIs OR "surgical infection" OR "surgical site infection") (orthopaedic OR fracture OR arthroplast) intravenous antibiotic antimicrobial prophylaxis

**Google search string(s):** (SSI OR SSIs OR "surgical infection" OR "surgical site infection") (orthopaedic OR fracture OR arthroplast) intravenous antibiotic antimicrobial prophylaxis

**Summary**

Although there is a lot of research on the efficacy of or need for antibiotic prophylaxis in orthopaedic surgery, there is little comparing antimicrobial dressings with intravenous antibiotics in SSI prophylaxis.
Guidelines and Policy

American Society of Health-System Pharmacists
Clinical practice guidelines for antimicrobial prophylaxis in surgery 2013

Orthopedic Procedures
Antimicrobial prophylaxis is not recommended for patients undergoing clean orthopedic procedures, including knee, hand, and foot procedures; arthroscopy; and other procedures without instrumentation or implantation of foreign materials. (Strength of evidence against prophylaxis = C.) If the potential for implantation of foreign materials is unknown, the procedure should be treated as with implantation.

NICE
CG74 Surgical site infection 2008
1. Nasal decontamination
   Do not use nasal decontamination with topical antimicrobial agents aimed at eliminating Staphylococcus aureus routinely to reduce the risk of surgical site infection.
2. Topical antimicrobial agents for wound healing by primary intention
   Do not use topical antimicrobial agents for surgical wounds that are healing by primary intention to reduce the risk of surgical site infection.

SIGN

Evidence-based reviews

British Medical Journal
Effectiveness of a bundled intervention of decolonization and prophylaxis to decrease Gram positive surgical site infections after cardiac or orthopedic surgery: systematic review and meta-analysis 2013
Surgical programs that implement a bundled intervention including both nasal decolonization and glycopeptide prophylaxis for MRSA carriers may decrease rates of surgical site infections caused by S aureus or other Gram positive bacteria.

Cochrane Database of Systematic Reviews
Antibiotic prophylaxis for the prevention of methicillin-resistant Staphylococcus aureus (MRSA) related complications in surgical patients 2013
Prophylaxis with co-amoxiclav decreases the proportion of people developing MRSA infections compared with placebo in people without malignant disease undergoing percutaneous endoscopic gastrostomy insertion, although this may be due to decreasing overall infection thereby preventing wounds from becoming secondarily infected with MRSA. There is currently no other evidence to suggest that using a combination of multiple prophylactic antibiotics or administering prophylactic antibiotics for an increased duration is of benefit to people undergoing surgery in terms of reducing MRSA infections. Well designed RCTs assessing the clinical effectiveness of different antibiotic regimens are necessary on this topic.

Dressings for the prevention of surgical site infection 2011
At present, there is no evidence to suggest that covering surgical wounds healing by primary intention with wound dressings reduces the risk of SSI or that any particular wound dressing is more effective than others in reducing the rates of SSI, improving scarring, pain control, patient acceptability or ease of dressing removal. Most trials in this review were small and of poor quality at high or unclear risk of bias. However, based on the current
evidence, we conclude that decisions on wound dressing should be based on dressing costs and the symptom management properties offered by each dressing type e.g. exudate management.

**Antibiotic prophylaxis for surgery for proximal femoral and other closed long bone fractures 2010**

Antibiotic prophylaxis should be offered to those undergoing surgery for closed fracture fixation.

**NICE Evidence Update**

*Surgical Site Infection 2013*

**Wound dressings**

NICE CG74 recommends covering surgical incisions with an appropriate interactive dressing at the end of the operation. However, it does not make any recommendations about specific types of dressing.

**All dressings**

A Cochrane review by Dumville et al. (2011) investigated wound dressings in the prevention of surgical site infections. RCTs that compared either different wound dressings, or dressing versus no dressing, in patients with postoperative wounds (of any contamination level) healing by primary intention, were included. Dressings must have been applied in the operating theatre. Trials of procedures involving graft sites, or in which patients had infected wounds at baseline, were excluded. A total of 16 RCTs (n=2578) were identified.

The authors stated that among the included trials, there was no evidence that covering wounds reduced the primary outcome of rate of surgical site infection (as defined by the US Centers for Disease Control and Prevention criteria, or individual trial authors), and that no particular wound dressing appeared to be better than any others, or than leaving the wound uncovered.

Limitations of the evidence included that:

- most modern dressings were compared only with basic wound contact dressings such as gauze or absorbent dressings, therefore performance versus other modern types was not clear
- many trials were small, and most studies were either assessed as poor quality, or could not be assessed because of incomplete reporting
- only 4 of the 16 studies were published within the last 10 years, during which time practices may have changed.

The authors concluded that in the absence of clear evidence of benefit of any particular dressing type on surgical site infection risk, wound dressings should be chosen on the basis of cost and the properties of the dressing. This evidence is unlikely to affect NICE CG74.

**NIHR Health Technology Assessments**

*Antimicrobial Prophylaxis in Total Hip Replacement 2013*

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**Published research – Databases**

* CINAHL and MEDLINE Results


**Author(s)** Glotzbecker MP, Riedel MD, Vitale MG, Matsumoto H, Roye DP, Erickson M, Flynn JM, Saiman L

**Citation:** Journal of Pediatric Orthopedics, July 2013, vol./is. 33/5(479-87), 0271-
Abstract: BACKGROUND: Despite relatively high rates of surgical site infections (SSIs) after pediatric spine surgery, practice guidelines are absent. We performed a systematic review of the literature, determining the level of evidence for risk factors for SSIs and prevention practices to reduce SSIs following pediatric spine surgery. METHODS: The search utilized the root search words "spine," "scoliosis," and "infection" resulting in 9594 abstracts. Following removal of duplicate abstracts, those that assessed only SSI rates, SSI treatment, nonoperative spine infections, or adult populations, 57 relevant studies were rated for level of evidence and graded using previously validated scales. RESULTS: Very few studies lead to grade A (good evidence) or grade B (fair evidence) recommendations. Ceramic bone substitute did not increase the risk of SSIs when compared with autograft (grade A). Comorbid medical conditions, particularly cerebral palsy or myelodysplasia; urinary or bowel incontinence; nonadherence to antibiotic prophylaxis protocols; and increased implant prominence increase the risk of SSIs (grade B). SSIs caused by gram-negative bacilli were more frequent in neuromuscular populations and first-generation stainless steel implants increased the risk of delayed infection compared to newer generation titanium implants (grade B). Evaluations of other risk factors for SSIs yielded conflicting or poor-quality evidence (grade C); these included malnutrition or obesity; number of levels fused or fusion extended to the sacrum/pelvis; blood loss; and use of allograft. Insufficient evidence (0 to 1 published studies) was available to recommend numerous practices shown to reduce SSI risk in other populations such as chlorhexidine skin wash the night before surgery, preoperative nasal swabs for Staphylococcus aureus, chlorhexidine skin disinfection, perioperative prophylaxis with intravenous vancomycin, vancomycin, or gentamicin powder in the surgical site or graft. CONCLUSIONS: Few studies have evaluated risk factors and preventive strategies for SSIs following pediatric spine surgery. This systematic review documents the relative lack of evidence supporting SSI prevention practices and highlights priorities for research. LEVEL OF EVIDENCE: Level III therapeutic study.

Source: Medline

2. Building consensus: development of a Best Practice Guideline (BPG) for surgical site infection (SSI) prevention in high-risk pediatric spine surgery.


Citation: Journal of Pediatric Orthopedics, July 2013, vol./is. 33/5(471-8), 0271-6798;1539-2570 (2013 Jul-Aug)

Publication Date: July 2013

Abstract: BACKGROUND: Perioperative surgical site infection (SSI) after pediatric spine fusion is a recognized complication with rates between 0.5% and 1.6% in adolescent idiopathic scoliosis and up to 22% in "high risk" patients. Significant variation in the approach to infection prophylaxis has been well documented. The purpose of this initiative is to develop a consensus-based "Best Practice" Guideline (BPG), informed by both the available evidence in the literature and expert opinion, for high-risk pediatric patients undergoing spine fusion. For the purpose of this effort, high risk was defined as anything other than a primary fusion in a patient with idiopathic scoliosis without significant comorbidities. The ultimate goal of this initiative is to decrease the wide variability in SSI prevention strategies in this area, ultimately leading to improved patient outcomes and reduced health care costs. METHODS: An expert panel composed of 20 pediatric spine surgeons and 3 infectious disease specialists from North America, selected for their extensive experience in the field of pediatric spine surgery, was developed. Using the Delphi process and iterative rounds using a nominal group technique, participants in this panel were as follows: (1) surveyed for current practices; (2) presented with a detailed systematic review of the relevant literature; (3) given the opportunity to voice opinion collectively; and (4) asked to vote regarding preferences privately. Round 1 was conducted using an electronic survey. Initial results were compiled and discussed face-to-face. Round 2 was conducted using the Audience Response System, allowing participants to vote for
(strongly support or support) or against inclusion of each intervention. Agreement >80% was considered consensus. Interventions without consensus were discussed and revised, if feasible. Repeat voting for consensus was performed.

RESULTS: Consensus was reached to support 14 SSI prevention strategies and all participants agreed to implement the BPG in their practices. All agreed to participate in further studies assessing implementation and effectiveness of the BPG. The final consensus driven BPG for high-risk pediatric spine surgery patients includes: (1) patients should have a chlorhexidine skin wash the night before surgery; (2) patients should have preoperative urine cultures obtained; (3) patients should receive a preoperative Patient Education Sheet; (4) patients should have a preoperative nutritional assessment; (5) if removing hair, clipping is preferred to shaving; (6) patients should receive perioperative intravenous cefazolin; (7) patients should receive perioperative intravenous prophylaxis for gram-negative bacilli; (8) adherence to perioperative antimicrobial regimens should be monitored; (9) operating room access should be limited during scoliosis surgery (whenever practical); (10) UV lights need NOT be used in the operating room; (11) patients should have intraoperative wound irrigation; (12) vancomycin powder should be used in the bone graft and/or the surgical site; (13) impervious dressings are preferred postoperatively; (14) postoperative dressing changes should be minimized before discharge to the extent possible.

CONCLUSIONS: In conclusion, we present a consensus-based BPG consisting of 14 recommendations for the prevention of SSIs after spine surgery in high-risk pediatric patients. This can serve as a tool to reduce the variability in practice in this area and help guide research priorities in the future. Pending such data, it is the unsubstantiated opinion of the authors of the current paper that adherence to recommendations in the BPG will not only decrease variability in practice but also result in fewer SSI in high-risk children undergoing spinal fusion.

LEVEL OF EVIDENCE: Not applicable.

Source: Medline

3. Vancomycin prophylaxis of surgical site infection in clean orthopedic surgery.

Author(s) Kanj WW, Flynn JM, Spiegel DA, Dormans JP, Baldwin KD

Citation: Orthopedics, February 2013, vol./is. 36/2(138-46), 0147-7447;1938-2367 (2013 Feb)

Publication Date: February 2013

Abstract: Community-acquired methicillin-resistant Staphylococcus aureus (MRSA) has been recognized as a public health concern since the mid-1990s. Because of the increase in reports of this pathogen, it has become increasingly tempting for clinicians to provide prophylaxis against this entity using antibiotics known to be effective against MRSA. The goal of this study was to assess the use of MRSA prophylaxis to determine whether it is safe and effective. A systematic search of the literature was performed to identify articles that examined the use of vancomycin in clean orthopedic surgery. Infection rates and adverse events were extracted, and the data were aggregated and analyzed using a DerSimonian and Laird random effects model. Publication bias and study quality were also assessed. No benefit of parenteral administration of vancomycin was identified. Local, vancomycin-impregnated cement and powder are associated with lower infection rates. Few adverse events occurred, and most of those that occurred involved infusion rate. Cost, resistance, and side effects are concerns in using vancomycin therapy in addition to standard antibiotic prophylaxis. Given the lack of efficacy of intravenous vancomycin, the authors do not recommend its routine use in clean orthopedic surgery. However, local administration appears to be safe and effective. The data are most compelling in orthopedic spine surgery in which a patient without prophylaxis is more than 4 times as likely to have a deep postoperative wound infection compared with a patient who received local vancomycin. The authors recommend the use of local antibiotics when possible in clean orthopedic surgery. Copyright 2013, SLACK Incorporated.

Source: Medline

OBJECTIVE: To compare risks for developing surgical site infection (SSI) due to Staphylococcus aureus when vancomycin is used for antibiotic prophylaxis with risks when a -lactam antibiotic is administered for prophylaxis.

BACKGROUND: Vancomycin is often used as surgical antibiotic prophylaxis for major surgery. In nonsurgical populations, there is evidence that vancomycin is less effective for prevention and treatment of methicillin-sensitive Staphylococcus aureus (MSSA) infections. Since 2002, the Victorian Healthcare Associated Surveillance System (VICNISS) has used standardized methods for infection surveillance in Australia, including any prophylactic antibiotic agent administered before surgical procedures.

METHODS: Surveillance records were obtained for patients undergoing 4 clean surgical procedures during the period of November 2002 to June 2009. Logistic regression analysis was used to examine risk factors for infection, including age, procedure duration, American Society of Anesthesiologists score, and choice and timing of antibiotic prophylaxis.

RESULTS: The data set consisted of 22,549 procedures, including cardiac bypass and hip and knee arthroplasty procedures. Vancomycin prophylaxis was administered in 1610 cases and a -lactam antibiotic for 20,939 cases. A total of 754 SSIs were recorded. The most frequent pathogens were MSSA, methicillin-resistant Staphylococcus aureus, and Pseudomonas species. The adjusted odds ratio (OR) for an SSI with MSSA was 2.79, where vancomycin prophylaxis was administered (P < 0.001). For methicillin-resistant Staphylococcus aureus infection, the adjusted OR for vancomycin was 0.44 (P = 0.05), whereas for Pseudomonas infection, it was 0.96 (P = 0.95). CONCLUSIONS: In a large Australian study population, prophylaxis with vancomycin was found to be associated with an increased risk of SSI due to MSSA when compared with prophylaxis with a -lactam antibiotic. Given the potential for poorer surgical outcomes in the setting of indiscriminate prophylactic vancomycin use, measures to improve adherence to guidelines for restricted administration of prophylactic vancomycin are supported.

Source: Medline
Available in fulltext from Annals of Surgery at the ULHT Library and Knowledge Services' ejournal collection

5. Does dual antibiotic prophylaxis better prevent surgical site infections in total joint arthroplasty?

Author(s) Sewick A, Makani A, Wu C, O'Donnell J, Baldwin KD, Lee GC

Citation: Clinical Orthopaedics & Related Research, October 2012, vol./is. 470/10(2702-7), 0009-921X;1528-1132 (2012 Oct)

Publication Date: October 2012

Abstract: INTRODUCTION: It is unclear which antibiotic regimen provides the best prophylaxis against surgical site infection (SSI) in patients undergoing hip and knee surgery.

QUESTION/PURPOSES: Therefore, we determined whether dual antibiotic prophylaxis (1) reduced the rate of SSI compared to single antibiotic prophylaxis and (2) altered the microbiology of SSI.

METHODS: We retrospectively reviewed 1828 primary THAs and TKAs performed between September 1, 2008 and December 31, 2010. We divided patients into two groups: (1) those who received a dual prophylactic antibiotic regimen of cefazolin and vancomycin (unless allergy), or (2) received cefazolin (unless allergy) as the sole prophylactic antibiotic. There were 701 males and 1127 females with an average age of 56 years (range, 15-97 years). We limited followup to 1 year, presuming subsequent infections were not related to the initial surgery.

RESULTS: During this period, there were 22 SSIs (1.2%). The infection rates for dual antibiotic prophylaxis compared to a single antibiotic regimen were 1.1% and 1.4%, respectively. Of 1328 patients treated with dual antibiotic prophylaxis, only one (0.08%) SSI was culture positive for methicillin resistant Staphylococcus aureus (MRSA), while four of 500 patients (0.8%) receiving only cefazolin prophylaxis had culture positive MRSA infection at the time of reoperation.

CONCLUSION: The addition of vancomycin as a prophylactic antibiotic agent
apparently did not reduce the rate of SSI compared to cefazolin alone. Use of vancomycin in addition to cefazolin appeared to reduce the incidence of MRSA infections; however, the number needed to treat to prevent a single MRSA infection was very high. LEVEL OF EVIDENCE: Level III, therapeutic study. See Guidelines for Authors for a complete description of levels of evidence.

Source: Medline
Available in fulltext from Clinical Orthopaedics and Related Research at National Library of Medicine

6. Avoiding and managing temporomandibular joint total joint replacement surgical site infections.

Author(s) Mercuri LG

Citation: Journal of Oral & Maxillofacial Surgery, October 2012, vol./is. 70/10(2280-9), 0278-2391;1531-5053 (2012 Oct)

Publication Date: October 2012

Abstract: PURPOSE: Surgical site infections (SSIs) are rare complications after total joint replacement (TJR); however, should an SSI occur, the clinical and economic consequences can be significant. A Medicare 5% national sample administrative dataset was used to identify and longitudinally observe patients undergoing total knee TJR for deep infections and revision surgery. In 69,663 patients undergoing elective total knee TJR, 1,400 infections (2%) were identified. The infection incidence within 2 years of implantation was 1.55%. A recent retrospective survey of 2,476 temporomandibular joint (TMJ) alloplastic TJR cases involving 3,368 joints reported that a 1.51% SSI rate occurred over a mean of 6 months postoperatively, with a range of 2 weeks to 12 years. This article discusses approaches to avoid and minimize TMJ TJR SSIs and recommends management options should early or late SSIs occur. MATERIALS AND METHODS: On the basis of a review of the orthopedic SSI literature, this article will discuss TMJ TJR SSI risk, prevention, and management from a number of perspectives, including preoperative patient risk assessment, preincision antibiotic prophylaxis, anesthesia and skin preparation protocols, intraoperative surgical technique and duration of surgery, and postoperative antibiotic and follow-up regimens. RESULT: Ways to avoid and manage potential risks for SSI in TMJ TJR cases are recommended. The diagnostic criteria and management protocols for both early- and late-occurring SSIs after TMJ TJR are recommended. CONCLUSIONS: The risk of SSI after TMJ TJR can be decreased with appropriate consideration to preoperative patient risk assessment; properly timed antibiotic prophylaxis; and intraoperative, postoperative, and postdischarge attention to detail. Copyright 2012 American Association of Oral and Maxillofacial Surgeons. Published by Elsevier Inc. All rights reserved.

Source: Medline
Available in print at Lincoln County Hospital Professional Library


Author(s) Vonberg RP, Gastmeier P

Citation: Current Infectious Disease Reports, October 2012, vol./is. 14/5(576-84), 1523-3847;1534-3146 (2012 Oct)

Publication Date: October 2012

Abstract: There is strong evidence that preoperative nasal S. aureus screening/decolonization will significantly reduce surgical site infections (SSIs) after joint prostheses implantation. There is some evidence that antibiotic-containing bone cement may lower SSI rates. Timely administration of perioperative systemic antibiotic prophylaxis is recommended for patients with implants who are undergoing dental treatment, urogenital surgery, upper endoscopy, sigmoidoscopy, or colonoscopy. Advanced skin disinfection by chlorhexidine-gluconate-impregnated cloths may be protective. There is evidence that clippers are favored for hair removal, rather than razors, but no significant advantage, as compared with other modes of hair removal, has been found. Antibiotic-coated
intramedullary nails and antibiotic-impregnated bone grafts may be useful for the treatment of chronic bone infections. No recommendation can be made for wound dressing types. Laminar air flow systems do not seem to prevent SSI but may even cause harm, instead. There is a strong association between the annual number of surgical procedures and low SSI rates.

Source: Medline

8. The effect of care bundle development on surgical site infection after hemiarthroplasty: an 8-year review.

Author(s) Johnson B, Starks I, Bancroft G, Roberts PJ

Citation: The Journal of Trauma and Acute Care Surgery, May 2012, vol./is. 72/5(1375-9), 2163-0763 (2012 May)

Publication Date: May 2012

Abstract: BACKGROUND: Proximal femoral fracture is the most common reason for emergency orthopedic admission in the United Kingdom with an annual cost of 1.7 billion to the National Health Service. Surgical site infection (SSI) after proximal femoral fracture increases patient morbidity and mortality. Methicillin-resistant Staphylococcus aureus (MRSA) poses a particular risk in this patient cohort as a large proportion of these patients are residents of long-term care facilities and are therefore transient or chronic carriers of MRSA. We recorded the effect of three stages of care bundle development on the infection and specifically the MRSA rate after hemiarthroplasty over an 8-year period.METHODS: Data were collated retrospectively from the surgical site infection surveillance service. These data were prospectively collected and independently collated. The data were analyzed using the (2) test and the normal test for differences between two proportions.RESULTS: Between October 2001 and June 2009, 1,830 hemiarthroplasties were performed. A statistically significant difference (p < 0.05) in SSI and MRSA rate was identified. The most effective care bundle included double skin preparation using alcoholic chlorhexidine, a single dose of intravenous co-amoxiclav (1.2 g) and gentamicin (240 mg) at induction, and implanted gentamicin-impregnated equine collagen at wound closure.CONCLUSIONS: Adoption of our care bundle approach led to a reduction in SSI rate after hemiarthroplasty. The care bundle we propose is tailored to reduce MRSA infection and minimize risks associated with antibiotic prophylaxis. It is a simple and cost-effective improvement in the clinical care of this vulnerable group.LEVEL OF EVIDENCE: IV, therapeutic study.

Source: Medline

Available in fulltext from Journal of Trauma and Acute Care Surgery at Ovid

9. Incidence and implications of early postoperative wound complications after total elbow arthroplasty

Author(s) Jeon I.-H., Morrey B.F., Anakwenze O.A., Tran N.V.

Citation: Journal of Shoulder and Elbow Surgery, September 2011, vol./is. 20/6(857-865), 1058-2746;1532-6500 (September 2011)

Publication Date: September 2011

Abstract: Hypothesis: Other than an awareness, there is little detailed information regarding wound problems after total elbow arthroplasty. The purpose of this study was to (1) determine the incidence of wound complications after elbow arthroplasty, (2) document the long-term implications, (3) characterize risk factors, and (4) discuss a management strategy. We hypothesize that the incidence of this complication can be reduced with careful preoperative planning. Materials and methods: We reviewed 1749 total elbow arthroplasties. The average patient age was 61.5 years (range; 30-91 years). Wound complications were diagnosed according to the criteria of the Centers for Disease Control and Prevention. Results: We identified and studied 97 patients (5.5%) from the 1749 procedures. The most common problems were delayed healing and drainage in 34 and wound hematoma in 33, of which 9 (27%) progressed to secondary deep infection. Of the 97 patients, 86 (88.7%) healed with the retention of the implant, 24 (~25%) progressed to a
Septic elbow, and 11 (~50%) required resection. Patients with rheumatoid arthritis represented 33% of the entire sample, but represented 45.8% of those with septic complications. Posttraumatic arthritis patients represented 58% of the entire sample and only 33% of those with septic problems (P < .05). Conclusions: The overall incidence of serious wound complications was slightly less than anticipated; however, the significance was considerable. Patients with rheumatoid arthritis are most vulnerable. Persistent wound drainage showed a high correlation for deep infection and subsequent implant removal. Anticipation of potential problems and appropriate prophylactic management may avoid wound complications. 2011 Journal of Shoulder and Elbow Surgery Board of Trustees.

Source: EMBASE

10. Minimizing infection risk: fortune favors the prepared mind.

Author(s) Dunbar, Michael J, Richardson, Glen
Citation: Orthopedics, 01 September 2011, vol./is. 34/9(665-665), 01477447
Publication Date: 01 September 2011
Abstract: Despite advances in care, infection in total joint arthroplasty remains a serious problem that has yet to be solved. Reported infection rates range from <0.5% in highly specialized centers to a high of 2% as reported at a national level. The epidemiology of total joint arthroplasty remains challenging because of the relatively low, but significant, incidence of infection. Still, there are variables that can be addressed that have demonstrated evidence regarding reduction in infection rates. These variables include optimizing medical conditions in the preoperative period such as anemia, blood glucose, and nutrition. In the perioperative period, administration of parenteral antibiotics within 1 hour of incision is a must. The effect of the operating room environment is less clear, but it is evident that traffic flow in the operating room has a negative effect on infection rates. Skin preparation with chlorhexidine is now the agent of choice, and evidence exists that iodophor impregnated occlusive dressings add value. Razors should not be used. Surgical staples for closure have an increased risk of superficial infection as compared to subcuticular sutures. In the postoperative period, early, persistent wound drainage should be managed aggressively. There is no evidence to support the use of parenteral antibiotics past 24 hours in routine cases. Patients should be advised about prophylaxis for infection when undergoing dental work and other high-risk procedures. There is a strong movement to extend this prophylactic period indefinitely, as opposed to 2 years postoperatively. Finally, and perhaps most importantly, it is the surgeon's responsibility to be aware of all these issues and to strongly advocate for patient safety in ensuring that infection risk is minimized.

Source: CINAHL


Author(s) Mercuri LG, Psutka D
Citation: Journal of Oral & Maxillofacial Surgery (02782391), 01 August 2011, vol./is. 69/8(2106-2111), 02782391
Publication Date: 01 August 2011
Abstract: PURPOSE: In 2009, the American Academy Of Orthopedic Surgeons recommended lifelong prophylaxis after orthopedic total joint replacement (TJR) before these patients undergo dental, aerodigestive, genitourinary (GU), and gastrointestinal (GI) procedures. Because oral and maxillofacial surgeons worldwide are implanting alloplastic total temporomandibular joint replacements (TMJ TJRs), it appeared reasonable to survey these surgeons to obtain data that might shed some light, not only on this issue, but also to obtain some data to begin to develop preliminary guidelines for the peri- and postoperative use of antibiotics for TMJ TJR using these results and the orthopedic data. MATERIALS AND METHODS: A total of 35 surgeons worldwide, members of either the TMJ Concepts or Biomet Microfixation online networks were e-mailed a standard questionnaire surveying their perioperative, postoperative, and prophylactic use of antibiotics for their TMJ TJR cases. RESULTS: Of the 35 surgeons, 26 (74.2%) from 8 different countries responded. A
total of 2,476 cases (3,368 joints) were retrospectively surveyed. Of the responding surgeons, 96.2% used, in order of frequency, cefazolin, clindamycin, cephalosporin, or penicillin-based antibiotics in the perioperative period and continued their use for a mean of 7 days (range 5 to 14) postoperatively. Also, 46.2% soaked the TJR components either in the perioperative antibiotic or in valcomycin, poviodeine, gentamycin, or pereoxide before implantation. In addition, 61.5% irrigated the wounds after device implantation with bacitracin, valcomycin, poviodeine, pereoxide, or the perioperative antibiotic. These surgeons reported that 51 joints (1.51%) had become infected within a mean of 6 months (range 2 weeks to 12 years) postoperatively. A total of 32 devices (0.95%) required removal and/or replacement. In cases in which the organisms were isolated, the organisms commonly associated with biofilm infection of TJR devices, Staphylococcus aureus, S epidermidis, Peptostreptococcus, and Pseudomonas aeruginosa, were cultured. In only 1 joint (0.003%) was there a suggestion of an association with an invasive dental/aerodigestive, GU/GI procedure. Regarding prophylaxis after TMJ TJRs and before dental/aerodigestive, GU, or GI procedures, 53.8% of the respondents reported that they provided prophylaxis. Of these, 1 recommended doing this for 6 months and 4 for 2 years, such as has been the American Dental Association/American Academy of Orthopedic Surgeons recommendation since 2003; and 9 reported they believe these TMJ TJR patients should have lifetime antibiotic prophylaxis before invasive dental/aerodigestive, GU, or GI procedures. CONCLUSION: The evidence provided from the present small study survey and a review of the orthopedic data could provide the opportunity to develop guidelines for the preoperative, intraoperative, and postoperative antibiotic management for TMJ TJRs and spur additional research into this important area of patient management.

Source: CINAHL
Available in print at Lincoln County Hospital Professional Library

12. Antimicrobial prophylaxis in adults

Author(s) Enzler M.J., Berbari E., Osmon D.R.

Citation: Mayo Clinic Proceedings, July 2011, vol./is. 86/7(686-701), 0025-6196 (July 2011)

Publication Date: July 2011

Abstract: Individual reprints of this article and a bound reprint of the entire Symposium on Antimicrobial Therapy will be available for purchase from our Web site www.mayoclinicproceedings.com. Antimicrobial prophylaxis is commonly used by clinicians for the prevention of numerous infectious diseases, including herpes simplex infection, rheumatic fever, recurrent cellulitis, meningococcal disease, recurrent uncomplicated urinary tract infections in women, spontaneous bacterial peritonitis in patients with cirrhosis, influenza, infective endocarditis, pertussis, and acute necrotizing pancreatitis, as well as infections associated with open fractures, recent prosthetic joint placement, and bite wounds. Perioperative antimicrobial prophylaxis is recommended for various surgical procedures to prevent surgical site infections. Optimal antimicrobial agents for prophylaxis should be bactericidal, nontoxic, inexpensive, and active against the typical pathogens that can cause surgical site infection postoperatively. To maximize its effectiveness, intravenous perioperative prophylaxis should be administered within 30 to 60 minutes before the surgical incision. Antimicrobial prophylaxis should be of short duration to decrease toxicity and antimicrobial resistance and to reduce cost. 2011 Mayo Foundation for Medical Education and Research.

Source: EMBASE
Available in fulltext from Mayo Clinic Proceedings at EBSCOhost
Available in fulltext from Mayo Clinic Proceedings at National Library of Medicine


Author(s) Kyzas PA

Citation: Journal of Oral & Maxillofacial Surgery (02782391), 01 April 2011, vol./is. 69/4(1129-1145), 02782391
Abstract: PURPOSE: The use of prophylactic antibiotics in the treatment of mandible fractures is common practice. The evidence supporting this practice has not been formally assessed for quality. The purpose of this study was to evaluate this empirically.

MATERIALS AND METHODS: Randomized and nonrandomized trials evaluating the possible impact of the prophylactic use of antibiotics in patients with mandible fractures were identified. Data were extracted on characteristics of studies and patients, including treatment, fracture location, time from injury to treatment, antibiotics used (type, route, dosage, duration), and complications (infection, malunion, reoperation). Randomized controlled trials (RCTs) were further evaluated for issues of reported methodological quality.

RESULTS: There were 31 eligible studies (5,437 patients). Of these, 9 were prospective RCTs; the remaining 22 were retrospective case series. Information about the time between injury and definite treatment was provided by 10 studies (31%). The type of antibiotic used was not defined in 13 of 31 studies (42%). Half of the studies (15 of 31 [48%]) did not describe the route of administration and did not comment on the duration of the antibiotic course. The vast majority (23 of 31 [74%]) did not describe the dosage of the antibiotics used. Most of the RCTs were small, had not adequately described the mode of randomization, and did not present intention-to-treat analyses. None of them presented power calculations or ensured allocation concealment. There was not a single mention about number needed to treat. The amount and quality of the available data precluded formal quantitative synthesis, despite scattered signals that prophylactic antibiotics may be better than nothing in preventing infection.

CONCLUSION: The overall evidence to support the use of prophylactic antibiotics in mandible fractures is of poor quality. Large RCTs are needed to guide clinical practice.

Source: CINAHL

Available in print at Lincoln County Hospital Professional Library

14. The microbiological basis for a revised antibiotic regimen in high-energy tibial fractures: preventing deep infections by nosocomial organisms.

Author(s) Glass GE, Barrett SP, Sanderson F, Pearse MF, Nanchahal J

Citation: Journal of Plastic, Reconstructive & Aesthetic Surgery: JPRAS, March 2011, vol./is. 64/3(375-80), 1748-6815;1878-0539 (2011 Mar)

Abstract: BACKGROUND: Deep surgical site infections (SSI's) complicate Gustilo IIIB tibial fractures in 8-13% of cases. Antibiotic prophylaxis typically covers environmental contaminants. However, nosocomial organisms are usually implicated in deep infection. We used the microbiological profile of infected Gustilo IIIB tibial fractures to define a new, dynamic prophylactic regimen which recognises the need for prophylaxis against nosocomial organisms at the time of definitive closure.

METHODS: The microbiological profiles of Gustilo IIIB tibial fractures presenting over a 2-year period from January 2006 to December 2007 were reviewed. The environmental contaminants were compared with the organisms isolated from deep SSI's and correlated with the prophylactic antibiotic regimen used.

RESULTS: Fifty-two patients were included. Nine developed a deep tissue infection. The pathogens implicated included resistant Enterococci, Pseudomonas, Enterobacter and MRSA. Standard antibiotic prophylaxis provided cover for these combinations in only one of nine cases. This would have improved to eight of nine cases with the use of teicoplanin and gentamicin, given as a one-time dose during definitive soft-tissue closure. Specimens taken from wound debridement were neither sensitive nor specific for the subsequent development of deep infection and did not predict the organisms responsible.

CONCLUSIONS: Following high-energy open fracture, a single prophylactic antibiotic regimen directed against environmental wound contaminants does not provide cover for the organisms responsible for deepest SSI's and may have depopulated the niche, promoting nosocomial contamination prior to definitive closure. We advocate a dynamic prophylactic strategy, tailoring a second wave of prophylaxis against nosocomial organisms at the time of definitive wound closure, and at the same time avoiding the potential complications of prolonged antibiotic use. Copyright 2010 British Association of Plastic, Reconstructive and Aesthetic Surgeons. Published by Elsevier Ltd. All rights reserved.
15. Outcomes of prophylactic antibiotics following surgery for zygomatic bone fractures.

Author(s) Knepil GJ, Loukota RA

Citation: Journal of Cranio-Maxillo-Facial Surgery, March 2010, vol./is. 38/2(131-3), 1010-5182;1878-4119 (2010 Mar)

Publication Date: March 2010

Abstract: Data regarding the use of prophylactic antibiotics and infection rate following surgery for fractures of the zygomatic bone is scarce. Therefore an audit of the use and outcomes of antibiotic prophylaxis for surgery of fractures of the zygoma was undertaken. Following audit approval, four maxillofacial surgery units in the Yorkshire Region gathered prospective data for 134 patients undergoing surgery for fractures of the zygoma. Data was collected on four groups of patients undergoing surgery for fractures of the zygomatic bone: uncomplicated reductions of the zygomatic arch, reductions of the zygomatic complex without mini-plate fixation, reductions of the zygomatic complex using mini-plate fixation but excluding zygomatico-maxillary buttress, and fixation of the zygomatic complex with miniplates including the zygomatico-maxillary buttress. The choice and timing of any antibiotics given peri-operatively was recorded, and 30 days after the operation, the patients' notes were reviewed to identify any episodes of surgical site infection (SSI) requiring the prescription of antibiotics, or any instances of plate removal in the post-operative period. This data has demonstrated that the prescription of antibiotic prophylaxis for surgery for fractures of the zygomatic bone is extremely variable, and that the infection rate is low.

Source: Medline

16. Infection risk prevention following total knee arthroplasty.

Author(s) Levent T, Vandeveld D, Delobelle JM, Labourdette P, Letendard J, Lesage P, Lecocq P, Dufour M

Citation: Orthopaedics & traumatology, surgery & research, February 2010, vol./is. 96/1(49-56), 1877-0568 (2010 Feb)

Publication Date: February 2010

Abstract: INTRODUCTION: Implant infection is serious; prevention is mandatory, and requires assessment. The present study assessed the incidence of deep surgical-site infection (SSI) at 1 year following total knee arthroplasty (TKA) and adherence to skin preparation, antibiotic prophylaxis, screening and prevention in case of methicillin-resistant S. aureus (MRSA). HYPOTHESIS: Adherence to prevention measures reduces infection risk secondary to TKA. MATERIAL AND METHODS: A prospective study of the incidence of SSI following primary TKA was run from December 1st 2005 to December 31st 2006 in a continuous series of 364 operations in 359 patients, excluding cases of septic or aseptic revision. Each implant was followed up for 12 months. Adherence to practice was assessed by independent observers. Antibiotic prophylaxis was assessed; skin preparation was scored (out of 10); MRSA was systematically screened for, and preventive measures were assessed in positive cases. Median follow-up was 12 months. Patients with less than 11 months’ FU were contacted by telephone. Median age was 72 years (range, 45-92 years). Eighty-seven percent of patients had ASA scores of 2; 14% were diabetic, and 42% obese. Mean surgery time was 70 min (range, 30-164 min). Among the implants, 81.5% were cemented. Eighty-six percent of operations had NNIS scores of 0. Infection risk linked to theater environment and teams was under control. RESULTS: Fourteen patients were lost to follow-up and excluded from analysis. The incidence of infection was 1.4% (n = 5/350) (95% CI [0.41-3.22]). Three of the infections were early (<1 month), and two were polymicrobial. Antibiotic prophylaxis was implemented correctly in 99% of cases, with skin preparation scores of 8.75 in 61% of cases and of 10 in 39%. Among the implants, 2.5% were MRSA-positive, none of whom developed infection. Infection prevention measures were applied in only half of the MRSA-positive cases. No MRSA-positive patients developed SSI. DISCUSSION: SSI incidence in the present series was low, but certainly underestimated. Assessment found good implementation of infection prevention protocols,
with SSI occurring randomly with regard to adherence parameters (antibiotic prophylaxis, skin preparation, MRSA status). CONCLUSION: Our hypothesis could not be confirmed. The study was mandatory for a health-care institution, and indispensable from a legal standpoint. LEVEL OF EVIDENCE: Level IV. Prospective prognostic study. 2009 Elsevier Masson SAS. All rights reserved.

Source: Medline

17. Comparison of routine prophylaxis with vancomycin or cefazolin for femoral neck fracture surgery: microbiological and clinical outcomes.

Author(s) Merrer J, Desbouchages L, Serazin V, Razafimamonjy J, Pauthier F, Leneveu M

Citation: Infection Control & Hospital Epidemiology, December 2006, vol./iss. 27/12(1366-71), 0899-823X;0899-823X (2006 Dec)

Publication Date: December 2006

Abstract: OBJECTIVE: To assess the impact of antibiotic prophylaxis on the emergence of vancomycin-resistant strains of Enterococcus faecium, Enterococcus faecalis, and Staphylococcus aureus and the incidence of surgical site infection (SSI) after vancomycin or cefazolin prophylaxis for femoral neck fracture surgery. DESIGN: Prospective cohort study. SETTING: A hospital with a high prevalence of methicillin-resistant S. aureus (MRSA) carriage. PATIENTS: All patients admitted with a femoral neck fracture from March 1, 2004 through February 28, 2005 were prospectively identified and screened for MRSA and vancomycin-resistant (VRE) carriage at admission and at day 7. Deep incisional and organ/space SSIs were also recorded. RESULTS: Of 263 patients included in the study, 152 (58%) received cefazolin and 106 (40%) received vancomycin. At admission, the prevalence of MRSA carriage was 6.8%; it was 12% among patients with risk factors and 2.2% among patients with no risk factors (P=.002). At day 7 after surgery, there were 6 patients (2%) who had hospital-acquired MRSA, corresponding to 0.7% in the cefazolin group and 5% in the vancomycin group (P=.04); none of the MRSA isolates were resistant to glycopeptides. The rate of VRE carriage at admission was 0.4%. Three patients (1%) had acquired carriage of VRE (1 had E. faecium and 2 had E. faecalis); all 3 were in the cefazolin group (2% of patients) and none in the vancomycin group (P=.27). Eight SSIs (3%) occurred, 4% in the cefazolin group and 2% in the vancomycin group (P=.47). CONCLUSIONS: This preliminary study demonstrates that cefazolin and vancomycin prophylaxis have similar impacts on the emergence of glycopeptide-resistant pathogens. Neither MRSA infection nor increased rates of SSI with other bacteria were observed in the vancomycin group, suggesting that a larger multicenter study should be initiated.

Source: Medline

18. Infection prophylaxis: A prospective study in 106 patients operated on by tibial osteotomy using the hemicallotasis technique

Author(s) W-Dahl A., Toksvig-Larsen S.

Citation: Archives of Orthopaedic and Trauma Surgery, September 2006, vol./iss. 126/7(441-447), 0936-8051 (September 2006)

Publication Date: September 2006

Abstract: Introduction: Tibial osteotomy by the hemicallotasis technique is a clean elective operation. With external fixation pins inserted, close to the knee joint, the infection prophylaxis should be considered. The primary aim was to investigate the differences in the postoperative use of antibiotics during the time in external fixation between administrating prophylactic antibiotics for 3 days or as a single dose in patients operated on by the hemicallotasis technique for knee deformities. Secondary aims were to study the differences in pin-site infection rate and grade and complications. Material and methods: A total of 106 consecutive patients of mean age 52 years (range 18-69) operated on by the hemicallotasis technique for knee deformities were included in this prospective study. Sixty patients were prescribed prophylactic antibiotics for 3 days and 46 patients as a single dose. Chlorhexidine (5 mg/ml) in alcohol (70% ethanol) was used as cleansing agent in the pin-site care. The power of the study was calculated to 80% to detect a difference in the
postoperative use of antibiotics for 7 days during the treatment in external fixation. Results: There were no differences in postoperative use of antibiotics between 3 days administration or a single dose of prophylactic antibiotics. This was the case with infection rate and grade, positive bacterial cultures, presence of Staphylococcus aureus, nor positive culturing from the tip of the pins at removal. Neither were there any differences in numbers of loose pins and complications. Conclusion: The re were no differences between 3 days of administration of prophylactic antibiotics and one single dose. One single dose of prophylactic antibiotics is appropriate together with a pin-site concept preventing pin-site infection in patients operated on by hemicallotasis osteotomy. Springer-Verlag 2006.

Source: EMBASE
Available in fulltext from Archives of Orthopaedic & Trauma Surgery at EBSCOhost

19. Prophylactic antibiotics in orthopaedic surgery: Guidelines and practice
Author(s) Yeap J.S., Lim J.W., Vergis M., Yeung P.S.A., Chiu C.K., Singh H.
Citation: Medical Journal of Malaysia, June 2006, vol./is. 61/2(181-188), 0300-5283 (June 2006)
Publication Date: June 2006
Abstract: The national clinical practice guideline has recommended that prophylactic antibiotic be given in orthopaedic surgery involving joint replacements and internal fixation of fractures. The aim of this study is to assess the current antibiotics prophylaxis practice in a state level hospital. One hundred and three patients (68 males, 35 females; mean age 41.6 +/- 22.2 years) undergoing internal fixation for closed fractures and joint replacement surgery were included in this prospective study. The choice of pre and post-operative antibiotics, their dosages and duration of administration were recorded. The pre-operative antibiotics were only deemed to have been given if it was documented in the case notes and in the case of post-operative antibiotics if it was signed on the drug chart. Eighty eight percent were given pre-operative prophylactic antibiotics and 92% were given post-operative antibiotics. For patients undergoing internal fixation of fractures, the most commonly used antibiotic for both pre and post-op is intravenous cefuroxime. For joint replacement surgery, the most commonly used antibiotic is intravenous cefoperazone. The duration or number of doses of post-operative antibiotics was highly variable. It was not stated in 56% of the post-operative instructions. Post-operative antibiotic was ordered for 48 hours or longer in 10%. In conclusion, prophylactic antibiotics appear to be widely practised. The first line antibiotics as recommended by the present guideline were not given in any of the patients. Second generation followed by third generation cephalosporins are the most popular antibiotics, with a trend towards using third generation cephalosporins in arthroplasty patients. Single dose prophylaxis was rarely practised.
Source: EMBASE

Author(s) Southwell-Keely JP, Russo RR, March L, Cumming R, Cameron I, Brnabic AJM
Citation: Clinical Orthopaedics & Related Research, 01 February 2004, vol./is. 419/(179-184), 0009921X
Publication Date: 01 February 2004
Abstract: A metaanalysis was done to identify the most effective prophylactic antibiotic regimen in hip fracture surgery. Specific comparisons addressed were antibiotics at any dose versus placebo, multiple doses (>24 hours coverage) versus one dose of antibiotics, and multiple doses versus 24 hours antibiotic coverage. Outcomes measured included overall wound infections, deep wound infection, superficial wound infection, urinary tract infection, and mortality. A computer search of the Medline and EMBASE databases (English language literature from 1966 to 2000 and 1988 to 2000, respectively) retrieved 15 randomized controlled trials which addressed the specific aims. Most studies evaluated antibiotics from the cephalosporin group. Antibiotic prophylaxis significantly reduced overall wound infections when compared with placebo and was equally effective for deep and superficial infections. One dose of intravenous antibiotics seemed no different than multiple
doses. Antibiotic use also was associated with a significant reduction in the incidence of urinary tract infection but had no significant effect on mortality.

Source: CINAHL

21. Use of perioperative mupirocin to prevent methicillin-resistant Staphylococcus aureus (MRSA) orthopaedic surgical site infections.

Author(s) Wilcox MH, Hall J, Pike H, Templeton PA, Fawley WN, Parnell P, Verity P

Citation: Journal of Hospital Infection, 01 July 2003, vol./is. 54/3(196-201), 01956701

Publication Date: 01 July 2003

Abstract: We have examined whether topical perioperative prophylaxis can reduce the incidence of methicillin-resistant Staphylococcus aureus (MRSA) surgical site infections (SSIs). Using a controlled before and after approach on patients from four orthopaedic wards, undergoing orthopaedic surgery involving insertion of metal prostheses and/or fixation, received perioperative prophylaxis with nasal mupirocin for five days, and a shower or bath with 2% (v/v) triclosan before surgery (PPNMT). After introduction of PPNMT there was a marked decrease in incidence of MRSA SSIs (per 1000 operations) from 23 in the six months beforehand (period A) to 3.3 (P<0.001) and 4 (P<0.001) in subsequent consecutive six-month periods (B and C, respectively). Of 11 MRSA SSI cases that occurred during periods B and C, only one had actually received PPNMT, and 10 occurred after acute, as opposed to elective, surgery (P<0.001). Point prevalence nasal MRSA carriage decreased from 38% before PPNMT to 23% immediately after, and 20%, 7%, 10% and 8% (P<0.001) at six-monthly intervals post-intervention. Conversely, the prevalence of nasal MRSA carriage in a control elderly medicine ward did not change significantly. Vancomycin usage, in terms of defined daily doses, declined by 23%. Low-level mupirocin resistance was found in 2.3% of S. aureus isolates from orthopaedic patients before PPNMT, and in 3.9%, 6.1%, 10% and 0% in subsequent six month periods. No S. aureus isolates with high-level mupirocin resistance were found. PPNMT can reduce the incidence of MRSA SSIs after orthopaedic surgery, probably by reducing nasal MRSA carriage in the endemic setting, without selecting for mupirocin resistance.

Source: CINAHL

Available in print at Lincoln County Hospital Professional Library

22. The use of antimicrobials in podiatric practice.

Author(s) O'Kane C, Kilmartin TE

Citation: British Journal of Podiatry, 01 February 2001, vol./is. 4/1(8-14), 14607328

Publication Date: 01 February 2001

Abstract: At present there is no recognised protocol for the use of antimicrobials within podiatric practice. The authors have reviewed the current literature and developed algorithms for the use of antimicrobials in the postsurgical patient, the presurgical patient and patients at risk from developing bacterial endocarditis (however in this latter case there is no evidence to suggest that this is required in clean, elective podiatric/orthopaedic surgery). Cephalosporins remain the mainstay of prophylaxis, however, they should be avoided in patients who have had a Type 1 hypersensitivity reaction to penicillin (as 10% of penicillin-allergic patients are also sensitive to cephalosporins). The role of clindamycin in both prophylaxis and therapeutic use should be considered, especially in penicillin-allergic patients, due to its excellent absorption in bone and effectiveness against both Staphylococcus and Streptococcus. Oral therapy is acceptable in the early stages of infection when drainage, gangrene, and systemic symptoms are absent. However, if there is no clinical improvement within 48-72 hours, intravenous (iv) therapy should be considered.

Source: CINAHL

28. Risk factors for infection after knee arthroplasty. A register-based analysis of
BACKGROUND: Clinical studies have revealed a number of important risk factors for postoperative infection following total knee arthroplasty. Because of the small numbers of cases in those studies, there is a risk of obtaining false-negative results in statistical analyses. The purpose of the present study was to determine the risk factors for infection following primary and revision knee replacement in a large register-based series.

METHODS: A total of 43,149 primary and revision knee arthroplasties, registered in the Finnish Arthroplasty Register, were followed for a median of three years. The Finnish Arthroplasty Register and the Finnish Hospital Discharge Register were searched for surgical interventions that were performed for the treatment of deep postoperative infections. Cox regression analysis with any reoperation performed for the treatment of infection as the end point was performed to determine the risk factors for this adverse outcome.

RESULTS: Three hundred and eighty-seven reoperations were performed because of infection. Both partial and complete revision total knee arthroplasty increased the risk of infection as compared with the risk following primary knee replacement. Male patients, patients with seropositive rheumatoid arthritis or with a previous fracture around the knee, and patients with constrained and hinged prostheses had increased rates of infection after primary arthroplasty. Wound-related complications increased the risk of deep infection. The rate of septic failure was lower after unicondylar than after total condylar primary knee arthroplasty, but the difference was not significant. The combination of parenteral antibiotic prophylaxis and prosthetic fixation with antibiotic-impregnated cement protected against septic failure, especially after revision knee arthroplasty. Following revision total knee arthroplasty, diagnosis and prosthesis type had no effect, but previous revision for the treatment of infection and wound-healing problems predisposed to repeat revision for the treatment of infection.

CONCLUSIONS: There was an increased risk of deep postoperative infection in male patients and in patients with rheumatoid arthritis or a fracture around the knee as the underlying diagnosis for knee replacement. The results of the present study suggest that the infection rate is similar after partial revision and complete revision total knee arthroplasties. Combining intravenous antibiotic prophylaxis with antibiotic-impregnated cement seems advisable in revision arthroplasty.
Group 1 then received penicillin VK, 500 mg every 6 hours for 5 days. Group 2 received oral placebo using the same schedule for the same duration as group 1. The patients were than evaluated for evidence of infection 1, 2, 4, and 6 weeks postoperatively. RESULTS: Two of 14 patients in group 1 (14.3%) and 2 of 16 patients in group 2 (12.5%) developed infections. No statistically significant difference in the incidence of infection was noted between the groups. CONCLUSIONS: In this preliminary study, the use of postoperative oral antibiotics in uncomplicated fractures of the mandible had no benefit in reducing the incidence of infections. Copyright 2001 American Association of Oral and Maxillofacial Surgeons

Source: CINAHL

EMBASE Results

1. Prophylactic antibiotics in open fractures: A pilot randomized clinical safety study

Author(s) Saveli C.C., Morgan S.J., Belknap R.W., Ross E., Stahel P.F., Chaus G.W., Hak D.J., Biffi W.L., Knepper B., Price C.S.

Citation: Journal of Orthopaedic Trauma, October 2013, vol./is. 27/10(552-557), 0890-5339:1531-2291 (October 2013)

Publication Date: October 2013

Abstract: OBJECTIVE:: To develop preliminary data on Staphylococcus aureus colonization and surgical site infections (SSIs) in patients with open fractures who received standard antibiotic prophylaxis compared with a regimen including targeted methicillin-resistant Staphylococcus aureus (MRSA) coverage. DESIGN:: Randomized prospective clinical trial. PATIENTS:: Adult patients who presented to the emergency department with an open fracture between April 2009 and July 2011. INTERVENTIONS:: One hundred thirty patients were randomized to receive prophylaxis with either cefazolin alone (control arm) or vancomycin and cefazolin (experimental arm) from presentation to the emergency department until 24 hours after the surgical intervention. Screening for S. aureus carriage was performed with nares swabs and predebridement and postdebridement open fracture wound swabs. Patients underwent prospective assessment for the development of SSI for no less than 30 days and up to 12 months. RESULTS:: Nasal colonization of methicillin-sensitive S. aureus and MRSA among the sample was 20% and 3%, respectively. No significant difference in the rates of SSI was observed between the study arms (15% vs 19%, respectively, P = 0.62). Staphylococcus aureus caused 55% of the deep incisional/organ space SSI, with 18% attributed to MRSA. A significantly higher rate of MRSA SSIs was observed among MRSA carriers compared with noncarriers (33% vs 1%, respectively, P = 0.003). CONCLUSIONS:: Staphylococcus aureus nasal colonization in trauma patients with open fractures is similar to that of the general community. In this pilot study, the addition of vancomycin to standard antibiotic prophylaxis was found safe, but its efficacy should be evaluated in a larger multiinstitutional trial. LEVEL OF EVIDENCE:: Therapeutic Level II. See Instructions for Authors for a complete description of levels of evidence. Copyright 2013 by Lippincott Williams & Wilkins.

Source: EMBASE

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2. What’s the evidence? systematic literature review of risk factors and preventive strategies for surgical site infection following pediatric spine surgery

Author(s) Glotzbecker M.P., Riedel M.D., Vitale M.G., Matsumoto H., Roye D.P., Erickson M., Flynn J.M., Saiman L.

Citation: Journal of Pediatric Orthopaedics, July 2013, vol./is. 33/5(479-487), 0271-6798;1539-2570 (July-August 2013)

Publication Date: July 2013

Abstract: BACKGROUND: Despite relatively high rates of surgical site infections (SSIs) after pediatric spine surgery, practice guidelines are absent. We performed a systematic
review of the literature, determining the level of evidence for risk factors for SSIs and prevention practices to reduce SSIs following pediatric spine surgery. METHODS: The search utilized the root search words "spine," "scoliosis," and "infection" resulting in 9594 abstracts. Following removal of duplicate abstracts, those that assessed only SSI rates, SSI treatment, nonoperative spine infections, or adult populations, 57 relevant studies were rated for level of evidence and graded using previously validated scales. RESULTS: Very few studies lead to grade A (good evidence) or grade B (fair evidence) recommendations. Ceramic bone substitute did not increase the risk of SSIs when compared with autograft (grade A). Comorbid medical conditions, particularly cerebral palsy or myelodysplasia; urinary or bowel incontinence; nonadherence to antibiotic prophylaxis protocols; and increased implant prominence increase the risk of SSIs (grade B). SSIs caused by gram-negative bacilli were more frequent in neuromuscular populations and first-generation stainless steel implants increased the risk of delayed infection compared to newer generation titanium implants (grade B). Evaluations of other risk factors for SSIs yielded conflicting or poor-quality evidence (grade C); these included malnutrition or obesity; number of levels fused or fusion extended to the sacrum/pelvis; blood loss; and use of allograft. Insufficient evidence (0 to 1 published studies) was available to recommend numerous practices shown to reduce SSI risk in other populations such as chlorhexidine skin wash the night before surgery, preoperative nasal swabs for Staphylococcus aureus, chlorhexidine skin disinfection, perioperative prophylaxis with intravenous vancomycin, vancomycin, or gentamicin powder in the surgical site or graft. CONCLUSIONS: Few studies have evaluated risk factors and preventive strategies for SSIs following pediatric spine surgery. This systematic review documents the relative lack of evidence supporting SSI prevention practices and highlights priorities for research. LEVEL OF EVIDENCE: Level III therapeutic study. Copyright 2013 by Lippincott Williams & Wilkins.

Source: EMBASE

3. Building consensus: Development of a best practice guideline (BPG) for surgical site infection (SSI) prevention in high-risk pediatric spine surgery


Citation: Journal of Pediatric Orthopaedics, July 2013, vol./is. 33/5(471-478), 0271-6798;1539-2570 (July-August 2013)

Publication Date: July 2013

Abstract: BACKGROUND: Perioperative surgical site infection (SSI) after pediatric spine fusion is a recognized complication with rates between 0.5% and 1.6% in adolescent idiopathic scoliosis and up to 22% in "high risk" patients. Significant variation in the approach to infection prophylaxis has been well documented. The purpose of this initiative is to develop a consensus-based "Best Practice" Guideline (BPG), informed by both the available evidence in the literature and expert opinion, for high-risk pediatric patients undergoing spine fusion. For the purpose of this effort, high risk was defined as anything other than a primary fusion in a patient with idiopathic scoliosis without significant comorbidities. The ultimate goal of this initiative is to decrease the wide variability in SSI prevention strategies in this area, ultimately leading to improved patient outcomes and reduced health care costs. METHODS: An expert panel composed of 20 pediatric spine surgeons and 3 infectious disease specialists from North America, selected for their extensive experience in the field of pediatric spine surgery, was developed. Using the Delphi process and iterative rounds using a nominal group technique, participants in this panel were as follows: (1) surveyed for current practices; (2) presented with a detailed systematic review of the relevant literature; (3) given the opportunity to voice opinion collectively; and (4) asked to vote regarding preferences privately. Round 1 was conducted using an electronic survey. Initial results were compiled and discussed face-to-face. Round 2 was conducted using the Audience Response System, allowing participants to vote for (strongly support or support) or against inclusion of each intervention. Agreement >80% was considered consensus. Interventions without consensus were discussed and revised, if feasible. Repeat voting for consensus was performed. RESULTS: Consensus was reached to support 14 SSI prevention strategies and all participants agreed to implement the BPG in
their practices. All agreed to participate in further studies assessing implementation and effectiveness of the BPG. The final consensus driven BPG for high-risk pediatric spine surgery patients includes: (1) patients should have a chlorhexidine skin wash the night before surgery; (2) patients should have preoperative urine cultures obtained; (3) patients should receive a preoperative Patient Education Sheet; (4) patients should have a preoperative nutritional assessment; (5) if removing hair, clipping is preferred to shaving; (6) patients should receive perioperative intravenous cefazolin; (7) patients should receive perioperative intravenous prophylaxis for gram-negative bacilli; (8) adherence to perioperative antimicrobial regimens should be monitored; (9) operating room access should be limited during scoliosis surgery (whenever practical); (10) UV lights need NOT be used in the operating room; (11) patients should have intraoperative wound irrigation; (12) vancomycin powder should be used in the bone graft and/or the surgical site; (13) impervious dressings are preferred postoperatively; (14) postoperative dressing changes should be minimized before discharge to the extent possible. CONCLUSIONS: In conclusion, we present a consensus-based BPG consisting of 14 recommendations for the prevention of SSIs after spine surgery in high-risk pediatric patients. This can serve as a tool to reduce the variability in practice in this area and help guide research priorities in the future. Pending such data, it is the unsubstantiated opinion of the authors of the current paper that adherence to recommendations in the BPG will not only decrease variability in practice but also result in fewer SSI in high-risk children undergoing spinal fusion. LEVEL OF EVIDENCE: Not applicable. Copyright 2013 by Lippincott Williams & Wilkins.

Source: EMBASE

4. Pre-admission Cutaneous Chlorhexidine Preparation Reduces Surgical Site Infections In Total Hip Arthroplasty

Author(s) Kapadia B.H., Johnson A.J., Daley J.A., Issa K., Mont M.A.

Citation: Journal of Arthroplasty, March 2013, vol./is. 28/3(490-493), 0883-5403;1532-8406 (March 2013)

Publication Date: March 2013

Abstract: The purpose of this study was to evaluate the incidence of surgical site infections in total hip arthroplasty patients who used an advance pre-admission cutaneous surgical preparation protocol and to compare these results to a cohort of patients who did not use the protocol. Between 2007 and 2010, 557 patients used the chlorhexidine cloths and 1901 patients did not use the cloths. Patient records were reviewed to determine the incidence of deep incisional and periprosthetic infections. A statistically significant lower incidence of infections occurred in patients who used the chlorhexidine cloths (0.5%) when compared to patients undergoing in-hospital perioperative skin preparation only (1.7%). These results confirm prior studies suggesting this as an effective method to prevent periprosthetic hip arthroplasty infections. 2013 Elsevier Inc.

Source: EMBASE

5. Vancomycin prophylaxis of surgical site infection in clean orthopedic surgery

Author(s) Kanj W.W., Flynn J.M., Spiegel D.A., Dormans J.P., Baldwin K.D.

Citation: Orthopedics, February 2013, vol./is. 36/2(138-146), 0147-7447 (February 2013)

Publication Date: February 2013

Abstract: Community-acquired methicillin-resistant Staphylococcus aureus (MRSA) has been recognized as a public health concern since the mid-1990s. Because of the increase in reports of this pathogen, it has become increasingly tempting for clinicians to provide prophylaxis against this entity using antibiotics known to be effective against MRSA. The goal of this study was to assess the use of MRSA prophylaxis to determine whether it is safe and effective. A systematic search of the literature was performed to identify articles that examined the use of vancomycin in clean orthopedic surgery. Infection rates and adverse events were extracted, and the data were aggregated and analyzed using a DerSimonian and Laird random effects model. Publication bias and study quality were also assessed. No benefit of parenteral administration of vancomycin was identified. Local,
vancomycin-impregnated cement and powder are associated with lower infection rates. Few adverse events occurred, and most of those that occurred involved infusion rate. Cost, resistance, and side effects are concerns in using vancomycin therapy in addition to standard antibiotic prophylaxis. Given the lack of efficacy of intravenous vancomycin, the authors do not recommend its routine use in clean orthopedic surgery. However, local administration appears to be safe and effective. The data are most compelling in orthopedic spine surgery in which a patient without prophylaxis is more than 4 times as likely to have a deep postoperative wound infection compared with a patient who received local vancomycin. The authors recommend the use of local antibiotics when possible in clean orthopedic surgery.

Source: EMBASE

7. Impact of vancomycin surgical antibiotic prophylaxis on the development of methicillin-sensitive staphylococcus aureus surgical site infections: Report from Australian surveillance data (VICNISS)

Author(s) Bull A.L., Worth L.J., Richards M.J.

Citation: Annals of Surgery, December 2012, vol./is. 256/6(1089-1092), 0003-4932;1528-1140 (December 2012)

Publication Date: December 2012

Abstract: OBJECTIVE: To compare risks for developing surgical site infection (SSI) due to Staphylococcus aureus when vancomycin is used for antibiotic prophylaxis with risks when a beta-lactam antibiotic is administered for prophylaxis. BACKGROUND: Vancomycin is often used as surgical antibiotic prophylaxis for major surgery. In nonsurgical populations, there is evidence that vancomycin is less effective for prevention and treatment of methicillin-sensitive Staphylococcus aureus (MSSA) infections. Since 2002, the Victorian Healthcare Associated Surveillance System (VICNISS) has used standardized methods for infection surveillance in Australia, including any prophylactic antibiotic agent administered before surgical procedures. METHODS: Surveillance records were obtained for patients undergoing 4 clean surgical procedures during the period of November 2002 to June 2009. Logistic regression analysis was used to examine risk factors for infection, including age, procedure duration, American Society of Anesthesiologists score, and choice and timing of antibiotic prophylaxis. RESULTS: The data set consisted of 22,549 procedures, including cardiac bypass and hip and knee arthroplasty procedures. Vancomycin prophylaxis was administered in 1610 cases and a beta-lactam antibiotic for 20,939 cases. A total of 754 SSIs were recorded. The most frequent pathogens were MSSA, methicillin-resistant Staphylococcus aureus, and Pseudomonas species. The adjusted odds ratio (OR) for an SSI with MSSA was 2.79, where vancomycin prophylaxis was administered (P < 0.001). For methicillin-resistant Staphylococcus aureus infection, the adjusted OR for vancomycin was 0.44 (P = 0.05), whereas for Pseudomonas infection, it was 0.96 (P = 0.95).

CONCLUSIONS: In a large Australian study population, prophylaxis with vancomycin was found to be associated with an increased risk of SSI due to MSSA when compared with prophylaxis with a beta-lactam antibiotic. Given the potential for poorer surgical outcomes in the setting of indiscriminate prophylactic vancomycin use, measures to improve adherence to guidelines for restricted administration of prophylactic vancomycin are supported. Copyright 2012 by Lippincott Williams & Wilkins.

Source: EMBASE

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8. Does dual antibiotic prophylaxis better prevent surgical site infections in total joint arthroplasty? infection

Author(s) Sewick A., Makani A., Wu C., O'Donnell J., Baldwin K.D., Lee G.-C.

Citation: Clinical Orthopaedics and Related Research, October 2012, vol./is. 470/10(2702-2707), 0009-921X;1528-1132 (October 2012)
Abstract: Introduction: It is unclear which antibiotic regimen provides the best prophylaxis against surgical site infection (SSI) in patients undergoing hip and knee surgery. Questions/purposes: Therefore, we determined whether dual antibiotic prophylaxis (1) reduced the rate of SSI compared to single antibiotic prophylaxis and (2) altered the microbiology of SSI. Methods: We retrospectively reviewed 1828 primary THAs and TKAs performed between September 1, 2008 and December 31, 2010. We divided patients into two groups: (1) those who received a dual prophylactic antibiotic regimen of cefazolin and vancomycin (unless allergy), or (2) received cefazolin (unless allergy) as the sole prophylactic antibiotic. There were 701 males and 1127 females with an average age of 56 years (range, 15-97 years). We limited followup to 1 year, presuming subsequent infections were not related to the initial surgery. Results: During this period, there were 22 SSIs (1.2%). The infection rates for dual antibiotic prophylaxis compared to a single antibiotic regimen were 1.1% and 1.4%, respectively. Of 1328 patients treated with dual antibiotic prophylaxis, only one (0.08%) SSI was culture positive for methicillin resistant Staphylococcus aureus (MRSA), while four of 500 patients (0.8%) receiving only cefazolin prophylaxis had culture positive MRSA infection at the time of reoperation. Conclusion: The addition of vancomycin as a prophylactic antibiotic agent apparently did not reduce the rate of SSI compared to cefazolin alone. Use of vancomycin in addition to cefazolin appeared to reduce the incidence of MRSA infections; however, the number needed to treat to prevent a single MRSA infection was very high. Level of Evidence: Level III, therapeutic study. See Guidelines for Authors for a complete description of levels of evidence. 2012 The Association of Bone and Joint Surgeons.

Source: EMBASE

Available in fulltext from Clinical Orthopaedics and Related Research at National Library of Medicine

9. A randomized control trial between fosfomycin and cefuroxime as the antibiotic prophylaxis in knee arthroplasty

Author(s) Chareancholvanich K., Udomkiat P., Waikakul S.

Citation: Journal of the Medical Association of Thailand = Chotmaihet thangphaet, September 2012, vol./is. 95 Suppl 9/(S6-13), 0125-2208 (Sep 2012)

Abstract: Antibiotic prophylaxis is used in all patient underwent total knee arthroplasty to prevent post operative infection which produced poor outcome. The suitable drug should be safe and good efficacy. To study safety and efficacy of fosfomicin and cefuroxime as antibiotic prophylaxis for total knee arthroplasty. The control trial was performed to find out efficacy and safety of fosfomycin as an antibiotic prophylaxis comparing to cefuroxime. There were 112 patients, 14 male and 98 female, with their ages ranged between 57 and 86 years. They were randomly divided into two groups, the fosfomycin group, 56 patients and the cefuroxime group, 56 patients. All patients underwent elective knee arthroplasty by the authors. The scheduled antibiotics were given perioperatively for 24 hours and all patients were followed-up for 6 months. Physical examination, skin temperature of the operated knee, radiograph and blood tests were carried out in the patients to monitor post operative infection, renal and liver disturbance. One patient in the cefuroxime group had local wound infection which responded well to local treatment and administration of antibiotics. No patients had post operative infection at the 6 months follow-up. No patients had any complication and none had renal and liver function disturbance during the follow-up. Comparing to cefuroxime,fosfomycin is safe and effective for the use as antibiotic prophylaxis in knee arthroplasty.

Source: EMBASE

10. Is antibiotic prophylaxis necessary in elective soft tissue hand surgery?

Author(s) Tosti R., Fowler J., Dwyer J., Maltenfort M., Thoder J.J., Ilyas A.M.
Abstract: Antibiotic prophylaxis for clean soft tissue hand surgery is not yet defined. Current literature focuses on overall orthopedic procedures, traumatic hand surgery, and carpal tunnel release. However, a paucity of data exists regarding the role of antibiotic prophylaxis in a broader variety of soft tissue hand procedures. The goal of the current study was to evaluate the rates of surgical site infection following elective soft tissue hand surgery with respect to administration of prophylactic antibiotics. A multicenter, retrospective review was performed on 600 consecutive elective soft tissue hand procedures. Procedures with concomitant implant or incomplete records were excluded. Antibiotic delivery was given at the discretion of the attending surgeon. Patient comorbidities were recorded. Outcomes were measured by the presence of deep or superficial infections within 30 days postoperatively. The 4 most common procedures were carpal tunnel release, trigger finger release, mass excision, and first dorsal compartment release. The overall infection rate was 0.66%. All infections were considered superficial, and none required surgical management. In patients who received antibiotic prophylaxis (n=212), the infection rate was 0.47%. In those who did not receive prophylaxis (n=388), the infection rate was 0.77%. These differences were not statistically significant (P=1.00).

Source: EMBASE

11. Frequency of wound infection in clean orthopaedic surgery using single dose antibiotic prophylaxis

Author(s) Kumar S., Kumar J., Ata-ur-Rehman

Citation: Medical Forum Monthly, May 2012, vol./is. 23/5(39-41), 1029-385X (May 2012)

Abstract: Introduction: Wound infection is the disastrous complication after clean orthopaedic surgery. Role of prophylactic single dose parenteral antibiotic is still controversial in prevention of this morbidity. Objective: Frequency of wound infection in patients underwent open reduction and internal fixation of long bone clean orthopaedic fracture using single dose antibiotic prophylaxis. Study Design: case series study. Place and Duration of Study: This study was conducted at the Department of Orthopaedic Unit 1, Civil Hospital, Karachi from 11\textsuperscript{th} August 2010 to 10\textsuperscript{th} February 2011. Patients and Methods: A total of 231 patients having long bone clean orthopaedic fracture were selected. Patients diagnosed as clean orthopaedic cases and determination of fractures on X-ray with intact skin over fractures were included in the study. Patients with open fracture having co-morbidities already on antibiotics were excluded from the study. Open reduction and internal fixation was carried out using single prophylactic dose of injection cephadine (2 grams). Wound infection was assess on 5\textsuperscript{th} postoperative day according to Southampton wound grading system. Results: There were 191 males and 40 females with mean age 36.70 years. Out of 231 patients, 213 had no infection while 18 cases had wound infection on 5\textsuperscript{th} postoperative day. Conclusion: The use of single dose prophylactic antibiotic prophylaxis is effective in preventing wound infection after management of clean long bones orthopaedic fractures.

Source: EMBASE

13. Outcome of cefazolin prophylaxis for total knee arthroplasty at an institution with high prevalence of methicillin-resistant Staphylococcus aureus infection


Citation: International Journal of Infectious Diseases, December 2011, vol./is. 15/12(e867-e870), 1201-9712;1878-3511 (December 2011)

Abstract: Objectives: The aim of this study was to evaluate the outcome of cefazolin prophylaxis for total knee arthroplasty (TKA) in a hospital with a high prevalence of
methicillin-resistant Staphylococcus aureus (MRSA) infection. Methods: Since July 1, 2006, we have applied a ‘care bundle’ to TKA to prevent surgical site infection (SSI) without using vancomycin as antimicrobial prophylaxis, in accordance with the 1999 Hospital Infection Control Practices Advisory Committee guidelines. All patients undergoing TKA from July 1, 2006 to September 30, 2009 were enrolled. We reviewed data on SSI collected prospectively as part of routine infection control surveillance. Results: Of 1323 TKAs, an SSI developed in 14 (1.06%) cases, which is comparable to the percentage obtained in other previous reports. When stratified by the National Nosocomial Infection Surveillance risk index, SSI rates were 0.86% (8/926), 1.30% (5/384), and 7.69% (1/13) in risk categories 0, 1, and 2, respectively. Of 14 SSIs, four (29%) were classified as superficial incisional, two (14%) as deep incisional, and eight (57%) as organ-space SSI. Conclusions: Our data suggest that antimicrobial prophylaxis using only cefazolin can maintain low SSI rates if other important infection management measures are employed, even where there is a high prevalence of MRSA infection. 2011 International Society for Infectious Diseases.

Source: EMBASE

14. Assessing the impact of antibiotic prophylaxis in outpatient elective hand surgery: A single-center, retrospective review of 8,850 cases

Author(s) Bykowski M.R., Sivak W.N., Cray J., Buterbaugh G., Imbriglia J.E., Lee W.P.A.

Citation: Journal of Hand Surgery, November 2011, vol./is. 36/11(1741-1747), 0363-5023;1531-6564 (November 2011)

Publication Date: November 2011

Abstract: Purpose: Prophylactic antibiotics have been shown to prevent surgical site infection (SSI) after some gastrointestinal, orthopedic, and plastic surgical procedures, but their efficacy in clean, elective hand surgery is unclear. Our aims were to assess the efficacy of preoperative antibiotics in preventing SSI after clean, elective hand surgery, and to identify potential risk factors for SSI. Methods: We queried the database from an outpatient surgical center by Current Procedural Terminology code to identify patients who underwent elective hand surgery. For each medical record, we collected patient demographics and characteristics along with preoperative, intraoperative, and postoperative management details. The primary outcome of this study was SSI, and secondary outcomes were wound dehiscence and suture granuloma. Results: From October 2000 through October 2008, 8,850 patient records met our inclusion criteria. The overall SSI rate was 0.35%, with an average patient follow-up duration of 79 days. The SSI rates did not significantly differ between patients receiving antibiotics (0.54%; 2,755 patients) and those who did not (0.26%; 6,095 patients). Surgical site infection was associated with smoking status, diabetes mellitus, and longer procedure length irrespective of antibiotic use. Subgroup analysis revealed that prophylactic antibiotics did not prevent SSI in male patients, smokers, or diabetics, or for procedure length less than 30 minutes, 30 to 60 minutes, and greater than 60 minutes. Conclusions: Prophylactic antibiotic administration does not reduce the incidence of SSI after clean, elective hand surgery in an outpatient population. Moreover, subgroup analysis revealed that prophylactic antibiotics did not reduce the frequency of SSI among patients who were found to be at higher risk in this study. We identified 3 factors associated with the development of SSI in our study: diabetes mellitus status, procedure length, and smoking status. Given the potential harmful complications associated with antibiotic use and the lack of evidence that prophylactic antibiotics prevent SSIs, we conclude that antibiotics should not be routinely administered to patients who undergo clean, elective hand surgery. Type of study/level of evidence: Therapeutic III. 2011 American Society for Surgery of the Hand.

Source: EMBASE

15. Advance pre-operative chlorhexidine reduces the incidence of surgical site infections in knee arthroplasty

Author(s) Zywiel M.G., Daley J.A., Delanois R.E., Naziri Q., Johnson A.J., Mont M.A.

Citation: International Orthopaedics, July 2011, vol./is. 35/7(1001-1006), 0341-2695;1432-
Abstract: Surgical site infections following elective knee arthroplasties occur most commonly as a result of colonization by the patient's native skin flora. The purpose of this study was to evaluate the incidence of deep surgical site infections in knee arthroplasty patients who used an advance cutaneous disinfection protocol and who were compared to patients who had peri-operative preparation only. All adult reconstruction surgeons at a single institution were approached to voluntarily provide patients with chlorhexidine gluconate-impregnated cloths and a printed sheet instructing their use the night before and morning of surgery. Records for all knee arthroplasties performed between January 2007 and December 2008 were reviewed to determine the incidence of deep incisional and periprosthetic surgical site infections. Overall, the advance pre-operative protocol was used in 136 of 912 total knee arthroplasties (15%). A lower incidence of surgical site infection was found in patients who used the advance cutaneous preparation protocol as compared to patients who used the in-hospital protocol alone. These findings were maintained when patients were stratified by surgical infection risk category. No surgical site infections occurred in the 136 patients who completed the protocol as compared to 21 infections in 711 procedures (3.0%) performed in patients who did not. Patient-directed skin disinfection using chlorhexidine gluconate-impregnated cloths the evening before, and the morning of, elective knee arthroplasty appeared to effectively reduce the incidence of surgical site infection when compared to patients who underwent in-hospital skin preparation only. 2010 Springer-Verlag.

Source: EMBASE

Available in fulltext from International Orthopaedics at National Library of Medicine

16. Antimicrobial prophylaxis in adults

Author(s) Enzler M.J., Berbari E., Osmon D.R.

Citation: Mayo Clinic Proceedings, July 2011, vol./is. 86/7(686-701), 0025-6196 (July 2011)

Publication Date: July 2011

Abstract: Individual reprints of this article and a bound reprint of the entire Symposium on Antimicrobial Therapy will be available for purchase from our Web site www.mayoclinicproceedings.com. Antimicrobial prophylaxis is commonly used by clinicians for the prevention of numerous infectious diseases, including herpes simplex infection, rheumatic fever, recurrent cellulitis, meningococcal disease, recurrent uncomplicated urinary tract infections in women, spontaneous bacterial peritonitis in patients with cirrhosis, influenza, infective endocarditis, pertussis, and acute necrotizing pancreatitis, as well as infections associated with open fractures, recent prosthetic joint placement, and bite wounds. Perioperative antimicrobial prophylaxis is recommended for various surgical procedures to prevent surgical site infections. Optimal antimicrobial agents for prophylaxis should be bactericidal, nontoxic, inexpensive, and active against the typical pathogens that can cause surgical site infection postoperatively. To maximize its effectiveness, intravenous perioperative prophylaxis should be administered within 30 to 60 minutes before the surgical incision. Antimicrobial prophylaxis should be of short duration to decrease toxicity and antimicrobial resistance and to reduce cost. 2011 Mayo Foundation for Medical Education and Research.

Source: EMBASE

Available in fulltext from Mayo Clinic Proceedings at EBSCOhost

Available in fulltext from Mayo Clinic Proceedings at National Library of Medicine

17. Antibiotic duration and postoperative infection rates in mandibular fractures

Author(s) Hindawi Y.H., Oakley G.M., Kinsella C.R., Cray J.J., Lindsay K., Scifres A.M.

Citation: Journal of Craniofacial Surgery, July 2011, vol./is. 22/4(1375-1377), 1049-2275
Publication Date: July 2011

Abstract: Background: Although the use of preoperative antibiotics has been proven effective, the value of postoperative antibiotics in the setting of mandibular fracture remains in question as does the appropriate duration of therapy. Methods: A retrospective study of all patients 18 years and older who presented with mandibular fractures to St Louis University Hospital between December 2001 and July 2006 was conducted. Collected variables included age, injury severity score, fracture type and location, preoperative antibiotic administration, antibiotic type, duration of antibiotic course, and postoperative infection. Infections were statistically compared with each. Results: Of 253 identified patients, 197 qualified for study inclusion. A total of 9 postoperative infections were documented. When comparing individuals with postoperative infection to those without, age was the only significant difference between infected and uninfected groups, with older patients more likely to acquire infection. Injury severity score, fracture type, duration of antibiotic course, and antibiotic type were not significantly different. Conclusions: Our findings suggest that patient factors make a greater contribution to postoperative infection when compared with iatrogenic factors in the treatment of mandibular fractures. We found no evidence to support prolonged postoperative antibiotic therapy. Our findings bring into question the need for postoperative antibiotics for the treatment of mandibular fractures.

Source: EMBASE

18. The role of antibiotics in open fractures revisited: Characteristics of Staphylococcus aureus (SA) and susceptibility profile

Author(s) Saveli C.C., Morgan S.J., Belknap R.W., Ross E., Stahel P.F., Chaus G.W., Biffl W.L., Price C.S.

Citation: Surgical Infections, May 2011, vol./is. 12/(S38-S39), 1096-2964 (May 2011)

Publication Date: May 2011

Abstract: Background: The benefits of antibiotic prophylaxis in open fractures have been clearly demonstrated in several randomized controlled trials, but the choice of antibiotic remains controversial since the current guidelines do not recommend agents with methicillin resistant Staphylococcus aureus (MRSA) activity. Methods: To develop preliminary data on the incidence of S. aureus (SA) colonization and surgical site infections (SSI) in patients with open fractures, a randomized prospective clinical trial was performed to compare the safety and benefits of adding MRSA coverage to standard antibiotic prophylaxis. Between April 2009 and November 2010, all consecutive adult patients with an open fracture who met study criteria were included. Patients were randomly allocated to receive either cefazolin alone (control arm) or vancomycin and cefazolin (experimental arm) from presentation to the ER until 24 hours after the surgery. Screening for SA carriage was performed with nares swabs and open fracture wound swabs. Patients underwent prospective assessment for the development of SSI within 30 days of the initial surgery. Results: Over a 20-month period, 92 patients with an open fracture were randomized to one of the prophylactic antibiotic regimens (46 subjects in each study arm). Study demographics and baseline characteristics were balanced between the two groups. 21.7% of the subjects were identified as colonized with SA. The prevalence of methicillin sensitive SA (MSSA) and MRSA among the sample were 18.4% and 3.2% respectively. None of the open fracture wounds were found to be colonized with SA. Overall 8 of 92 patients (8.7%) developed a SSI, 4 of 46 in each study group. Selected characteristics of patients who developed a SSI are summarized in Table 1. No adverse events in either of the study arms were reported during the study period. Conclusions: Preliminary findings demonstrate that addition of vancomycin to standard antibiotic prophylaxis is safe. SA was the most common cause of SSI after open fractures. SA colonization in orthopedic trauma patients is similar to the general population and methicillin resistance was shown in 3.2% of these patients. Pathogens inherently resistant to cephalosporins (i.e. Enterococcus) were also causative pathogens in two SSIs, one of which was susceptible to vancomycin. Further data are needed to determine whether the addition of vancomycin to standard antibiotic prophylaxis (Table presented) prevents the development of SSI compared to standard regimens.
19. The microbiological basis for a revised antibiotic regimen in high-energy tibial fractures: Preventing deep infections by nosocomial organisms

Author(s) Glass G.E., Barrett S.P., Sanderson F., Pearse M.F., Nanchahal J.

Citation: Journal of Plastic, Reconstructive and Aesthetic Surgery, March 2011, vol./is. 64/3(375-380), 1748-6815 (March 2011)

Publication Date: March 2011

Abstract: Background: Deep surgical site infections (SSI's) complicate Gustilo IIIB tibial fractures in 8-13% of cases. Antibiotic prophylaxis typically covers environmental contaminants. However, nosocomial organisms are usually implicated in deep infection. We used the microbiological profile of infected Gustilo IIIB tibial fractures to define a new, dynamic prophylactic regimen which recognises the need for prophylaxis against nosocomial organisms at the time of definitive closure. Methods: The microbiological profiles of Gustilo IIIB tibial fractures presenting over a 2-year period from January 2006 to December 2007 were reviewed. The environmental contaminants were compared with the organisms isolated from deep SSI's and correlated with the prophylactic antibiotic regimen used. Results: Fifty-two patients were included. Nine developed a deep tissue infection. The pathogens implicated included resistant Enterococci, Pseudomonas, Enterobacter and MRSA. Standard antibiotic prophylaxis provided cover for these combinations in only one of nine cases. This would have improved to eight of nine cases with the use of teicoplanin and gentamicin, given as a one-time dose during definitive soft-tissue closure. Specimens taken from wound debridement were neither sensitive nor specific for the subsequent development of deep infection and did not predict the organisms responsible. Conclusions: Following high-energy open fracture, a single prophylactic antibiotic regimen directed against environmental wound contaminants does not provide cover for the organisms responsible for deepest SSI's and may have depopulated the niche, promoting nosocomial contamination prior to definitive closure. We advocate a dynamic prophylactic strategy, tailoring a second wave of prophylaxis against nosocomial organisms at the time of definitive wound closure, and at the same time avoiding the potential complications of prolonged antibiotic use. 2010 British Association of Plastic, Reconstructive and Aesthetic Surgeons. Published by Elsevier Ltd. All rights reserved.

Source: EMBASE

20. A retrospective study of risk factors for poor outcomes in methicillin-resistant Staphylococcus aureus (MRSA) infection in surgical patients

Author(s) Eseonu K.C., Middleton S.D., Eseonu C.C.

Citation: Journal of orthopaedic surgery and research, 2011, vol./is. 6/(25), 1749-799X (2011)

Publication Date: 2011

Abstract: Since its isolation, Methicillin-resistant Staphlococcus aureus (MRSA) has become a major cause of hospital acquired infection (HAI), adverse patient outcome and overall resource utilisation. It is endemic in Scotland and widespread in Western hospitals. MRSA has been the subject of widespread media interest—a manifestation of concerns about sterile surgical techniques and hospital cleanliness. This study aimed to investigate patient outcome of MRSA infections over the last decade at a major orthopaedic trauma centre. The objective was to establish the association of variables, such as patient age and inpatient residence, against patient outcome, in order to quantify significant relationships; facilitating the evaluation of management strategies with an aim to improving patient outcomes and targeting high-risk procedures. This is a retrospective study of the rates and outcomes of MRSA infection in orthopaedic trauma at the Royal Infirmary of Edinburgh. Data was collated using SPSS 14.0 for Windows(R). Shapiro-Wilkes testing was performed to investigate the normality of continuous data sets (e.g: age). Data was analysed using both Chi-Squared and Fisher's exact tests (in cases of expected values under 5) This study found significant associations between adverse patient outcome (persistent deep infection,
osteomyelitis, the necessity for revision surgery, amputation and mortality) and the following patient variables: Length of inpatient stay, immuno-compromise, pre-admission residence in an institutional setting (such as a residential nursing home) and the number of antibiotics used in patient care. Despite 63% of all infections sampled resulting from proximal femoral fractures, no association between patient outcome and site of infection or diagnosis was found. Somewhat surprisingly, the relationship between age and outcome of infection was not proved to be significant, contradicting previous studies suggesting a statistical association. Antibiotic prophylaxis, previously identified as a factor in reducing overall incidence of MRSA infection, was not found to be significantly associated with outcome. Early identification of high-risk patients as identified by this study could lead to more judicious use of therapeutic antibiotics and reductions in adverse outcome, as well as socioeconomic cost. These results could assist in more accurate risk stratification based on evidence based evaluation of the significance of the risk factors investigated.

Source: EMBASE
Available in fulltext from Journal of Orthopaedic Surgery and Research at BioMedCentral
Available in fulltext from Journal of Orthopaedic Surgery and Research at National Library of Medicine

21. Adherence to perioperative antibiotic prophylaxis among orthopedic trauma patients

Author(s) Lundine K.M., Nelson S., Buckley R., Putnis S., Duffy P.J.
Citation: Canadian Journal of Surgery, December 2010, vol./is. 53/6(367-372), 0008-428X;1488-2310 (December 2010)
Publication Date: December 2010
Abstract: Background: The goal of this study was to assess whether patients receive their antibiotic prophylaxis as prescribed. We also investigated what doses and durations of antibiotics are typically ordered, which patients actually receive antibiotics and factors causing the ordered antibiotic regimen to be altered. Methods: We performed a retrospective review of 205 patient charts and sent a national survey to all surgeon members of the Canadian Orthopaedic Trauma Society (COTS) about antibiotic prophylaxis in the setting of surgical treatment for closed fractures. Results: In all, 93% (179 of 193) of patients received an appropriate preoperative dose of antibiotics, whereas less than 32% (58 of 181) of patients received their postoperative antibiotics as ordered. The most commonly stated reason for patients not receiving their postoperative antibiotics as ordered was patients being discharged before completing 3 postoperative doses. There was a 70% (39 of 56) response rate to the survey sent to COTS surgeons. A single dose of a first-generation cephalosporin preoperatively followed by 3 doses postoperatively is the most common practice among orthopedic trauma surgeons across Canada, but several surgeons give only preoperative prophylaxis. Conclusion: Adherence to multidose postoperative antibiotic regimens is poor. Meta-analyses have failed to demonstrate the superiority of multidose regimens over single-dose prophylaxis. Single-dose preoperative antibiotic prophylaxis may be a reasonable choice for most orthopedic trauma patients with closed fractures. 2010 Canadian Medical Association.

Source: EMBASE
Available in fulltext from Canadian Journal of Surgery at EBSCOhost
Available in fulltext from Canadian Journal of Surgery at National Library of Medicine

22. Antibiotic prophylaxis in primary hip and knee arthroplasty. Comparison between cefuroxime and two specific antistaphylococcal agents

Author(s) Tyllianakis M.E., Karageorgos A.C., Marangos M.N., Saridis A.G., Lambiris E.E.
Citation: Journal of Arthroplasty, October 2010, vol./is. 25/7(1078-1082), 0883-5403 (October 2010)
Publication Date: October 2010
**Abstract:** This is a prospective randomized study comparing cefuroxime to 2 antistaphylococcal agents (fusidic acid and vancomycin), for prophylaxis in total hip arthroplasty (THA) and total knee arthroplasty (TKA) in an institute, where methicillin-resistant Staphylococcus aureus (MRSA) and methicillin-resistant Staphylococcus epidermidis (MRSE) prevalence exceeds 25% of orthopedic infections. There were 3 patient groups. Group A included the patients who received cefuroxime, group B those who received fusidic acid, and group C those who received vancomycin. Patients were evaluated for the presence of superficial and/or deep infection at the surgical site. Statistical analysis did not reveal any substantial difference between the 3 groups. We do not recommend the use of specific antistaphylococcal agents for prophylactic use in primary THA and TKA, even in institutions where MRSA and MRSE exceed 25% of orthopedic infections. 2010.

**Source:** EMBASE

Available in print at Pilgrim Hospital Staff Library

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**23. Prior use of antimicrobial therapy is a risk factor for culture-negative prosthetic joint infection**

**Author(s)** Malekzadeh D., Osmon D.R., Lahr B.D., Hanssen A.D., Berbari E.F.

**Citation:** Clinical orthopaedics and related research, August 2010, vol./is. 468/8(2039-2045), 1528-1132 (Aug 2010)

**Publication Date:** August 2010

**Abstract:** BACKGROUND: Clinical characteristics and control of the infection of patients with culture-negative (CN) prosthetic joint infection (PJI) have not been well assessed. Prior use of antimicrobial therapy has been speculated but not proven as a risk factor for CNPJI. QUESTIONS/PURPOSES: We therefore determined whether prior use of antimicrobial therapy, prior PJI, and postoperative wound healing complications were associated with CN PJI. METHODS: We performed a retrospective case-control study of 135 patients with CN PJI treated between January 1, 1985, and December 31, 2000 matched with 135 patients with culture-positive (CP) PJs (control patients) during the study period. The time to failure of therapy compared between cases and control patients using a Kaplan-Meier analysis. RESULTS: The use of prior antimicrobial therapy and postoperative wound drainage after index arthroplasty were associated with increased odds of PJI being culture-negative (odds ratio, 4.7; 95% CI, 2.8-8.1 and odds ratio, 3.5; 95% CI, 1.5-8.1, respectively). The percent (+/- SE) cumulative incidence free of treatment failure at 2 years followup was similar for CN and CP PJI: 75% (+/- 4%) and 79% (+/- 4%), respectively. CONCLUSIONS: Prior antimicrobial therapy and postoperative wound drainage were associated with an increased risk of negative cultures among patients with PJI. Physicians should critically evaluate the need for antimicrobial therapy before establishing a microbiologic diagnosis of PJI in patients with suspected PJI. LEVEL OF EVIDENCE: Level III, therapeutic study. See Guidelines for Authors for a complete description of levels of evidence.

**Source:** EMBASE

Available in fulltext from Clinical Orthopaedics and Related Research at National Library of Medicine

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**24. Outcomes of prophylactic antibiotics following surgery for zygomatic bone fractures**

**Author(s)** Knepil G.J., Loukota R.A.

**Citation:** Journal of Cranio-Maxillofacial Surgery, March 2010, vol./is. 38/2(131-133), 1010-5182 (March 2010)

**Publication Date:** March 2010

**Abstract:** Data regarding the use of prophylactic antibiotics and infection rate following surgery for fractures of the zygomatic bone is scarce. Therefore an audit of the use and outcomes of antibiotic prophylaxis for surgery of fractures of the zygoma was undertaken. Following audit approval, four maxillofacial surgery units in the Yorkshire Region gathered
prospective data for 134 patients undergoing surgery for fractures of the zygoma. Data was collected on four groups of patients undergoing surgery for fractures of the zygomatic bone: uncomplicated reductions of the zygomatic arch, reductions of the zygomatic complex without mini-plate fixation, reductions of the zygomatic complex using mini-plate fixation but excluding zygomatico-maxillary buttress, and fixation of the zygomatic complex with miniplates including the zygomatico-maxillary buttress. The choice and timing of any antibiotics given peri-operatively was recorded, and 30 days after the operation, the patients' notes were reviewed to identify any episodes of surgical site infection (SSI) requiring the prescription of antibiotics, or any instances of plate removal in the post-operative period. This data has demonstrated that the prescription of antibiotic prophylaxis for surgery for fractures of the zygomatic bone is extremely variable, and that the infection rate is low. 2009 European Association for Cranio-Maxillo-Facial Surgery.

Source: EMBASE

25. Adequacy Assessment of Antibiotic prophylaxis in orthopedic and traumatologic surgery [Spanish] Evaluacion de la adecuacion de la profilaxis antibiotica en cirugia ortopedica y traumatologica

Author(s) Rodriguez-Caravaca G., Santana-Ramirez S., Villar-del-Campo M.C., Martin-Lopez R., Martinez-Martín J., Gil-de-Miguel A.

Citation: Enfermedades Infecciosas y Microbiologia Clinica, January 2010, vol./is. 28/1(17-20), 0213-005X;1578-1852 (January 2010)

Publication Date: January 2010

Abstract: Introduction: Antibiotic prophylaxis is an essential strategy for preventing surgical wound infection. This study assesses the adequacy of surgical antibiotic prophylaxis in trauma and orthopedic patients. Methods: Cross-sectional study including consecutive patients who underwent hip or knee replacement, or spinal surgery. Sample estimation was based on 95% confidence, 5% precision, an overall adequacy of 85%, and assuming a loss of 5%. Thus, 206 patients were required. The appropriateness of the indication, time of administration, administration route, and dose according to the hospital protocol was assessed. The cumulative incidence of surgical site infection at discharge was determined. Results: A total of 221 patients were included, 33.5% men and 66.5% women; mean age was 61.1 (SD=14.1) for men and 67.1 (SD=12.4) for woman (P<0.05). Antibiotic prophylaxis was indicated in all patients. Overall adequacy of prophylaxis according to the hospital protocol was 89.1%. Cumulative incidence of surgical wound infection at discharge was 3.2%. There was no association between the adequacy of antibiotic prophylaxis and surgical site infection (P>0.05). Conclusions: The adequacy of postoperative antibiotic prophylaxis was high in this study, but it can be improved. 2008 Elsevier Espana, S.L. All rights reserved.

Source: EMBASE

26. Evaluation of three preoperative preparation products when used in a preoperative site-wash regimen

Author(s) Beausoleil C.

Citation: Clinical Microbiology and Infection, May 2009, vol./is. 15/(S555), 1198-743X (May 2009)

Publication Date: May 2009

Abstract: Objective: Many patients undergoing orthopedic, cardiovascular, and general thoracic or abdominal surgeries experience post-surgical infections, prolonging their medical treatments, and imposing unnecessary medical risk and expense. The standard of practice for preoperative preparation (PreOp Prep) is to treat the intended surgical site with an effective topical antimicrobial immediately prior to a surgery, usually with prophylactic antibiotic therapy before and after the surgery. However, some medical practitioners currently prescribe for their presurgical patients, in addition, a preoperative site-wash (PreOp SW) regimen with the intention of reducing microbial populations residing on the skin prior to the routine site preparation at the time of the surgery. The logical rationale has
been that such a combination procedure would reduce potentially contaminative microbial populations to levels far lower than could the PreOp Prep alone. The purpose of this study was to evaluate effectiveness of a PreOp SW procedure by measuring reductions of normal and transient microorganisms produced at a specific site, the knee, by applications of a marketed PreOp Prep product over the course of 4 consecutive days. Three different commercially available products were tested - TRISEPTIN Water-Aided, MaxiClens, and ChloraPrep. Methods: Two products were evaluated on each human subject to provide 10 data files per product (15 subjects, total). Technicians applied the products per use-instructions to the skin of subjects' knees once per day for 4 consecutive days. Microbial populations were sampled each day prior to and immediately following treatment. Performance of a product was evaluated in terms of its ability to reduce microbial populations progressively and in total over the 4-day period of testing. Results: All products tested produced significant reductions in the populations of microbial flora on the skin of the knee (see table). (Table presented) Conclusion: A PreOp SW regimen using any of the products tested TRISEPTIN Water-Aided, MaxiClens, or ChloraPrep - plainly would present a much reduced population of microbial flora in challenge to the site PreOp Prep procedure to be performed immediately prior to surgery. The data indicate that the PreOp SW process should be initiated at least 2 days prior to the scheduled surgery, and that 3 or 4 days prior would be better yet.

Source: EMBASE

Available in fulltext from Clinical Microbiology & Infection at EBSCOhost

27. Antimicrobial prophylaxis for spinal surgery

Author(s) Takahashi H., Wada A., Iida Y., Yokoyama Y., Katori S., Hasegawa K., Shintaro T., Suguro T.

Citation: Journal of Orthopaedic Science, January 2009, vol./is. 14/1(40-44), 0949-2658 (January 2009)

Publication Date: January 2009

Abstract: Background: The concept of antimicrobial prophylaxis (AMP) did not exist in Japan until recently. Therefore, postoperative administration of antimicrobial drugs has long been practiced under the pretext of prophylaxis against surgical site infection (SSI). In recent years, however, the concept of AMP and prophylactic countermeasures against SSI, based on evidence of the effectiveness of AMP, has gradually spread in Japan. From 2000 onward, we have undertaken prophylactic countermeasures against SSI in patients undergoing spinal surgery referring to the Guideline for Prevention of Surgical Site Infection published by the Centers for Disease Control and Prevention in 1999. The purpose of this study was to investigate the type of AMP that would be appropriate for spinal surgery and the manner in which it should be used. Methods: The subjects were 1415 patients who underwent spinal surgery at our department from January 1990 to March 2008. The patients were classified into four groups according to the method of AMP administration: group 1, AMP was employed for 7 days, only postoperatively; group 2, initial AMP dosing was administered at the time of anesthesia induction, followed by administration of AMP for 5 days, including the day of the operation; group 3, initial AMP dosing was administered at the time of anesthesia induction, and AMP was administered for 3 days, including the day of the operation; group 4, the initial dosing was administered at the time of anesthesia induction, and AMP was administered for 2 days, including the day of the operation. The frequency of SSI was assessed in the four groups. Results: The frequencies of SSI in groups 1-4 were 2.6% (14/539), 0.9% (5/536), 0% (0/257), and 0% (0/83), respectively. Thus, the frequency of SSI decreased as the duration of the AMP administration period decreased. Conclusions: As a result of thorough implementation of preventive measures against perioperative occurrence of infections, which included additional preoperative and intraoperative administration of AMP, the incidence of SSI could be decreased despite shortening the duration of AMP administration to 2 days. 2009 The Japanese Orthopaedic Association.

Source: EMBASE
29. Surgical site infections in orthopedic patients: Prospective cohort study

**Author(s)** Maksimovic J., Markovic-Denic L., Bumbasirevic M., Marinkovic J., Vlajinac H.

**Citation:** Croatian Medical Journal, February 2008, vol./is. 49/1(58-65), 0353-9504;1332-8166 (February 2008)

**Publication Date:** February 2008

**Abstract:** Aim: To estimate the incidence rate and risk factors of surgical site infections in the orthopedic wards in a major teaching hospital in Serbia. Methods: A 6-month prospective cohort study, with 30 days of patient follow-up after surgery, was conducted at the teaching hospital in Belgrade. We collected patients' basic demographic data and data on underlying disease status, surgical procedures, preoperative preparation of patients, and antibiotic prophylaxis. The National Nosocomial Infections Surveillance (NNIS) risk index was computed for each patient. Descriptive and logistic regression analyses were performed to determine risk factors for surgical site infections. Results: Assessment of 277 patients after operation revealed surgical site infection in 63 patients. In 3 (4.8%) of them, surgical site infections were detected after hospital discharge. The overall incidence rate of surgical site infections was 22.7% (95% confidence interval [95% CI], 17.5-29.1). The incidence increased from 13.2% in clean wounds to 70.0% in dirty wounds. The rates of surgical site infection for the NNIS risk index classes 0 to 3 were 8.1% (13 of 161), 36.4% (32 of 88), 63.0% (17 of 27), and 100% (1 of 1) (P<0.001; chi<sup>2</sup> test). Multivariate logistic regression analysis identified the following independent risk factors for surgical site infections: greater number of persons in the operating room (odds ratio [OR], 1.28; 95% CI, 1.02-1.60), contaminated or dirty wounds (OR, 12.09; 95% CI, 5.56-26.28), and American Society of Anesthesiologists' (ASA) score >2 (OR, 3.47; 95% CI, 1.51-7.95). In patients who were shaved with a razor, the period of 12 or more hours between shaving and intervention was also an independent risk factor (OR, 2.77; 95% CI, 1.22-6.28). Conclusion: There is a high incidence of surgical site infections in orthopedic patients in Serbia in comparison with developed countries and some developing countries. Points for intervention could be reduction of personnel during surgery, better treatment of wounds, decreasing ASA score, and reduction of the time between surgical site shaving and the intervention.

**Source:** EMBASE

Available in fulltext from Croatian Medical Journal at National Library of Medicine
Available in fulltext from Croatian Medical Journal at EBSCOhost

30. Surgical site infections in older adults: Epidemiology and management strategies

**Author(s)** Young M.H., Washer L., Malani P.N.

**Citation:** Drugs and Aging, 2008, vol./is. 25/5(399-414), 1170-229X (2008)

**Publication Date:** 2008

**Abstract:** Surgical site infections (SSIs) represent a major source of morbidity and mortality among older adults. In this review we discuss the epidemiology and risk factors for SSIs among older adults. We also offer an overview of current treatment and management strategies for several common SSIs. Our comments focus on the following areas in order to illustrate issues of clinical importance in the older patient: (i) cardiac surgery; (ii) vascular grafts; (iii) total joint arthroplasty; (iv) breast surgery; and (v) spinal surgeries. Besides being common and relatively specific to older adults, several of these surgical procedures require the use of prosthetic materials or devices, which present unique treatment challenges in the context of infection. When an older adult does develop an SSI, it is critical for clinicians to establish an overall treatment goal for each patient. In the majority of patients, this will be either complete cure or remission followed by suppressive therapy. However, clinicians caring for older adults must consider not only the possibility of microbiological cure, but also balance the need to preserve functional status and overall quality of life. Infections associated with devices and prosthetic material can present unique treatment challenges. Treatment of significant infections often requires prolonged courses of parenteral and/or oral antimicrobial therapy, which can raise issues related to the safety...
and tolerability of antimicrobial agents, including higher rates of nephrotoxicity. Issues concerning overall functional status, nutritional reserve and medical co-morbidities must be taken into consideration when approaching SSIs in an older adult. 2008 Adis Data Information BV. All rights reserved.

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31. Antibiotic prophylaxis and the risk of surgical site infections following total hip arthroplasty: Timely administration is the most important factor

Author(s) Van Kasteren M.E.E., Mannien J., Ott A., Kullberg B.-J., De Boer A.S., Gyssens I.C.

Citation: Clinical Infectious Diseases, April 2007, vol./is. 44/7(921-927), 1058-4838 (01 Apr 2007)

Publication Date: April 2007

Abstract: Background. Surgical site infections (SSIs) following total hip arthroplasty can lead to prolonged hospitalization, increased morbidity and mortality, and high costs. This article analyzes the effect of various parameters of surgical antibiotic prophylaxis on the risk of SSI following total hip arthroplasty. Methods. Data about SSI and potential prophylaxis-, patient-, and procedure-related risk factors were prospectively collected for 1922 patients who underwent elective total hip arthroplasty in 11 hospitals that participated in the Dutch intervention project, Surgical Prophylaxis and Surveillance. Multivariate logistic regression analysis was performed to correct for random variation among hospitals. Results. SSIs (superficial and deep) occurred in 50 patients (2.6%). The highest odds ratios for SSI were found in patients who received prophylaxis after incision (2.8, 95% confidence interval [CI], 0.9-8.6; P = .07), had an American Society of Anesthesiology score that was >2 (2.8, 95% CI, 0.8-9.2; P = .09), and experienced a duration of surgery that was >75th percentile (2.5; 95% CI, 1.1-5.8; P = .04). Prolonged prophylaxis after the end of surgery and the use of antibiotic-impregnated cement did not contribute to fewer SSIs in this study. Conclusions. This study suggests that intervention programs in search of amendable factors to prevent SSI should focus on timely administration of antibiotic prophylaxis. 2007 by the Infectious Diseases Society of America. All rights reserved.

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32. Effect of optimized antibiotic prophylaxis on the incidence of surgical site infection


Citation: Infection Control and Hospital Epidemiology, December 2006, vol./is. 27/12(1340-1346), 0899-823X (December 2006)

Publication Date: December 2006

Abstract: OBJECTIVE. To compare the rate of surgical site infection (SSI) before and after an intervention period in which an optimized policy for antibiotic prophylaxis was implemented. To demonstrate that a more prudent, restrictive policy would not have a detrimental effect on patient outcomes. DESIGN. Before-after trial with prospective SSI surveillance in the Dutch nosocomial surveillance network (Preventie Ziekenhuisinfecties door Surveillance [PREZIES]), using the criteria of the Centers for Disease Control, including postdischarge surveillance for up to 1 year. METHODS. During a preintervention period and a postintervention period (both 6-13 months), 12 Dutch hospitals collected data on antimicrobial prophylaxis and SSI rates. The study was limited to commonly performed surgical procedures in 4 specialties: vascular, intestinal, gynecological and orthopedic
surgery. Selected risk factors for analysis were sex, age, American Society of Anesthesiologists classification, wound contamination class, duration of surgery, length of hospital stay before surgery, and urgency of surgery (elective or acute). RESULTS. A total of 3,621 procedures were included in the study, of which 1,668 were performed before the intervention and 1,953 after. The overall SSI rate decreased from 5.4% to 4.5% (P = .22). Among the procedures included in the study, the largest proportion (55%) were total hip arthroplasty, and the smallest proportion (2%) were replacement of the head of the femur. SSI rates varied from 0% for vaginal hystereotomy to 21.1% for femoropopliteal or femorotibial bypass surgery. Crude and adjusted odds ratios showed that there were no significant changes in procedure-specific SSI rates after the intervention (P > .1).

CONCLUSIONS. An optimized and restrictive antibiotic prophylaxis policy had no detrimental effect on the outcome of clean and clean contaminated surgery, as measured by SSI rate. 2006 by The Society for Healthcare Epidemiology of America. All rights reserved.

Source: EMBASE

33. Comparison of routine prophylaxis with vancomycin or cefazolin for femoral neck fracture surgery: Microbiological and clinical outcomes

Author(s) Merrer J., Desbouchages L., Serazin V., Razafimamonjy J., Pauthier F., Leneveu M.

Citation: Infection Control and Hospital Epidemiology, December 2006, vol./iss. 27/12(1366-1371), 0899-823X (December 2006)

Publication Date: December 2006

Abstract: OBJECTIVE. To assess the impact of antibiotic prophylaxis on the emergence of vancomycin-resistant strains of Enterococcus faecium, Enterococcus faecalis, and Staphylococcus aureus and the incidence of surgical site infection (SSI) after vancomycin or cefazolin prophylaxis for femoral neck fracture surgery. DESIGN. Prospective cohort study. SETTING. A hospital with a high prevalence of methicillin-resistant S. aureus (MRSA) carriage. PATIENTS. All patients admitted with a femoral neck fracture from March 1, 2004 through February 28, 2005 were prospectively identified and screened for MRSA and vancomycin-resistant (VRE) carriage at admission and at day 7. Deep incisional and organ/space SSIs were also recorded. RESULTS. Of 263 patients included in the study, 152 (58%) received cefazolin and 106 (40%) received vancomycin. At admission, the prevalence of MRSA carriage was 6.8%; it was 12% among patients with risk factors and 2.2% among patients with no risk factors (P = .002). At day 7 after surgery, there were 6 patients (2%) who had hospital-acquired MRSA, corresponding to 0.7% in the cefazolin group and 5% in the vancomycin group (P = .04); none of the MRSA isolates were resistant to glycopeptides. The rate of VRE carriage at admission was 0.4%. Three patients (1%) had acquired carriage of VRE (1 had E. faecium and 2 had E. faecalis); all 3 were in the cefazolin group (2% of patients) and none in the vancomycin group (P = .27). Eight SSIs (3%) occurred, 4% in the cefazolin group and 2% in the vancomycin group (P = .47).

CONCLUSIONS. This preliminary study demonstrates that cefazolin and vancomycin prophylaxis have similar impacts on the emergence of glycopeptide-resistant pathogens. Neither MRSA infection nor increased rates of SSI with other bacteria were observed in the vancomycin group, suggesting that a larger multicenter study should be initiated. 2006 by The Society for Healthcare Epidemiology of America. All rights reserved.

Source: EMBASE

34. Timely Administration of Prophylactic Antibiotics for Major Surgical Procedures

Author(s) Hawn M.T., Gray S.H., Vick C.C., Itani K.M., Bishop M.J., Ordin D.L., Houston T.K.

Citation: Journal of the American College of Surgeons, December 2006, vol./iss. 203/6(803-811), 1072-7515 (December 2006)

Publication Date: December 2006

Abstract: Background: Prophylactic antibiotics (PA) given within 60 minutes before
surgical incision decrease risk of subsequent surgical site infection. Nationwide quality improvement initiatives have focused on improving the proportion of patients who receive timely prophylactic antibiotics. Study design: This is a cohort study of major surgical procedures performed in 108 Veterans Affairs hospitals between January and December 2005. Using data from the External Peer Review Program and the National Surgical Quality Improvement Program, we examined factors associated with timely PA administration. Univariate and multivariable analyses were performed. Results: There were 8,137 major surgical procedures: cardiac (2,664), hip and knee arthroplasty (3,603), colon (1,142), arterial vascular (606), and hysterectomy (122). Timely PA occurred in 76.2% of patients, 18.2% received them too early, and 5.4% received them too late. Early administration accounted for 79% of untimely PA. Differences in timeliness were seen by procedure type (68% to 87%; p < 0.0001), admission status (67% to 80%; p < 0.0001), and antibiotic class (65% to 89%; p < 0.0001). PA administration occurred in the operating room for 63.5% of patients. When PA administration occurred in the operating room, they were timely in 89% of patients, compared with 54% of patients where administration was outside the operating room (odds ratio, 7.74; 95% CI = 6.49 to 9.22). Conclusions: Early PA administration accounted for the majority of inappropriately timed PA. Efforts to improve performance on this measure should focus on administering antibiotics in the operating room. 2006 American College of Surgeons.

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35. Infection prophylaxis: A prospective study in 106 patients operated on by tibial osteotomy using the hemicallotasis technique

Author(s): W-Dahl A., Toksvig-Larsen S.

Citation: Archives of Orthopaedic and Trauma Surgery, September 2006, vol./is. 126/7(441-447), 0936-8051 (September 2006)

Publication Date: September 2006

Abstract: Introduction: Tibial osteotomy by the hemicallotasis technique is a clean elective operation. With external fixation pins inserted, close to the knee joint, the infection prophylaxis should be considered. The primary aim was to investigate the differences in the postoperative use of antibiotics during the time in external fixation between administering prophylactic antibiotics for 3 days or as a single dose in patients operated on by the hemicallotasis technique for knee deformities. Secondary aims were to study the differences in pin-site infection rate and grade and complications. Material and methods: A total of 106 consecutive patients of mean age 52 years (range 18-69) operated on by the hemicallotasis technique for knee deformities were included in this prospective study. Sixty patients were prescribed prophylactic antibiotics for 3 days and 46 patients as a single dose. Chlorhexidine (5 mg/ml) in alcohol (70% ethanol) was used as cleansing agent in the pin-site care. The power of the study was calculated to 80% to detect a difference in the postoperative use of antibiotics for 7 days during the treatment in external fixation. Results: There were no differences in postoperative use of antibiotics between 3 days administration or a single dose of prophylactic antibiotics. This was the case with infection rate and grade, positive bacterial cultures, presence of Staphylococcus aureus, nor positive culturing from the tip of the pins at removal. Neither were there any differences in numbers of loose pins and complications. Conclusion: There were no differences between 3 days of administration of prophylactic antibiotics and one single dose. One single dose of prophylactic antibiotics is appropriate together with a pin-site concept preventing pin-site infection in patients operated on by hemicallotasis osteotomy. Springer-Verlag 2006.

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36. Reduction of urinary tract infection and antibiotic use after surgery: A controlled, prospective, before-after intervention study

Author(s): Stephan F., Sax H., Wachsmuth M., Hoffmeyer P., Clergue F., Pittet D.
Abstract: Background. Urinary tract infection is the most frequent health care-associated complication. We hypothesized that the implementation of a multifaceted prevention strategy could decrease its incidence after surgery. Methods. In a controlled, prospective, before-after intervention trial with 1328 adult patients scheduled for orthopedic or abdominal surgery, nosocomial infection surveillance was conducted until hospital discharge. A multifaceted intervention including specifically tailored, locally developed guidelines for the prevention of urinary tract infection was implemented for orthopedic surgery patients, and abdominal surgery patients served as control subjects. Infectious and noninfectious complications, adherence to guidelines, and antibiotic use were monitored before and after the intervention and again 2 years later. Results. The incidence of urinary tract infection decreased from 10.4 to 3.9 episodes per 100 patients in the intervention group (incidence-density ratio, 0.41; 95% CI, 0.20-0.79; P = .004). Adherence to guidelines was 82.2%. Both the frequency and the duration of urinary catheterization decreased following the intervention. Recourse to antibiotic therapy after surgery dropped in the intervention group from 17.9 to 15.6 defined daily doses per 100 patient-days (P<.005) because of a reduced need for the treatment of urinary tract infection (P<.001). Follow-up after 2 years revealed a sustained impact of the strategy and a subsequent low use of antibiotics, consistent with stable adherence to guidelines (80.8%). Conclusions. A multifaceted prevention strategy can dramatically decrease postoperative urinary tract infection and contribute to the reduction of the overall use of antibiotics after surgery. 2006 by the Infectious Diseases Society of America. All rights reserved.

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37. Prophylactic antibiotics in orthopaedic surgery: Guidelines and practice

Author(s) Yeap J.S., Lim J.W., Vergis M., Yeung P.S.A., Chiu C.K., Singh H.

Citation: Medical Journal of Malaysia, June 2006, vol./is. 61/2(181-188), 0300-5283 (June 2006)

Publication Date: June 2006

Abstract: The national clinical practice guideline has recommended that prophylactic antibiotic be given in orthopaedic surgery involving joint replacements and internal fixation of fractures. The aim of this study is to assess the current antibiotics prophylaxis practice in a state level hospital. One hundred and three patients (68 males, 35 females; mean age 41.6 +/- 22.2 years) undergoing internal fixation for closed fractures and joint replacement surgery were included in this prospective study. The choice of pre and post-operative antibiotics, their dosages and duration of administration were recorded. The pre-operative antibiotics were only deemed to have been given if it was documented in the case notes and in the case of post-operative antibiotics if it was signed on the drug chart. Eighty eight percent were given pre-operative prophylactic antibiotics and 92% were given post-operative antibiotics. For patients undergoing internal fixation of fractures, the most commonly used antibiotic for both pre and post-op is intravenous cefuroxime. For joint replacement surgery, the most commonly used antibiotic is intravenous cefoperazone. The duration or number of doses of post-operative antibiotics was highly variable. It was not stated in 56% of the post-operative instructions. Post-operative antibiotic was ordered for 48 hours or longer in 10%. In conclusion, prophylactic antibiotics appear to be widely practised. The first line antibiotics as recommended by the present guideline were not given in any of the patients. Second generation followed by third generation cephalosporins are the most popular antibiotics, with a trend towards using third generation cephalosporins in arthroplasty patients. Single dose prophylaxis was rarely practised.

Source: EMBASE
Abstract: Because the incidence of infection in arthroscopic surgery is very low, one can argue both for and against the use of prophylactic antibiotics. Administering antibiotics adds expense and introduces the potential for both exposure to allergic reactions and selection of resistant organisms. Antibiotics are given to prevent deep infection; such treatment may require further surgery, prolonged use of intravenous antibiotics, high costs, and outcomes that may be less than satisfactory. An answer to this controversial issue would require a study that includes large numbers of patients to make it adequately statistically powered because the incidence of infection is so low. No such research has yet been performed, and the American Academy of Orthopaedic Surgeons (AAOS) has not produced an advisory statement addressing this issue. It is the opinion of this author that antibiotic prophylaxis is indicated for arthroscopic surgery. Despite surgical team best practices, mistakes can occur. This has led the AAOS to issue an advisory statement to prevent wrong-site surgery. Similarly, complacency with repetition may produce breaks in sterility that may occasionally go undetected. Antibiotic usage may help to reduce infection in such circumstances. Arthroscopic procedures are not always performed in healthy patients. The risk of infection in "high-risk" patients, such as those with diabetes, immune problems, and skin disorders, may be reduced by prophylactic antibiotics. How one defines a case as arthroscopic can be debated. If small incisions are made, or if the scope is used for only a portion of the procedure, many would still consider the case to be arthroscopic. Surgeries are becoming more complex, which adds to their duration. Some cases also involve the use of implants such as interference screws and suture anchors. It is my opinion that antibiotics should be used in these situations. The potential exists for litigation in cases of infection. Medico-legally, it is easier to argue that all measures were taken to prevent infection if prophylactic antibiotics were given, although patient care issues supersede defensive medicine. Risk of infection in arthroscopic surgery is multifactorial, and antibiotic prophylaxis is only one facet of the issue. Although it is my opinion that antibiotics are recommended, others could be justified in supporting the opposite opinion, pending appropriately designed and adequately powered future investigations. 2006 Arthroscopy Association of North America.

Source: EMBASE

39. Role of single dose antibiotic prophylaxis in clean orthopedic surgery

Abstract: OBJECTIVE: To compare the proportion of early postoperative infection in clean orthopedic surgery after single dose of prophylactic antibiotic and multiple doses of prophylactic antibiotic. Design: Interventional quasi-experimental study. PLACE AND DURATION OF STUDY: Department of Orthopedics, Abbasi Shaheed Hospital, Karachi from April 2004 to March 2005. MATERIAL AND METHODS: Two hundred patients of either age and gender, undergoing clean orthopedic surgery were equally divided into two groups A and B. Group A was given single dose of prophylactic antibiotic, while group B was given multiple doses of prophylactic antibiotic. Follow-up period was 28 days. All cases were evaluated for postoperative wound infection. Sampling technique was non-probability convenience. RESULTS: Mean age was 35.51 +/- 20.79 years in group A and 26.17 +/- 19.79 years in group B. However, there was a significantly higher proportion of male patients in group B than in group A (p=0.006). Statistical analysis showed no significant difference in the proportion of early postoperative infection cases between the two groups (p=0.270). Staphylococcus aureus was the commonest organism cultured from the wound discharge in our study followed by E. coli. Eight of our cases having postoperative wound infection showed no growth, out of which 7 were superficial and 1 was deep. There was no
significant difference between the two groups regarding mean operating time and duration of stay in hospital. CONCLUSION: There was no statistically significant difference in the proportion of early postoperative infection cases between the two groups.

Source: EMBASE

40. Antibiotic prophylaxis in orthopedic surgeries: The results of an implemented protocol

Author(s) Queiroz de Araujo R., Grinbaum R.S., Galvao L.L., Tavares F.G., Bergsten-Mendes G.

Citation: Brazilian Journal of Infectious Diseases, August 2005, vol./is. 9/4(283-287), 1413-8670:1413-8670 (August 2005)

Publication Date: August 2005

Abstract: Though the basic principles of antibiotic prophylaxis have been well established, there is still considerable incorrect usage, including how much is prescribed and especially in the duration of treatment, which is generally superior to what is indicated. The adequate use of these drugs contributes towards decreasing the time of internment of the patient, prevents surgical site infection (SSI), decreasing the development of resistant microorganisms, and towards reduced costs for the hospital pharmacy. A protocol for the use of antibiotic prophylaxis in the Orthopedics and Traumatology Service of the Hospital do Servidor Publico Estadual de Sao Paulo was developed. The objectives of the study were to promote rational antibiotic surgical prophylaxis, through the implantation of a protocol for the use of these drugs in a surgical unit, with the direct contribution of a druggist in collaboration with the Infection Control Committee, to evaluate the adhesion of the health team to the protocol during three distinct periods (daily pre-protocol, early post-protocol and late post-protocol) and to define the consumption of antimicrobials used, measured as daily defined dose. 2005 by The Brazilian Journal of Infectious Diseases and Contexto Publishing. All rights reserved.

Source: EMBASE

41. Evaluation of hospital and patient factors that influence the effective administration of surgical antimicrobial prophylaxis

Author(s) Turnbull B.R.R., Zoutman D.E., Lam M.

Citation: Infection Control and Hospital Epidemiology, May 2005, vol./is. 26/5(478-485), 0899-823X (May 2005)

Publication Date: May 2005

Abstract: OBJECTIVE: To analyze and model the patient and healthcare system factors that may interfere with the appropriate administration of surgical antimicrobial prophylaxis. DESIGN: Between 1994 and 1998, surgical-site surveillance data were collected prospectively for a cohort of eligible surgical patients. For all cases, and each individual procedure (cardiothoracic, colonic, gynecologic, orthopedic, or vascular), forward stepwise multiple logistic regression was applied to relate key hospital and patient factors to an effective first prophylactic dose (ie, appropriate administration time, dose, route, and drug). SETTING: A 450-bed, tertiary-care teaching hospital in Canada. PATIENTS: A total of 4,835 patients admitted for surgical procedures who required antimicrobial prophylaxis. RESULTS: Factors positive for an effective first prophylactic dose for all cases were when an order was written (OR, 19.7; CI<sub>95</sub>, 9.1-42.7; P < .001) and given in the operating room (OR, 13.9; CI <sub>95</sub>, 7.5-25.6; P < .001). Factors negative for an effective first prophylactic dose were beta-lactam allergy (OR, 0.49; CI<sub>95</sub>, 0.4-0.61; P < .001) and same-day surgery (OR, 0.57; CI<sub>95</sub>, 0.4-0.82; P < .001). CONCLUSIONS: With few exceptions, the four factors included in the procedure models showed that when a preoperative order was written or the antibiotic was given in the operating room, a patient was more likely to receive an effective first prophylactic dose. Conversely, when a patient had a beta-lactam allergy or the surgery was performed on the day the patient was admitted, the administration of an effective first prophylactic dose was
42. Skeletal pin site care: National Association of Orthopaedic Nurses guidelines for orthopaedic nursing

**Author(s)** Holmes S.B., Brown S.J.

**Citation:** Orthopaedic nursing / National Association of Orthopaedic Nurses, March 2005, vol./is. 24/2(99-107), 0744-6020 (2005 Mar-Apr)

**Publication Date:** March 2005

**Abstract:** A systematic analysis of the research literature on skeletal pin site care was conducted, and the opinions of an expert panel were obtained. Four specific recommendations for skeletal pin site care are offered, with explicit discussions of the level of research support and/or expert panel support for each. Discussion of other pin site care issues is provided, and characteristics of the research base regarding skeletal pin site care are described.

**Source:** EMBASE

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44. Perioperative antibiotic prophylaxis in clean bone and joint surgery [German;English] Perioperative antibiotikaprophylaxe bei aseptischen Knochen- und Gelenkeingriffen

**Author(s)** Stengel D., Bauwens K., Seifert J., Ekkernkamp A.

**Citation:** Operative Orthopadie und Traumatologie, March 2003, vol./is. 15/1(101-112), 0934-6694 (01 Mar 2003)

**Publication Date:** March 2003

**Abstract:** Objective. Prevention of deep surgical wound- and implant-related infections in instances of surgical treatment of closed long bone fractures and instances of hip and knee arthroplasty by prophylactic administration of antibiotics. The Evidence. The efficacy of both, intravenous single-shot and short-time prophylaxis (24 h), has been proven by meta-analyses (level Ia evidence) and additional placebo-controlled, randomized clinical trials that were not considered in the aggregated estimates (level Ib evidence). There is paucity or inconsistency of data concerning oral administration of drugs, antibiotic-containing cements, and prophylaxis for orthopedic surgery of the upper limbs. Indications. Available evidence commands that perioperative antibiotics have to be offered to patients scheduled for elective or emergency procedures as outlined in this review. Applications. Prior to skin incision administration of antimicrobial agents. No antibiotic treatment beyond the day of surgery. Administration of either multiple doses of short-acting first-generation cephalosporins (e.g., cefazolin) or a single dose of a long-acting third-generation cephalosporin (e.g., ceftriaxone). Avoidance of glycopeptides (e.g., teicoplanin) for the purpose of prophylaxis. Recommendations. Documentation of drug-related adverse events (e.g., allergy, diarrhea, especially colitis caused by Clostridium difficile).

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WJ Gillespie, G Walenkamp - Cochrane Database Syst Rev, 2001 - Wiley Online Library ... As the pathogenesis of post-surgical infection is similar after osteosynthesis of any closed fracture, it has ... L, Hedin G. Prophylaxis with oral cephadril versus intravenous cefuroxime in trochanteric fracture surgery. ... Archives of Orthopaedic and Trauma Surgery 1995;114:303–7. ... Cited by 155 Related articles All 5 versions Cite Save

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... review of 1597 consecutive uninfected patients who underwent lumbar spine surgery revealed that SSIs developed in ... and postoperative single dose of first-generation cephalosporin) effectively prevented SSI in lumbar ... 2008) Effective prevention of surgical site infection using a …

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The role of topical antibiotics used as prophylaxis in surgical site infection prevention

SM McHugh, CJ Collins… - … of antimicrobial …, 2011 - Br Soc Antimicrob Chemo

... local antibiotics, 'intra-operative antibiotics', 'surgical prophylaxis', 'antibiotic prophylaxis', 'surgical site infection', 'surgical infection', 'healthcare associated ... controlled trials, recent guidelines from the Surgical Infection Society stated that ... as being effective in the prevention of SSI. ...

Cited by 22 Related articles All 14 versions Cite Save

Antibiotics in trauma and orthopedic surgery—a primer of evidence-based recommendations

M Jaeger, D Maier, WV Kern, NP Südkamp - Injury, 2006 - Elsevier

... The value of surgical antibiotic prophylaxis in terms of the incidence of surgical site infection (SSI) (including ... Surgical antibiotic prophylaxis reduced the incidence of SSI in comparison to placebo or no intervention. ... Trends in the treatment of orthopaedic prosthetic infections. ...

Cited by 27 Related articles All 7 versions Cite Save

Antibiotic prophylaxis against postoperative wound infections.

SM Gordon - Cleveland Clinic journal of medicine, 2006 - ccjm.org

... were the largest group, primarily associated with Foley catheters).1 The risk of surgical site infection can be ... Antimicrobial prophylaxis for surgery: an advisory statement from the National Surgical Infection Prevention Project. ... 10. American Academy of Orthopaedic Surgeons. ...

Cited by 21 Related articles All 7 versions Cite Save

Reduction in surgical antibiotic prophylaxis expenditure and the rate of surgical site infection by means of a protocol that controls the use of prophylaxis

MI Gómez, SI Acosta-Gnass… - Infection control and …. 2006 - JSTOR

... study stage is given in Table 3. Table 3. Table 3. Rates of Surgical Site Infection (SSI) Before and ... adequacy of surgical antimicrobial prophylaxis, expense saving, and a decrease in the SSI rate ... This indicated that the risk that a patient would acquire an SSIs if the automatic-stop ...

Cited by 23 Related articles All 3 versions Cite Save

Quality improvement of surgical prophylaxis in Dutch hospitals: evaluation of a multi-site intervention by time series analysis

MEE van Kasteren, J Mannien… - … of Antimicrobial ..., 2005 - Br Soc Antimicrob Chemo

... Surgical site infection. ... prophylaxis guidelines in a variety of hospitals, the recently published report on the National Surgical Infection Prevention Collaborative. ... can improve the quality of prophylaxis and can decrease antibiotic use with sustained efficacy in preventing SSI. ...

Cited by 65 Related articles All 7 versions Cite Save

Antibiotic prophylaxis for wound infections in total joint arthroplasty A SYSTEMATIC REVIEW
B AlBuhairan, D Hind… - Journal of Bone & Joint …, 2008 - bjj.boneandjoint.org.uk ... 36 , 37 , 43 The recorded route of administration in most studies was **intravenous** and only ... When comparing the use of systemic antibiotics with antibiotic-impregnated cement, one study 45 ... results show that there is no evidence that any type of antibiotic prophylaxis has better ...

**Using PHMB antimicrobial to prevent wound infection**

K Moore, D Gray - Wounds uK, 2007 - wounds-uk.com ...

... On the basis that the attributable cost to treat an SSI was US$15,646, the ... PHMB-containing dressings makes them a cost-effective option for prophylactic prevention of SSIs. ... Beneke MJ, Doner J (2005) Observation of nosocomial surgical-site infection rates with utilisation of ...

**Antibiotic prophylaxis in orthopedic prosthetic surgery**

F De Lalla - Journal of chemotherapy, 2001 - ingentaconnect.com ...

... Total knee replacement, orthopedic prosthetic surgery, staphy- lococcal infection, surgical infection, teicoplanin, glycopeptide ... parison of teicoplanin and cefuroxime as prophylaxis for orthopaedic implant surgery ... 1 (0.5) llb 6th post-operative surgical debridement day iv antibiotics ...

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More

**Published Research – Search Strategy**

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