

SSIs. However, we did not achieve an overall decrease in SSIs, likely due to increased reporting of SSIs through improved SSI surveillance. However, important gains were achieved in improved healthcare worker knowledge and practice through the implementation of an SSI care bundle. Fluctuations in checklist compliance reflected COVID-19 surges.

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Subject Category: SSIs

Abstract Number: SG-APASIC1092

Bundled preoperative preparation reduced surgical-site infections

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Objectives: We aimed to reduce the overall surgical-site infection (SSI) rate to 0.2%. **Methods:** A new checklist protocol was developed based on the APASIC guidelines. The bundle for preoperative preparation was implemented: adequate preoperative bathing, proper time of hand-forearm washing, and sufficient contact time of antiseptic application. The compliance rate was monitored with a weekly control chart from December 2019 to November 2020. **Results:** In total, 9,995 cases were operated at Narasuan University Hospital (NUH) in 2020, classified by surgical wound type as follows: clean wound, 62.6%; clean-contaminated wound, 32.1%; contaminated wound, 0.8%; and dirty wound, 4.5%. According to surgical wound type, the mean compliance with preoperative bathing was 68.22% for clean wounds, 68.33% for clean-contaminated wounds, and 34.82% for contaminated wounds. Hand hygiene preparation compliance was higher for clean wound surgeries (mean, 94.01%) and clean-contaminated wound surgeries (mean, 95.05%) than for contaminated wound surgeries (mean, 88.30%). A high percentage was achieved by the 3 groups. The rate of skin antiseptic preparation compliance was higher in the clean wound group (mean, 89.05%) and the clean-contaminated wound group (mean, 90.70%) than the contaminated wound group (mean, 68.12%). The lower rate might be due to time constraints in contaminated wound operations. Only 0.18% of clean-wound operations had SSIs, and the clean-contaminated wound group had 0.19% SSIs, whereas no SSIs occurred in the contaminated and dirty wound groups. The overall SSI rate was 0.17%; thus, we achieved our goal. **Conclusions:** A bundle of preoperative infection-prevention preparations reduced the rate of SSI. Furthermore, the bundle had a highly tangible positive impact for both internal and external stakeholders, and it was effective in ensuring good practice regarding preoperative preparation.

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Redesign of outpatient clinic clean care to decrease postoperative SSIs after orthopedic implants

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Objectives: Based on Sardjito Hospital surveillance data in 2020, the incidence of SSI in orthopedic implant surgery was 46 cases (4.7%), mostly in the outpatient clinic. We evaluated some of the potential risks and proposed redesign of infection prevention and control measures in April 2021 to improve the overall clean care at the orthopedic outpatient clinic. **Methods:** We conducted an operational study to redesign various components of clean care using a before-and-after evaluation of infection risk. The study was led by an IPC nurse and was supported by all levels of stakeholders at Sardjito Hospital, a referral and academic hospital in Yogyakarta, Indonesia, during May–September 2021. **Results:** The redesigned components covered continuing professional development (CPD) through a workshop on clean care and wound care for doctors

and nurses. The workshop also encouraged high-level management to make several important changes: (1) to redistribute medical staff schedules, (2) to start online patient registration to better distribute and decrease patient loads, (3) to set up the waiting room as well as the dressing room with strictly separate between dirty and clean areas, (4) to schedule daily general disinfection at noon during service hours, and (5) to perform routine air disinfection after daily clinic services as well as placing an additional portable HEPA filter for continuous air disinfection. After these changes, during 2021, 7 SSIs occurred among postoperative orthopedic implant patients, a decrease of 85%. We observed more clean and neat rooms without patient overcrowding as well as easy and comfortable flow of patients and staff. Environmental pathogen germ counts decreased significantly. **Conclusions:** A redesign project at the orthopedic outpatient clinic reduced the incidence of postoperative SSIs and reduced the number of environmental pathogens. Overall clean care is a basic strategy in IPC for improving patient safety.

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Microbiological surveillance of endoscopes in a Singapore tertiary-care academic hospital: A retrospective study from 2018 to 2021

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Objectives: Improper reprocessing of endoscopes may result in healthcare-associated infections. Regular microbiological surveillance is an important means of evaluating the quality of endoscope reprocessing. We evaluated the effectiveness of reprocessing endoscopes (including the protocols on steps to be taken in the event of any positive microbiological results) in a sterile supply unit (SSU) and an endoscopy unit in a Singapore tertiary-care academic hospital. **Methods:** Singapore General Hospital (SGH) is a 1,750-bed, tertiary-care, academic medical center in Singapore with 2 main SSUs: 1 inpatient endoscopy unit and 1 outpatient endoscopy unit. We reviewed microbiological surveillance results from endoscopes following reprocessing from January 2018 to December 2021. In total, 160 endoscopes (27 bronchoscopes, 58 gastroscopes, 52 colonoscopes, 6 duodenoscopes, 5 echoscopes, 5 cystoscopes, 5 rhinolaryngoscopes, and 5 enteroscopes) and 15 automated endoscope reprocessors (AERs) were evaluated for the presence of microorganisms. Samples were obtained by swabbing the tip of the scope and the biopsy channel. Fluid was flushed from the biopsy channel after reprocessing, and this water from the AERs was sampled after waterline disinfection. **Results:** Of the 15,783 samples collected, 15,667 (99.3%) yielded no growth; 36 (0.2%) were positive for gut and environmental flora; and 80 (0.5%) were positive for low-concern organisms such as skin flora. **Conclusions:** Microbiological surveillance yielded a high percentage of negative results confirming the effectiveness of endoscope reprocessing. This quality-assurance process is necessary and beneficial in achieving patient safety.

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Abstract Number: SG-APASIC1084

Reduce cost and reesterilization rate of reusable medical device sets by reorganizing and rearranging packaging and process

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Objectives: We evaluated the reesterilization rate, user satisfaction, and cost of reesterilization after rearranging and packing of reusable instrument sets. **Methods:** For 1 month in July 2018, we conducted an observational

prospective study in 39 service departments for which sterilization and instrument packing was done by the central sterile supply department (CSSD). Common sterile instrument sets (eg, intercostal drainage (ICD) sets, bone-marrow aspiration sets, or suture sets) were analyzed to set up basic surgical instruments for common procedures and specific instruments for each procedure. Sets for common procedures were then packed and rearranged for use universally in various procedures separately from specific instruments. A questionnaire survey was delivered to all 39 service departments to evaluate user satisfaction. The resterilization rates and cost analyses before and after the rearranging and packing were compared for their effectiveness. The data were analyzed using descriptive statistics for percentage, mean, standard deviation, and inferential statistics. Categorical data were analyzed using the χ^2 test and continuous data were analyzed using a *t* test with significance level of 0.05. **Results:** The resterilization rate decreased significantly from 7.1% to 0.1%. The cost of resterilization decreased from 76,500 Thai baht (US \$2,287) to 4,800 Thai baht (US \$143) within 1 month. Overall, user satisfaction regarding this intervention was 85.2%. **Conclusions:** This study highlights the need for the evaluation of process and customer demand to improve user satisfaction and reduce hospital cost by customizing the sterilization packaging and rearranging process.

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A quantitative assessment of ATP bioluminescence on dental instruments reprocessed by automated washer-disinfector and ultrasonic machine

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Objectives: Dental instruments are contaminated by blood and saliva during dental procedures. To prevent cross infection, all contaminants should be removed from the surfaces of instruments. Inadequate cleaning can hinder disinfection and sterilization process. To compare the cleaning efficacy of an automated washer–disinfector versus an ultrasonic machine on dental instruments, adenosine triphosphate (ATP) measurements were compared. **Methods:** From National University Polyclinic Bukit Panjang Dental Services, we collected 2 loads of 40 dental instruments previously used in dental treatments: extraction forceps, high-volume suction tips, Coupland elevators, matrix band holders, and ultrasonic scaler tips. At the point of use, gross soil was wiped from instrument surfaces with water. Each instrument was swabbed after cleaning either using a washer–disinfector or an ultrasonic machine. The relative light units (RLU) on the luminometer indicated the amount of ATP contaminants and residue bioburden present on the instruments. **Results:** The mean RLU values across all instruments in the washer–disinfector group was 2.5 times lower than the mean value of the instruments in the ultrasonic group (35.4 vs 89.9 RLU). This difference was statistically significant for all instrument groups except for the high-volume suction tips. The Mann-Whitney *U* test indicated that the RLU in the ultrasonic group was higher than the RLU for the washer–disinfector group for extraction forceps ($P < .001$), ultrasonic scaler tips ($P < .023$), and matrix bands ($P < .006$). A *t* test indicated the same relationship for Coupland elevators ($P < .005$). **Conclusions:** The mean RLU values for both cleaning methods were lower than the manufacturer's benchmark ($RLU \leq 150$), suggesting that both methods can achieve effective cleaning. However, cleaning using an automated washer–disinfector is significantly more effective than an ultrasonic machine for nonlumen instruments. The effectiveness of cleaning using ultrasonic machine varied greatly among different types of instruments with different design complexities.

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Effectiveness of sterilization practice in reprocessing medical devices among different multidisciplinary tertiary-care hospitals in Dhaka City
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Objectives: Sterilization failure is one of the main causes of surgical-site infections. We assessed the effectiveness of the sterilization process of surgical instruments to determine the reasons for sterilization failure. **Methods:** In total, 100 sterilization cycles were observed from February 4, 2022, to September 5, 2022, in hospitals in Dhaka City. We used sterilization quality assurance monitoring tools (ie, biological indicators) for rapid steam and ethylene oxide sterilization methods. Tests were performed using an automatic reading machine, chemical indicator strips, and indicator tape for both steam and ethylene oxide methods. For laboratory testing and data collection, APSIC guidelines were followed. All samples were incubated for 48 hours to cross check the accuracy of the auto-reader result. **Results:** All ethylene oxide sterilization cycles were 100% successful, as shown by the rapid biological indicator (auto-reader), chemical indicator strips, and indicator tape. However, 22% sterilization failure occurred with steam sterilization, which was confirmed by the auto-reader, chemical indicator strips, and indicator tape. All biological samples showed no growth after 48 hours of incubation, except the sample from steam sterilization, which did show growth after 48 hours of incubation. **Conclusions:** We detected 22% steam sterilization failure, and serious harm to patients could occur if these surgical instruments were used for surgery. Process recall would not have been not possible if rapid biological indicator tests had not been performed and other chemical monitoring tools had not been used. The regular use of monitoring tools according to guidelines can be a reliable solution to reduce surgical site infections caused by inappropriate sterilization of surgical instruments.

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Subject Category: Sterilization and Disinfection

Abstract Number: SG-APSIC1130

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Objectives: We noted moisture in Thompson retractor sets after steam sterilization in our hospital. Moisture can cause severe problems leading to potentially contaminated instruments that carry infection risk to patients and cause procedure delays, wasted time and effort, greater workload, and higher costs. We sought to reduce the number of retractor sets with moisture to zero. **Methods:** The central sterile supply (CSS) team discussed the cause of the problem. We hypothesized that temperature difference between the sterilizer chamber and inside the container might create condensation and thus moisture in the final surgical set. We collected and analyzed data and proposed an experiment to improve the sterilization process. We performed a trial of sterilization process improvements pertaining to proper loading technique and the packaging process. We also evaluated the appropriate drying time for rigid containers. We then rearranged the process and adjusted the cooling time from 30 to 60 minutes after steaming. **Results:** Moisture in Thompson retractor packs occurred because of thicker, rigid containers. We removed the previous type of lining material to separately steam the rigid surgical instrument, and we extended the cooling time to 60 minutes. We updated standard operation procedures and continued to monitor and re-evaluate the process. **Conclusions:** We identified the primary cause of moisture in Thompson retractor sets after steam sterilization. We illustrated that avoiding sterilizer overload, avoiding contact with fabric wrapping materials, and proper cooling time kept