

hand hygiene; therefore, a more robust strategic approach is needed. One such strategy is customized audit with real-time feedback. A literature review highlighted the effectiveness of audit coupled with specific feedback. This approach was also supported by several guidelines and regulatory bodies that recognized the importance of audit and feedback in hand hygiene improvement efforts. For example, the World Health Organization (WHO) has emphasized 5 core components of improving hand hygiene. One of these components is evaluation and feedback. We sought to provide feedback to healthcare personnel when they do not show compliance with the Five Moments of Hand Hygiene. We aimed to achieve >95% hand hygiene compliance among healthcare staff. **Methods:** Information on the use of the hand hygiene feedback card was provided to the auditors. The hand hygiene feedback card procedure began in all the wards in May 2020. This process first started with orientation of the auditors regarding the hand hygiene feedback card, followed by auditing hand hygiene practice. Staff who did not comply with hand hygiene procedures were given real-time feedback via a card that specified the missed hand hygiene movement. **Results:** Overall hand hygiene compliance among healthcare staff increased by 6% after the hand hygiene feedback card procedure was implemented. **Conclusions:** Overall, the hand hygiene feedback card was effective in improving hand hygiene. Through this quality improvement project, significant and sustained gains in hand hygiene compliance rates of >95% can be achieved.

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**Subject Category:** Hand Hygiene

**Abstract Number:** SG-APSIC1171

**A new approach of hand hygiene observation with focus on healthcare worker (HCW) category**

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**Objectives:** The past hand hygiene (HH) compliance rate has indicated the low number of opportunities for some healthcare workers (HCWs) because the infection control liaison officer (ICLO) tended to capture opportunities from nurses who were available, despite the proportional allocation of opportunities per HCW type based on the World Health Organization (WHO) HH methodology. Therefore, HH compliance rates may not have accurately represented the specific HCW type, which may have affected the overall HH compliance rate. We sought to determine an accurate baseline of HH compliance rate with consistent number of opportunities across all HCW categories. **Methods:** HH auditors were ICLOs trained in HH observation by the infection control nurse (ICN) according to the WHO “My Five Moments of Hand Hygiene.” HH observations were conducted bimonthly with assigned areas focusing only on 1 HCW category for each session: nursing, medical, clinical support services, or environmental services. A briefing session was given on the day of observation, with the goal of collecting 20 opportunities per area with HCW focus during their peak activities. Direct feedback and positive reinforcement were given to HCWs after observations were completed. **Results:** A survey of 96 ICLOs indicated that observations based on HCW focus allowed them to capture more HH opportunities and concentrate on their observations. The new approach showed a significant increase in number of opportunities across all HCW categories that was more representative. We also successfully determined a new baseline for all HCW categories, with further breakdown of HCW type. **Conclusions:** A new methodology of HH observation with a focus on HCW category has resulted in more HH opportunities across all HCW categories and improved representation of the HH compliance rate.

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**Abstract Number:** SG-APSIC1038

**Hospital-wide study to evaluate the tolerability and acceptability of alcohol-based hand rubs according to WHO protocol, and healthcare worker hand hygiene behavior during the COVID-19 pandemic**

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**Objectives:** To evaluate the tolerability and acceptability of 3 different alcohol-based hand rub (ABHR) products, and to determine factors influencing hand hygiene (HH) behavior among healthcare workers (HCWs) during the COVID-19 pandemic. **Methods:** A cross-sectional study was conducted in Sarawak General Hospital, a 1,034-bed tertiary-care state hospital. A self-administered 7-point Likert scale questionnaire was adapted from the WHO ‘Protocol for Evaluation of Tolerability and Acceptability of ABHR.’ The study was conducted between November 12 and 26, 2021, based on 3 types of ABHR products. Participation in answering the questionnaire was voluntary, so consent was implied. The Student *t* test was used to determine the significant differences among the ABHR product. The  $\chi^2$  distribution test was performed to evaluate the characteristics of ABHR products. **Results:** We received a response rate of 35% (1,598 of 4,628); 82% of respondents were female, and the overall cohort had a mean age of 35 years. Also, 972 (61%) of 1,598 respondents were nurses, and 1,490 (93%) of 1,598 respondents used ABHR at least 5 days every week. Of 1,598 respondents, 1,156 (72%) indicated that ABHR products were easily accessible at the point of patient care. Evaluation of ABHR products showed that respondents were receptive to all product colors ( $P < .0114$ ) and had no color preference ( $P > .05$ ). Comparison among ABHR products yielded no statistical difference ( $P > .05$ ) for ‘smell,’ ‘stickiness,’ ‘irritation,’ or ‘drying speed.’ ‘Drying effect’ of all products was statistically significant ( $P < .0252$ ). The overall satisfaction for all products was good ( $P < .0022$ ). HCWs did not expect their HH compliance to improve even if they were provided with their preferred choice of ABHR. Of 1,598 respondents, 783 (49%) correctly used a palm-full of ABHR for HH, and 1,275 (80%) indicated that hospital management should organize more HH-related awareness and continuous medical education on HH. **Conclusions:** A comparison among different ABHR characteristics mostly showed no statistically significant difference regarding tolerability and acceptability. These findings suggest that different ABHR products will not influence HH behavior during COVID-19 pandemic.

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**12-hydroxystearic acid upregulates skin antimicrobial peptides in skin models and provides long-lasting protection from bacterial challenge from a handwash formulation**

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**Objectives:** We evaluated the role of 12-hydroxystearic acid (12HSA) in upregulating skin antimicrobial peptides (AMPs) in *in vitro* and *ex vivo*

assays, and 12HSA provides long-lasting germ protection in vivo through a handwash formulation. **Methods:** In vitro assays were performed by treating skin cells, maintained in cell-culture media, with 12HSA. After treatment, AMP gene-expression was measured in cells by RT-qPCR, and secreted AMPs in spent cell culture media were analyzed by ELISA. Skin explants were treated with 12HSA, and 3D-living skin equivalent (LSE) models were treated with 12HSA-containing handwash formulations. AMP levels were measured by immunohistochemical staining or RT-qPCR after treatment. In clinical studies, volunteer forearms were washed multiple times with 12HSA-containing handwash in an ethics-approved study in which participants provided informed consent. The washed forearms were challenged with *E. coli* at different time points after washing. The 12HSA deposition from the formulation was measured using tape strips. **Results:** Skin cells treated with 12HSA showed increased expression of several AMP genes in vitro, and higher psoriasis AMP secretion was measured in cell-culture media. An enhanced level of LL37 AMP was obtained from the skin epidermis of 12HSA-treated explant skin. AMP genes were also upregulated in the 3D-LSE model treated with a 12HSA-containing handwash formulation. A measurable level of 12HSA was deposited from handwash formulation in the in vivo clinical sample. *E. coli* recovery from challenged skin was significantly lower at 6 and 10 hours after washing compared to unwashed skin. **Conclusions:** These data demonstrate that 12HSA boosts skin-AMPs and that a handwash containing 12HSA provides long-lasting germ protection under in vivo test conditions by potentially enhancing skin's natural immunity. With an emerging understanding of skin's innate immunity and AMPs, designing cleansing products that strengthen these natural defenses will offer novel approaches to extend hygiene benefits beyond immediate in-wash protection.

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**Hand hygiene knowledge: Its effect on hand hygiene adherence rate during the COVID-19 pandemic in the primary care setting**

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**Objectives:** Good hand hygiene knowledge among healthcare workers (HCWs) is important in the fight against COVID-19. The coronavirus disease is primarily spread through droplet and contact routes, so hand hygiene and PPE are key infection control measures to protect patients and HCWs. We sought to determine whether hand hygiene knowledge scores had an impact on the hand hygiene adherence rate during a pandemic. **Methods:** Hand hygiene audit observations that were conducted covertly on a monthly basis and are presented as percentages of adherent reactions to moments to wash or sanitize hands. These data were examined in relation to HCW knowledge scores on hand hygiene. The knowledge scores on hand hygiene were analyzed based on 15 questions derived from WHO tools. Scores were determined using a quiz administered in a hand hygiene promotion event. **Results:** In total, 195 HCWs participated and scores on hand hygiene knowledge were ranked into 3 categories: 2% scored  $\geq 90\%$  (high), 60% scored 70%–89% (medium), and 38% scored  $\leq 70\%$  (low). Knowledge scores at the medium level and above were considered satisfactory. Even though 38% of the participants scored  $\leq 70\%$ , there was no direct impact on monthly hand hygiene audit observation rates in the 6 healthcare clinics. Hand hygiene observation rates ranged from 90% to 97%, with an overall mean of 92% for 2021. **Conclusions:** Contrary to studies that have shown the significant impact of knowledge on the hand hygiene adherence rate, our data suggest that a high hand-hygiene adherence rate is achievable and sustainable among HCWs. Adherence could be driven by attention to the importance of hand hygiene associated with the pandemic and potential exposure to COVID-19. High hand-hygiene compliance attains a place of importance in the minds of HCWs during a pandemic crisis.

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**Subject Category:** Healthcare-Associated Infection (HAI) Surveillance

**Abstract Number:** SG-APSIC1108

**Implementation of infection prevention and control in Indonesian hospitals: Identification of strengths, gaps, and challenges in current practices**

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**Objectives:** Infection prevention and control (IPC) in hospitals is key to safe patient care. Currently, no data are available regarding the implementation of IPC in hospitals in Indonesia. We assessed the existing IPC practices in a nationwide survey using the World Health Organization (WHO) IPC assessment framework tool (IPCAF) to identify strengths, weaknesses, and challenges. **Methods:** A cross-sectional study was conducted from July to November 2021. Of all general hospitals in Indonesia, 475 (20%) were selected using stratified random sampling based on class (ie, A, B, C, and D; A being the larger hospitals with  $\geq 250$  beds) and region. IPCAF was translated into Indonesian and was tested in 4 hospitals. Questions were added regarding challenges in the implementation of IPC. Introduction meetings were held online with all selected hospitals, after which the IPCAF was sent as an online questionnaire. **Results:** In total, 355 hospitals (74.7%) participated in this study. The overall median score of IPCAF was 632.5. The level of implementation of IPC was mostly advanced (56.9%), followed by intermediate (35.8%), basic (7.0%), and inadequate (0.3%). The core component with the highest scores was IPC guidelines; almost all hospitals had guidelines on the most important topics, including hand hygiene. Core components with the lowest scores were surveillance of healthcare-associated infections (HAIs), education and training, and multimodal strategies. Although  $>90\%$  of hospitals indicated that surveillance of HAIs was performed, 57.2% reported no availability of adequate microbiology laboratory capacity to support HAI surveillance. The most reported challenges in the implementation of IPC were behavior change and lack of availability of antibiograms. **Conclusions:** The implementation of the IPC core components in most Indonesian hospitals was “advanced.” For surveillance of HAIs, the need for the availability and capability of the microbiology laboratory was revealed.

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