Presentation Type:
Poster Presentation

A Journey of Hand Hygiene (HH) from Basic to Advance Level at a Tertiary-Care Hospital in Karachi, Pakistan

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Background: According to the WHO, hand hygiene is the primary measure to reduce infections. It is a simple act, but the lack of compliance among healthcare workers has been a great concern for all healthcare facilities. Healthcare facilities can perform a situation analysis of hand hygiene promotion and practices according to a set of indicators designed by the WHO in the form of a hand hygiene self-assessment framework. Results can be used to identify areas of improvement and to develop an action plan and strategies accordingly. Low- or middle-income country (LMIC) initial scoring within this framework was 195 points (ie basic level); thus, we aimed to achieve the advanced level, with a score of > 375. **Methods:** The WHO hand hygiene self-assessment framework is a diagnostic tool to identify key issues requiring attention and improvement. Repeated assessments are done to document the progress over time, which allows a health-care facility to track their progress in hand hygiene resources, to conduct promotion activities, to plan their actions, and to achieve improvement and sustainability. We developed an action plan under each category of WHO framework that included: system change, training and education, evaluation and feedback, reminders in workplace, and institutional safety climate for hand hygiene. We implemented the following measures: point-of-care hand hygiene stations were made available at all bedsides; mandatory training was introduced for all healthcare workers, and consumption of hand rub or hand sanitizers and liquid soap was monitored as a consumption indicator. In addition, posters were placed in all wards and clinics, time was dedicated for HH promotion, and a May 5th plan was implemented. HH leaders, role models, and champions were identified from each discipline. Patients were involved in HH promotion; HH leaflets were given to patients, HH e-learning tools were implemented, and a system for personal accountability was initiated, as well as a buddy system for new employees. **Results:** After implementation of multiple strategies in each section of the WHO self-assessment framework, we our overall score increased from basic (ie, 195) to advanced (ie, 395). In addition, category score increased in system change from 60 to 85, in training and education from 35 to 100, in evaluation and feedback from 52.5 to 100, in reminders in workplace from 17.5 to 45, and in institutional safety climate from 30 to 65. **Conclusions:** The WHO hand hygiene self-assessment framework should be utilized by all the hospitals in LMICs as a guide to improve hand hygiene levels.

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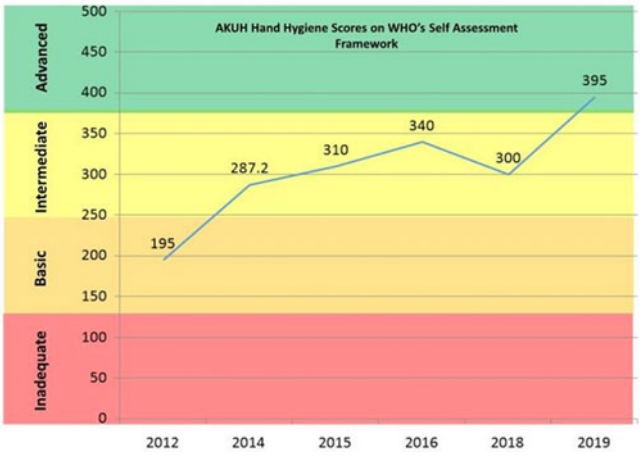

Fig. 1.

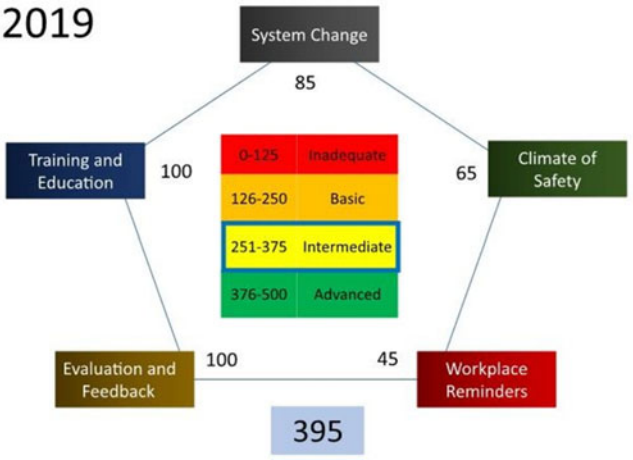

Fig. 2.

Presentation Type:
Poster Presentation

A Large Outbreak of Peritonitis Among Patients on Peritoneal Dialysis (PD) Following Transition in PD Equipment

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Background: Peritoneal dialysis is a type of dialysis performed by patients in their homes; patients receive training from dialysis clinic

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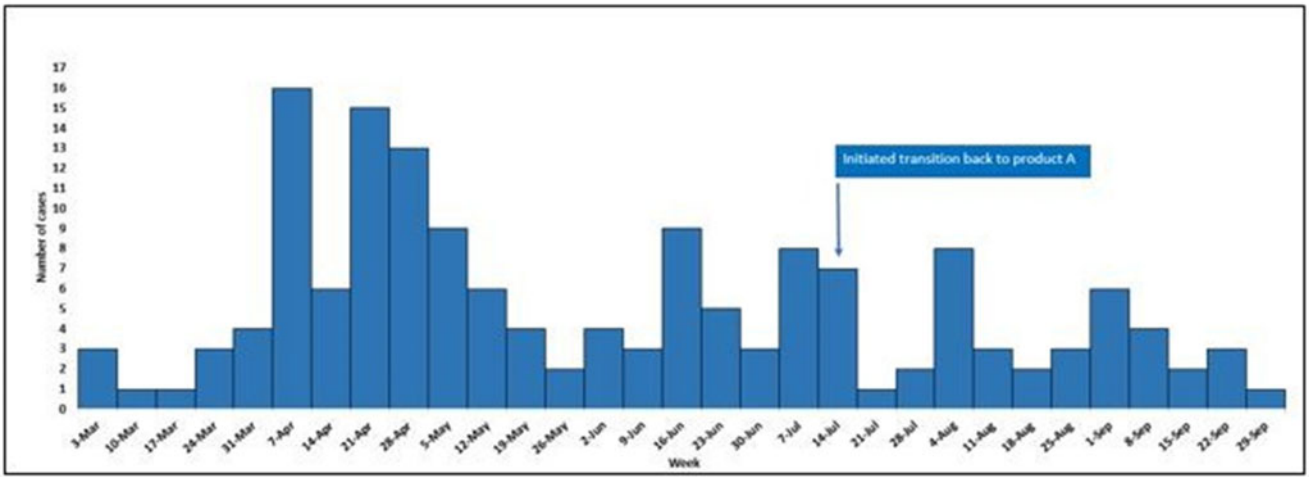
Figure: Cases of peritonitis reported from 15 facilities in two states by week of onset, March – September 2019 (N=157)



staff. Peritonitis is a serious complication of peritoneal dialysis, most commonly caused by gram-positive organisms. During March—April 2019, a dialysis provider organization transitioned ~400 patients to a different manufacturer of peritoneal dialysis equipment and supplies (from product A to B). Shortly thereafter, patients experienced an increase in peritonitis episodes, caused predominantly by gram-negative organisms. In May 2019, we initiated an investigation to determine the source. **Methods:** We conducted case finding, reviewed medical records, observed peritoneal dialysis procedures and trainings, and performed patient home visits and interviews. A 1:1 matched case–control study was performed in 1 state. A case had ≥2 of the following: (1) positive peritoneal fluid culture, (2) high peritoneal fluid white cell count with ≥50% polymorphonuclear cells, or (3) cloudy peritoneal fluid and/or abdominal pain. Controls were matched to cases by week of clinic visit. Conditional logistic regression was used to estimate univariate matched odds ratios (mOR) and 95% confidence intervals (CIs). We conducted microbiological testing of peritoneal dialysis fluid bags to rule out product contamination. **Results:** During March—September 2019, we identified 157 cases of peritonitis across 15 clinics in 2 states (attack rate≈39%). *Staphylococcus* spp (14%), *Serratia* spp (12%) and *Klebsiella* spp (6.3%) were the most common pathogens. Steps to perform peritoneal dialysis using product B differed from product A in several key areas; however, no common errors in practice were identified to explain the outbreak. Patient training on transitioning products was not standardized. Outcomes of the 73 cases in the case–control study included hospitalization (77%), peritoneal dialysis failure (40%), and death (7%). The median duration of training prior to product transition was 1 day for cases and controls ($P = .86$). Transitioning to product B (mOR, 18.00; 95% CI, 2.40—134.83), using product B (mOR, 18.26; 95% CI, 3.86—∞), drain-line reuse (mOR, 4.67; 95% CI, 1.34—16.24) and performing daytime exchanges (mOR, 3.63; 95% CI, 1.71—8.45) were associated with peritonitis. After several interventions, including transition of patients back to product A (Fig. 1), overall cases declined. Sterility testing of samples from 23 unopened product B peritoneal dialysis solution bags showed no contamination. **Conclusions:** Multiple factors may have contributed to this large outbreak, including a rapid transition in peritoneal dialysis products and potentially inadequate patient training. Efforts are needed to identify and incorporate best training practices, and product advances are desired to improve the safety of patient transitions between different types of peritoneal dialysis equipment.

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A Machine-Learning Approach For Predicting Antibiotic Resistance in *Pseudomonas aeruginosa*

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Background: *Pseudomonas aeruginosa* is an important nosocomial pathogen associated with intrinsic and acquired resistance mechanisms to major classes of antibiotics. To better understand clinical risk factors for drug-resistant *P. aeruginosa* infection, decision-tree models for the prediction of fluoroquinolone and carbapenem-resistant *P. aeruginosa* were constructed and compared to multivariable logistic regression models using performance characteristics. **Methods:** In total, 5,636 patients admitted to 4 hospitals within a New York City healthcare system from 2010 to 2016 with blood, respiratory, wound, or urine cultures growing PA were included in the analysis. Presence or absence of drug-resistance was defined using the first culture of any source positive for *P. aeruginosa* during each hospitalization. To train and validate the prediction models, cases were randomly split (60 of 40) into training and validation datasets. Clinical decision-tree models for both fluoroquinolone and carbapenem resistance were built from the training dataset using 21 clinical variables of interest, and multivariable logistic regression models were built using the 16 clinical variables associated with resistance in bivariate analyses. Decision-tree models were optimized using