

Fig. 2.

of the month to analyze the surveillance data; the analysis becomes prospective and timely. The outbreak alert system brings the future to the present, showing the risk of an outbreak.

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#### Presentation Type:

Poster Presentation

#### Cohorting KPC+ *Klebsiella pneumoniae* (KPC-Kp)-Positive Patients—A Genomic Exposé of Cross-Colonization Hazards

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**Background:** Long-term acute-care hospitals (LTACHs) are disproportionately burdened by multidrug-resistant organisms (MDROs) like KPC-Kp. Although cohorting KPC-Kp+ patients into rooms with other carriers can be an outbreak-control strategy and may protect negative patients from colonization, it is unclear whether cohorted patients are at unintended increased risk of cross colonization with additional KPC-Kp strains. **Methods:** Cohorting KPC-Kp+ patients at admission into rooms with other positive patients was part of a bundled intervention that reduced transmission in a high-prevalence LTACH. Rectal surveillance culturing for KPC-Kp was performed at the start of the study, upon admission, and biweekly thereafter, capturing 94% of patients. We evaluated whole-genome sequencing (WGS) evidence of acquisition of distinct KPC-Kp strains in a convenience sample of patients positive

for KPC-Kp at study start or admission to identify plausible secondary KPC-Kp acquisitions. **Results:** WGS multilocus sequence type (MLST) strain variability was observed among the 452 isolates from the 254 patients colonized by KPC-Kp (Fig. 1). Among the 32 patients who were positive at the beginning of the study or admission and had a secondary isolate collected at a later date (median, 89 days apart, range, 2–310 days), 17 (53%) had secondary isolates differing by MLST from their admission isolate. Although 60% of the KPC-Kp in the study was ST258, there was substantial genomic variation within ST258 isolates from the same patient (range, 0–102 genetic variants), suggesting multiple acquisitions of distinct ST258 isolates. Among the 17 patients who imported ST258 and had ST258 isolated again later, 11 (65%) carried secondary isolates genetically closer to isolates from other importing patients than to their own ST258 (Fig. 2). Examination of spatiotemporal exposures among patients with evidence of multiple acquisitions revealed that 11 (65%) patients with multiple MLSTs shared a room with a patient who was colonized with an isolate matching the secondary MLST, and 6 (35%) patients who carried multiple distinct ST258 isolates shared a room with a patient who imported these closely related isolates prior to secondary acquisition. **Conclusions:** Half of patients who imported KPC-Kp and had multiple isolates available had genomically supported secondary acquisitions linked to roommates who carried the acquired strains. Although cohorting is intended to protect negative patients from acquiring MDROs, this practice may promote multiple strain acquisitions by colonized patients in the cohort, potentially prolonging the period of MDRO carriage and increasing time at risk of infection. Our findings add to the debate about single-patient

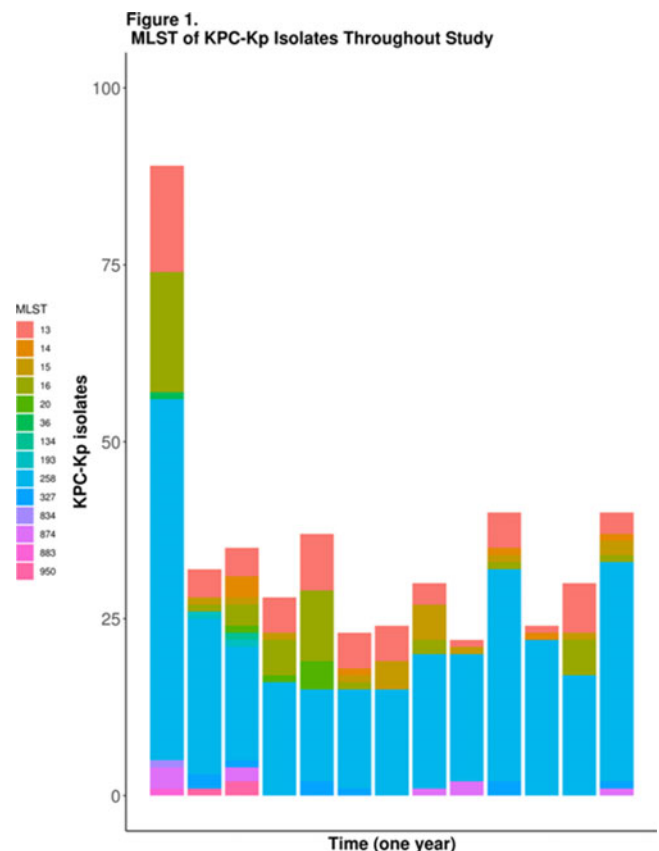


Fig. 1.

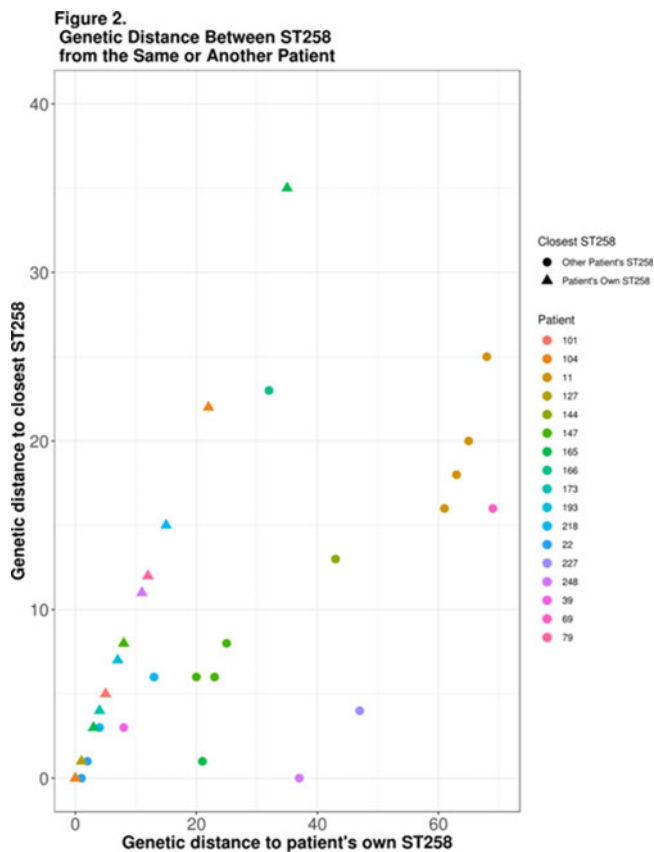


Fig. 2.

rooms, which may be preferred to cohorts to minimize potential harms by reducing MDRO transmission.

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Poster Presentation

#### Collaborative Approach to Developing Infection Prevention Control Recommendations at a Tertiary-Care Pediatric Hospital

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**Background:** Stollery Children's Hospital (SCH) is a tertiary-care pediatric hospital with a complex infrastructure: 3 NICUs located at 3 different hospitals, and all of the pediatric inpatient beds, PICU, PCICU, and a medical-surgical NICU at the main SCH site shared buildings with an academic adult hospital. We describe a collaborative process used to develop standardized SCH Infection Prevention and Control (IPC) recommendations. **Methods:** The

SCH IPC formed a working group with Patient and Family-Centered Care (PFCC) and family representatives in 2014 to enhance the engagement of families in regards to IPC issues and initiatives. The working group identified inconsistent messages provided to families when a child was admitted as a patient requiring additional precautions (PRAP). The working group then developed a framework of key questions to be answered for family care providers of PRAP. The working group held several consultative meetings with frontline staff followed by a review of published guidelines and consultations with other pediatric hospitals about contentious issues. A consensus meeting with all key stakeholders was held to finalize IPC recommendations. **Results:** The key contentious issues included (1) whether personal protective equipment is required for family care providers who stay overnight with PRAP and (2) whether family care providers of PRAP are allowed to access nutrition centers on clinical units and family lounges in PCICU-PICU-NICU that were stocked with free hot meals for the families. No directly applicable recommendation was available IPC guidelines on these issues. Discussions of these topics were directed by PFCC at family councils of various clinical programs with efforts to seek opinions from more family representatives. Expert opinions and current practice were also obtained from Canadian hospitals through emails and from US hospitals through SHEA Open Forum by ICP. A final consensus meeting revisiting all available information was held, and a new Stollery IPC guideline was created with families as partners sharing the IPC vision of minimizing transmission risk at SCH. **Conclusions:** A consultative engagement and consensus process was successful in the development of IPC recommendations for family care providers for PRAP for implementation at a tertiary-care pediatric hospital with a complex infrastructure. The next step is to develop family-friendly educational and resource materials with clear and concise messages.

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Poster Presentation

#### Colonization and Infection With MRSA and CRKP and Its Result in an Increased Mortality Rate Within the Intensive Care and High-Dependency Units in Barbados

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**Background:** Methicillin-resistant *Staphylococcus aureus* (MRSA) and carbapenem-resistant *Klebsiella pneumoniae* (CRKP) are a growing public health concern in Barbados. Intensive care and critically ill patients are at a higher risk for MRSA and CRKP colonization and infection. MRSA and CRKP colonization and infection are associated with a high mortality and morbidity rate in the intensive care units (ICUs) and high-dependency units (HDUs). There is no concrete evidence in the literature regarding MRSA and CRKP colonization and infection in Barbados or the Caribbean. **Objectives:** We investigated the prevalence of MRSA and CRKP colonization and infection in the patients of the ICU and HDU units at the Queen Elizabeth Hospital from 2013 to 2017. **Methods:** We conducted a retrospective cohort analysis of patients admitted to the MICU, SICU, and HDU from January 2013 through December 2017. Data were collected as part of the surveillance program instituted by the IPC department. Admissions and weekly swabs for rectal, nasal, groin, and axilla were performed to screen for colonization with MRSA and CRKP. Follow-up was performed for positive