

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  $\chi^2$  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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**Abstract Number:** SG-APUSIC1045

**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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**Abstract Number:** SG-APUSIC1206

**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, APUSIC 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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**Abstract Number:** SG-APUSIC1130

**Zero wet pack Pimporn Sirikraiwanawong, Thailand**

**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

the pack moisture free. Occurrences of moisture in surgical packs after sterilization should be reported and handled efficiently by CSS personnel to preserve quality and avoid waste.

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**Abstract Number:** SG-APUSIC1149

**Continuous quality improvement project: Changing from sterile to clean perineal care sets at Maharaj Nakorn Chiang Mai Hospital**  
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**Objectives:** The central sterile supply department (CSSD) provides sterile perineal care sets (SPC sets) for use with patients. However, the SPC sets exceed the standard, and the sterilization process incurs high cost. Therefore, a CSSD nursing team set out to find ways to save costs by providing clean perineal care sets (CPC sets) instead of sterile sets. We examined the rate of catheter-associated urinary tract infection (CAUTI) after using CPC sets, measured the satisfaction of the nursing staff who use the CPC sets, evaluated the decrease in the cost to the hospital. **Methods:** The CSSD nursing team presented some evidence of the benefits of using the CPC sets to the infection control subcommittee and asked for their approval to use CPC sets instead of SPC sets. After approval by the subcommittee, the CSSD nursing staff began to use CPC sets for patients. The incidence of CAUTI was monitored, and a satisfaction survey of the nurses who used the CPC sets was performed. We compared the costs between the SPC set and the CPC set to determine the cost savings. **Results:** The CAUTI rate did not change after using CPC sets. The nurses who used the CPC sets indicated no difference in satisfaction between the SPC and CPC sets, and the cost of the CPC set was cheaper than the SPC set (27 Baht per set). **Conclusions:** In a quality improvement effort, using the CPC set was safe for patients. The users were satisfied with the CPC set and trusted the safety of the instruments. Moreover, using the less expensive CPC sets saved the hospital >700,000 Baht per year.

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**Sequential time workforce management**

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**Objectives:** Since 2018, the workload in the central sterilization services department (CSSD) has intensified as surgeries have increased. The extended operative time among complicated surgical cases has also led to shortages of resterilized surgical instruments. One factor influencing these shortages was inadequate CSSD staff during high workload periods. We developed a strategy to improve the availability of resterilized instruments. We sought to reduce wasted time and improve effectiveness of surgical instrument preparation by adopting a shift-work arrangement. We additionally sought to minimize unorganized instrumentation and surgical equipment loss. **Methods:** Team members investigated workload disproportion shift by shift. We devised a practical arrangement of staff for each work shift by dividing manpower in ratios based on workload. **Results:** The period from 10:00 A.M. to 7:00 P.M. was the period of most intense workload in the CSSD. However, 3 staff worked the morning shift and 2 staff worked the evening shift (4:00 P.M.– 2:00 A.M.). We reassigned 1 person to work from 8:00 A.M. to 4:00 P.M. and 2 persons for an extra shift from 10:30 A.M. to 6:30 P.M. After the manpower readjustment, surgical equipment damage and loss decreased from 57 to 26 losses per year from 2018 to 2021. In addition, work productivity increased from 85% to 115%. Worker satisfaction improved >70%. **Conclusions:** Internal inconsistency concerning instrumental preparation and improper instrument arrangement can affect surgery time. By addressing

workload and shift distribution of labor, productivity notably improved, with higher satisfaction and a dramatic decrease in surgical equipment loss.

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**BHQ instrument management at Bangkok Hospital**

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**Objectives:** We evaluated the BHQ instrument management strategies at Bangkok Hospital as well as the general instrument and surgical instrument inventories to develop effective management of general and surgical instruments. **Methods:** A survey of instruments that had been used and were ready for use was conducted in all departments of Bangkok Hospital. Data were collected and analyzed using statistical methods to adapt the “refill and reduce” strategy. We determined usage rates from each department to determine inventory needs based on the principles that patients are safest with sufficient instruments available and that the central sterilization supply department (CSSD) can provide the best inventory management. **Results:** Our evaluation revealed that BHQ instrument management strategies can assist the hospital in reducing the cost of resterilizing instruments and thus can lower the workload and reduce tracking conflicts related to overdue instruments. **Conclusions:** This report confirmed earlier findings that Bangkok Hospital can have more instruments ready to use and can reduce costs without buying replacement instruments by using a strategy of “filling missing parts and cutting the excess.”

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**Abstract management services for the sterilization of single-use medical supplies**

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**Objectives:** Single-use medical supplies are usually expensive, resulting in excess costs for hospitals and patients. Reusing single-use medical devices by resterilization or reprocessing has thus been enacted. We compared the cost of resterilizing single-use medical supplies with the cost of new purchases to reduce the unnecessary resterilization of medical supplies. **Methods:** The central sterile supply department (CSSD) listed single-use medical supplies that were sent for resterilization. Policies and guidelines for reusing or resterilizing single-use medical supplies were established following the standards for disinfection and sterilization. The costs of the resterilizing process for single-use medical supplies were compared with the expenses of new purchases of those medical supplies. **Results:** In 2019, many medical supplies were resterilized, and the resterilization of single-use devices cost up to 2,352,270 Thai baht (US \$68,340). Since this project was implemented in fiscal year 2020 (October 1, 2019–September 30, 2020), the resterilization of medical supplies has decreased, and the cost of resterilization has decreased to 1,356,280 Thai baht (US \$40,557), leading to a saving of 995,990 Thai baht (US \$29,783, or 42% of the resterilization cost in 2019). The CSSD proposed a resterilization policy in which resterilization for reuse must be done for medical supplies and/or devices that cost  $\geq 1,000$  Thai baht (US \$30). **Conclusions:** Although this project did not reach the target outcome of 100% reduction, the outcome was consistent with the aims of the project. The cost of resterilization of single-use medical supplies can be reduced, and a resterilization system can be developed that assures safety and effectiveness to both service providers and patients.

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