Abstracts • OFID 2021:8 (Suppl 1) • S59

Conclusion. All patients who had complete extraction achieved clinical cure at 3-months follow-up, while high failure rates occurred in those with device retention. Most infections were polymicrobial and predominantly caused by gram-positive pathogens. Thirty percent of patients with re-implantation after complete device extraction developed re-infection within 1 year.

Disclosures. All Authors: No reported disclosures

93. Early Recognition and Response to Increases in Surgical Site Infections (SSI) using Optimized Statistical Process Control (SPC) Charts – the Early 2RIS Trial: A Multicenter Stepped Wedge Cluster Randomized Controlled Trial (RCT) Arthur W. Baker, MD, MPH1; Italian Ilies, PhD2; James C. Benneyan, PhD2; Yuliya Lokhnygina, PhD2; Katherine R. Fey, RN3; Sarah S. Lewis, MD, MPH4; Brittain A. Wood, BSN, RN, CRCSS5; CIC6; Esther Baker, MSN, RN, CIC6; Linda Crane, BSMT (ASCP) SM, CIC7; Kathy L. Crawford, BS, RN, CIC8; Andrea Cromer, BSN, MT, MIPv1, CIC, CPH; Polly W. Padgett, BSN, RN, CIC, FAPIC9; Linda Rosch, BSMT, CIC, CCHM10; Linda Adcock, BSN, CIC, RN11; Nicole Nehls, B.S.12; Joseph Salem, MEng13; Dale W. Bratzler, DO, MPH, FIDSA14; Patch Dellinger, MD15; Linda R. Greene, MPS, RN, CIC16; Susan S. Huang, MD17; Christopher Mantyh, MD18; Deverick J. Anderson, MD, MPH19; 1Duke University School of Medicine, Durham, North Carolina; 2Northeastern University, Boston, MA; 3Duke University, Durham, NC; 4Duke Infection Control Outreach Network (DICON), Morrisville, North Carolina; 5Duke University School of Medicine, Durham, North Carolina; 6Oklahoma University Health Sciences Center, Oklahoma City, OK; 7University of Washington School of Medicine, Seattle, Washington; 8University of Rochester Medical Center Affiliate, Rochester, New York; 9University of California, Irvine, Irvine, CA; 10Duke Center for Antimicrobial Stewardship and Infection Prevention, Durham, North Carolina

Session: O-20. Infection Risks from Invasive Procedures

Background. Traditional approaches for SSI surveillance have deficiencies that can delay detection of SSI outbreaks and other clinically important increases in SSI rates. Optimized SPC methods for SSI surveillance have not been prospectively evaluated.

Methods. We conducted a prospective multicenter stepped wedge cluster RCT to evaluate the performance of SSI surveillance and feedback performed with optimized SPC plus traditional surveillance methods compared to traditional surveillance alone. We divided 13 common surgical procedures into 6 clusters (Table 1). A cluster of procedures at a single hospital was the unit of randomization and analysis, and 105 total clusters across 29 community hospitals were randomized to 12 groups of 8-10 clusters (Figure 1). After a 12-month baseline observation period (3/2016-2/2017), the SPC surveillance intervention was serially implemented according to stepped wedge assignment over a 36-month intervention period (3/2017-2/2020) until all 12 groups of clusters had received the intervention. The primary outcome was the overall SSI prevalence rate (PR=SSIs/100 procedures), evaluated with a GEE model with Poisson distribution.

Table 1

| Cluster | Procedures |
|---------|------------|
| Cardiac | Coronary artery bypass graft |
| Gastrointestinal | Colon |
| | Herniorrhaphy |
| Joint | Knee arthroplasty |
| | Hip arthroplasty |
| Obstetrics and gynecology | Cesarean section |
| | Hysterectomy |
| Vascular | Vaginal hysterecmty |
| | Carotid endarterectomy |
| | Peripheral venous bypass |

Schematic for stepped wedge design. The 12-month baseline observation period was followed by the 36-month intervention period, comprised of 12 3-month steps.

Results. Our trial involved prospective surveillance of 237,704 procedures that resulted in 1,952 SSIs (PR=0.82). The overall SSI PR did not differ significantly between clusters of procedures assigned to SPC surveillance (781 SSIs/89,339 procedures; PR=0.87) and those assigned to traditional surveillance (1,171 SSIs/148,365 procedures; PR=0.79; PR ratio=1.10 [95% CI, 0.94–1.30]; P=.25) (Table 2). SPC surveillance identified 104 SSI rate increases that required formal investigations, compared to only 25 investigations generated by traditional surveillance. Among 10 best practices for SSI prevention, 453 of 502 (90%) SSIs analyzed due to SPC detection of SSI rate increases had at least 2 deficiencies (Table 3).
Compliance with 10 best practices for surgical site infection (SSI) prevention among SSI studies analyzed during SSI investigations generated by statistic process control surveillance.

**Conclusion.** SPC methods more frequently detected important SSI rate increases as compared to standard infection surveillance; however, feedback of this information did not lead to SSI rate reductions. Further studies are needed to determine the best application of SPC methods to improve adherence to SSI quality measures and prevent SSI.

**Disclosures.** Arthur W. Baker, MD, MPH, Medline (Advisor or Review Panel member); Susan S. Huang, MD, MPH, Medline (Other Financial or Material Support, Conducted studies in which participating hospitals and nursing homes received contributed antiseptic and cleaning products); Molnycke (Other Financial or Material Support, Conducted studies in which participating hospitals and nursing homes received contributed antiseptic and cleaning products); Stryker (Other Financial or Material Support, Conducted studies in which participating hospitals and nursing homes received contributed antiseptic and cleaning products); Xtrium (Other Financial or Material Support, Conducted studies in which participating hospitals and nursing homes received contributed antiseptic and cleaning products)

Table 3

| Best Practice for SSI Prevention | Compliance with Best Practice, n/N (%) |
|----------------------------------|---------------------------------------|
| Choice of prophylactic antibiotic(s) | 485/502 (97%) |
| Timing of prophylactic antibiotic(s) | 485/502 (97%) |
| Weight-based dose of prophylactic antibiotic(s) | 485/502 (97%) |
| Re-dosing of prophylactic antibiotic(s) | 38/502 (7.6%) |
| Skin antiseptic with appropriate agent | 402/502 (80%) |
| Maintenance of perioperative normothermia | 379/502 (75%) |
| Operative and postoperative supplemental images* | 77/525 (15%) |
| Postoperative glucose monitoring and control | 322/502 (64%) |
| Use of SSI prevention checklist | 15/502 (30%) |
| Prophylactic oral antibiotics and mechanical bowel preparation* | 28/727 (3.9%) |
| Procedures with at least 1 best practice deficiency | 499/502 (99%) |
| Procedures with 2 or more best practice deficiencies | 1/502 (0.2%) |

*Analysed for surgeons requiring re-dosing based on surgery duration and antibiotic choice.

*Analysed for colorectal surgery only.

94. Infectious Complications of Left Ventricular Assist Devices

Courtney Harris, MD; Lara Coakley, CNP; Mandeep R. Mehra, MD; Hari R. Mallidi, MD; Lindsey R. Baden, MD; Ann E. Woolley, MD, MPH

**Session:** O-20. Infection Risks from Invasive Procedures

**Background.** Left ventricular assist devices (VAD) have significantly increased survival for patients with advanced heart failure. With advances in device development the past 10 years have improved thrombotic and bleeding complications, infection remains a significant cause of morbidity and mortality. We assessed the incidence and risk factors for the increased risk of non-device associated infections in VAD patients.

**Methods.** A single center, retrospective study of patients who had VAD implanted between January 2007 and December 2020 was performed. Patients with concurrent right side mechanical circulatory support devices were excluded. Patient demographics, clinical characteristics, labs, microbiology data, and antimicrobials were obtained from the electronic medical records. Clinical outcomes were adjudicated by 2 independent physicians. VAD infections were classified using the ISHLT 2011 guidelines.

**Results.** 241 patients had durable VAD implanted in this 14-year period, with a median time of 3 years follow-up. 134 (56%) patients had a clinically significant infection; 42 (17.3%) were VAD specific infections, 42 (17.3%) were VAD related, and 50 (20.6%) were non-VAD infections. 57 (23.6%) died compared to 33 of 107 (31%) without an infectious complication. Further studies are needed to assess the immunologic risk factors for the increased risk of non-device associated infections in VAD patients.

**Conclusion.** More than half of VAD patients at our center during a 14-year time period had an infectious complication and higher mortality rate compared to those without an infectious complication. Further studies are needed to assess the immunologic risk factors for the increased risk of non-device associated infections in VAD patients.

**Disclosures.** Mandeep R. Mehra, MD; Abbott (Consultant); Baim Institute for Clinical Research (Consultant); FineHeart (Consultant); Nupulse CV (Consultant); Ann E. Woolley, MD, MPH, COVAX (Consultant)

Table 1

| Characteristic              | Infection, n=134 | No Infection, n=107 |
|----------------------------|------------------|---------------------|
| Age (median, range, years) | 59 (25-76)       | 59 (18-73)          |
| Sex                        |                   |                     |
| Male                       | 111 (82.6%)      | 87 (81.3%)          |
| Race                       |                   |                     |
| White non-Hispanic         | 113 (83.4%)      | 90 (84.1%)          |
| Black non-Hispanic         | 31 (23.1%)       | 13 (12.1%)          |
| Asian non-Hispanic         | 3 (2.2%)         | 3 (2.8%)            |
| Hispanic                   | 7 (5.3%)         | 1 (0.9%)            |
| Smoking                    |                   |                     |
| Current                    | 6 (4.5%)         | 3 (2.8%)            |
| Former                     | 72 (53.7%)       | 59 (55.1%)          |
| Never                      | 56 (41.8%)       | 45 (42.1%)          |
| Diabetes                   | 55 (41.4%)       | 37 (37.0%)          |
| CKD stage 3                | 41 (30.6%)       | 27 (25.2%)          |
| BMI (pre-VAD)              | 81 (60.4%)       | 62 (57.9%)          |
| End present at time of VAD placement | | |
| Yes                        | 114 (85.3%)      | 97 (90.7%)          |
| Prophylactic support       | 29 (21.6%)       | 23 (21.5%)          |
| (NSAID/ECBM)               |                   |                     |
| Roaon for VAD placement    |                   |                     |
| Bridge to transplant       | 55 (41.9%)       | 65 (60.9%)          |
| Bridge to decision         | 9 (6.7%)         | 8 (7.5%)            |
| Destination therapy        | 70 (52.2%)       | 34 (31.8%)          |
| Type of VAD                |                   |                     |
| HeartMate II               | 82 (61.2%)       | 51 (47.7%)          |
| HeartMate III              | 32 (23.9%)       | 37 (34.6%)          |
| HeartWare                  | 20 (14.9%)       | 19 (17.7%)          |
| Length of index hospitalization, (days, median) | 26 (24) | 20 (20) |

95. Impact of Penetrating Trauma on Surgical Site Infection Standardized Infection Ratio (SIR) for Colon Procedures

Kecley M. Boston, MPH, CIC, CPHQ, FAPIC; Misti Ellsworth, DO; Jocelyn Thomas, MPH, CIC, CSSGB; Tawanna A. McNinch-Cole, MS, BSN, RN, CIC; Luis Ostrosky-Zeichner, MD; Infection Prevention & Management Associates, Houston, TX; Memorial Hermann, Houston, Texas; Memorial Hermann Healthcare System, Houston, TX; University of Texas Health Science Center, Houston, Texas

**Session:** O-20. Infection Risks from Invasive Procedures

**Background.** Colon surgery (COLO) is one of the focus areas for the Centers for Medicare and Medicaid Services (CMS) Hospital Inpatient Quality Reporting (IQR) Program. Standardized criteria from the National Healthcare Surveillance Network (NHSN) are used to define surgical site infections (SSI) and to assess and weight standardized risk variables, so that all organizations can be judged to the same standard. Performance is compared though use of a standardized infection ratio (SIR), which is the observed number of infections, divided by the "predicted" number of infections, given the number and type of surgeries performed.

**Methods.** A retrospective review of medical records and NHSN documentation was conducted for 778 COLO procedures that were performed at a large academic and level 1 trauma center between January 2019 and December 2020. Initial review of the data showed that the increases in SIR were primarily concentrated in trauma patients with intestinal injury and fecal spillage. SIR for adult procedures were calculated using the CMS IQR. The CDC NHSN Statistics Calculator was used to compare SIR for