differences in terms of performance. The hospitals generally did well in terms of the AMS team (ie, comprising at least a physician leader responsible for AMS activities, a pharmacist, and infection control and microbiology personnel), and access to a timely and reliable microbiology service, with mean positive response rates (PRR) of ≥ 80% for these indicators (Figure 1). In the core components of AMS program interventions, and AMS monitoring and reporting, the lower mean PRR (> 60%) revealed that Asia has wider gaps in these areas versus gold standards. Although many hospitals had formal hospital leadership statements to support AMS (mean PPR 85.6%), this was not always matched by allocated financial support for AMS activities (mean PPR 57.1%).

Figure 1

Conclusion.

For all core components of an AMS program, most Asian hospitals participating in this survey fell short of international gold standards. Inter-country differences in gaps highlight that country-specific solutions are needed to improve current standards in AMS.

Disclosures.

Tetsuya Matsumoto, MD; PhD, MSD (Speaker’s Bureau), Pfizer

92. Characteristics and Outcomes of Deep Brain Stimulation Device Related Infections: Experience from Quaternary Centers

Hussam Tabaja, MD; Don Bambino Geno Tai, MD, MBA; Cristina G. Corsini Campioli, MD; Supavit Chesdachai, MD; Daniel DeSimone, MD; Maryam Mahmood, M.B., Ch.B.; Mayo Clinic, ROCHESTER, MN

Session: O-20. Infection Risks from Invasive Procedures

Background. Increasing use of deep brain stimulation (DBS) over the past 20 years is paralleled by a rise in DBS infections. There is a paucity of data on the diagnosis, management, and outcomes in such infections. We describe our center’s experience with DBS infections.

Methods. Adults (> 18 years) diagnosed with DBS associated infection between January 1, 2000 and May 1, 2020 were retrospectively reviewed. Data on patient demographics, clinical presentation, microbiology, and management was collected.

Results. Seventy cases were identified (Table 1). The mean age at diagnosis was 58.9 ± 16.5 years. The bulk were free of comorbidities. Parkinson’s disease and essential tremors were the most common indications for DBS placement. The median time from implantation to infection was 4 months (IQR 1, 24). The neurotransmitter and extension wires were the most frequently infected parts. A microbiological diagnosis was made in 89% of cases, 47% of which were polymicrobial. The most commonly identified organisms were Staphylococcus aureus, Cutibacterium acnes, and coagulase-negative staphylococci. For patients with deep infection, 71% had complete device extraction, 20% partial extraction, and 9% device retention; clinical cure at 3 months occurred in 97%, 64% and 100%, respectively (Figure 1). On the other hand, 93% of patients with superficial infection had device retention; cure at 3 months was seen in 64% (Figure 2). Suppressive oral antibiotics were rarely used, 45% of patients with partial extraction and 26% with device retention. DBS was reimplanted in 71% of patients after complete extraction and led to reinfection in 30% at 1 year follow up. Median time to reimplantation was 2.7 months. All patients who failed at 3 months in the partial extraction and device retention cohorts subsequently underwent complete device removal leading to clinical cure sustained at 1 year follow up.

Table 1

| Infections for DBS Placement | Partial device retention | Complete device extraction | Partial device extraction |
|-----------------------------|--------------------------|---------------------------|--------------------------|
| Parkinson’s disease         | 85%                      | 85%                       | 85%                      |
| Dementia                    | 85%                      | 85%                       | 85%                      |
| Diabetes                    | 60%                      | 60%                       | 60%                      |
| Obstructive sleep apnea     | 94%                      | 94%                       | 94%                      |
| ACS                          | 60%                      | 60%                       | 60%                      |
| Other                        | 57%                      | 57%                       | 57%                      |

Figure 1. Management and outcomes of Deep device infections

Figure 2. Outlines the management and outcomes of 75 patients with deep DBS associated device infection. Patients with device exposure or evidence of pathologic material surrounding device, seen by imaging or by incision and drainage, were considered to have deep infection. Cure was defined as clinical resolution of signs and symptoms without evidence for recurrence from date of infection onset until the specified time of follow up. Failure was defined as persistence of signs and symptoms of infection or recurrence of symptoms after transient resolution from date of infection onset until the specified time of follow up.

* Subsequently underwent complete device removal

** All had failure after re-implantation
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.

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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; Iulian Ilies, PhD2; James C. Benneyan, PhD3; Yulika Lokhnygina, PhD3; Katherine R. Foy, RN3; Sarah S. Lewis, MD, MPH3; Brittain A. Wood, BSN, RN, CRCP, CIC4; Esther Baker, MSN, RN, CIC4; Linda Crane, BSN,ASCP,SM5; Christopher Mantyh, MD1; Deverick J. Anderson, MD, MPH10; 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 Infection Control Outreach Network, Durham, North Carolina; 6Oklahoma University Health Sciences Center, Oklahoma City, OK; 7University of Rochester Medical Center Affiliate, Rochester, New York; 8University of California, Irvine, Irvine, CA; 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.

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).