The metric of appropriateness is meaningful for both orthopedic surgeons and AMS programs. Targeted quality improvement projects are needed for orthopedic surgical procedures and to study the engagement between orthopedic surgeons, AMS, and guideline developers to support optimization of antimicrobial use in the surgical setting.
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Oral Presentation

Bloodstream Infections with Typical Probiotic Organisms

Sara Gore, Oregon Health and Sciences University; Kendall Tucker, Oregon State University Pharmacy Portland, Oregon State University Lynne Strasfeld

Background: Probiotics are protective against *Clostridioides difficile* infection and antibiotic-associated diarrhea, and they may decrease risk of infections following complex abdominal surgeries. Infectious risks associated with probiotic use are not well described in the literature. We describe probiotic use among patients with bloodstream infections (BSIs) due to organisms typically found in probiotics. **Methods:** Patients with positive blood cultures with *Lactobacillus* spp, *Saccharomyces* spp, and *Bifidobacterium* spp at our large academic hospital from October 2016 through October 2019 were identified using Theradoc, a clinical surveillance tool. Clinical data and orders for probiotics, including probiotic capsules, probiotic yogurt, and kefir, were extracted from the electronic medical record. Cases were considered distinct if the cultures were collected 7 or more days apart. True infections were defined as positive cultures which were treated with antimicrobials and had provider documentation outlining clinical relevance of culture data. **Results:** Among 26 distinct episodes of BSI, 16 (62%) were considered true infections. The remaining 10 cases were interpreted as contaminants or of unclear significance. Of the 16 cases representing true infection in 14 patients, 6 (38%) had received probiotics in the hospital in the preceding month. Among these patients, 5 had *Lactobacillus* bacteremia and had received *Lactobacillus* capsules, probiotic yogurt, and/or kefir. One patient had *Saccharomyces* fungemia following receipt of probiotic yogurt and kefir. All 6 patients with BSI possibly related to probiotic use had an antecedent gastrointestinal procedure or surgery within a month of the BSI, and 2 had intra-abdominal abscesses from which the same organism was cultured. Of the 16 true BSIs, 9 occurred in immunocompromised hosts, but antecedent probiotic use was confirmed in only 1 of these cases. Two episodes caused by different organisms occurred within the same month; all other episodes were >60 days apart. **Conclusions:** In our retrospective review of BSIs with organisms typically found in probiotics over a 3-year period at a large academic hospital, more than one-third of those with clinically relevant BSIs had antecedent probiotic use within the hospital. All patients with infections possibly related to probiotic use had recent gastrointestinal procedures or surgery, raising concern for probiotic use following interventions that increase the risk for gastrointestinal tract leakage or translocation. Further research is necessary to assess the risk of bloodstream infection in postoperative patients treated with probiotics.
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Bright STAR Collaborative Consensus Guidelines for Blood Culture Use in Critically Ill Children

Charlotte Woods-Hill, 1.) Children's Hospital of Philadelphia 2.) University of Pennsylvania 3.) Leonard Davis Institute of Health Economics; Anping Xie; Danielle Koontz, Johns Hopkins University; Annie Voskertchian, Johns Hopkins University; Marlene Miller, UH Rainbow Babies and Children's Hospital; James Fackler, Johns Hopkins University, School of Medicine; Judy Shea, Department of Medicine, University of Pennsylvania; Aaron Michael Milstone, Johns Hopkins University

Background: Blood cultures are essential diagnostic tools used to identify bloodstream infections and to guide antimicrobial therapy. However, collecting cultures without clear indications or that do not inform management can lead to false-positive results and unnecessary use of antibiotics. Blood culture practices vary significantly in critically ill children. Our objective was to create a consensus guideline focusing on when to safely avoid blood cultures in pediatric intensive care unit (PICU) patients. **Methods:** A panel of multidisciplinary experts, many participating in the Blood Culture Improvement Guidelines and Diagnostic Stewardship for Antibiotic Reduction in Critically Ill Children (Bright STAR) Collaborative, engaged in a 2-part modified Delphi process. Round 1 consisted of a preparatory literature summary and an electronic survey sent to subject matter experts (SMEs). In the survey, SMEs rated a series of recommendations about when to avoid blood cultures on a 5-point Likert scale, 1 being the lowest score and 5 being the highest score. Consensus was achieved for each recommendation if 75% of respondents chose a score of 4 or 5, and these were included in the final guideline. Any recommendations that did not meet these a priori criteria for consensus were set aside for discussion during the in-person expert panel review (round 2). An outside expert in consensus methodology facilitated round 2. After a review of the survey results and comments from round 1 and group discussion, the SMEs voted on these recommendations in real time. Voting was blinded. Participants included Bright STAR site leads, national content experts, and representatives from relevant national societies. **Results:** We received 29 completed surveys from 34 invited participants for an 85% response rate. Of the 27 round 1 recommendations, 18 met predetermined criteria for consensus. Round 2 included 26 in-person voting participants who (1) discussed and modified the 9 recommendations that had not met round 1 consensus, and (2) modified for clarity or condensed from multiple into single recommendations the 18 recommendations that had met the round 1 consensus. The final document contains 19 recommendations that provide guidance on how to safely improve blood culture use in PICU patients (Table 1). Also, 8 recommendations discussed did not reach consensus for inclusion. **Conclusions:** Using a modified Delphi process, we created consensus recommendations on when to avoid blood cultures and prevent overuse in critically ill children. These guidelines are a critical step in disseminating diagnostic stewardship and reducing unnecessary testing on a wider scale.
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