animals and farm workers, and to identify human behavioral interventions to reduce risk. **Methods:** Focus groups with farm workers were held at 8 dairy farms across Wisconsin selected to represent a range of antibiotic use in cattle. We explored the nature of potentially high-risk practices and farm-worker knowledge and experiences with antibiotic use and resistance. Farm workers were asked to describe common tasks, including hand hygiene and eating practices, and the policies guiding these practices. Focus groups were conducted in English and Spanish guided by the Systems Engineering in Patient Safety (SEIPS) framework, adapted for an agricultural context. Discussions were recorded, transcribed, and translated. A content analysis was conducted to identify themes. Dedoose version 8.0.35 software was used to organize the data. **Results:** In total, 10 focus groups were conducted on 8 farms. Knowledge of when to use antibiotics for human health varied; upset stomach, headache, and flu symptoms were suggested as appropriate uses. Few workers had personal experience with antibiotic resistance at home or on the farm. Some displayed knowledge of the role of antibiotic stewardship in preventing the spread of ARG ("I guess all dairy farmers have a responsibility not to overdo it"). Others associated the risk of spread with the consumption of raw milk or meat from cows receiving antibiotics. Knowledge of personal protective equipment was stronger among workers who commonly reported glove use. Some perceived glove use to be mandatory, and others chose to wear gloves in the perceived absence of written rules. Some workers reported changing gloves numerous times throughout the day, and others did so less frequently or "only when they rip." In general, hand hygiene practices are guided by individual knowledge of established rules, beliefs about risk, and personal discretion. **Conclusions:** Knowledge about mechanisms of spread of ARGs varies among workers on Wisconsin dairy farms and reflects a combination of farm-level rules, experience, individual knowledge, and beliefs. Applying knowledge from the healthcare setting to reduce ARG spread into agriculture is crucial to the tenets of One Health. Programs to reduce ARG spread on dairy farms should focus on proper hand hygiene and PPE use at the level of knowledge, beliefs, and practices.

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Poster Presentation

Precision Infection Prevention (PIP) as a New Standard of Practice Within Longitudinal Infection Prevention and Surveillance

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Background: Infection prevention and control (IPC) workflows are often retrospective and manual. New tools, however, have entered the field to facilitate rapid prospective monitoring of infections in hospitals. Although artificial intelligence (AI)–enabled platforms facilitate timely, on-demand integration of clinical data feeds with pathogen whole-genome sequencing (WGS), a standardized workflow to fully harness the power of such tools is lacking. We report a novel, evidence-based workflow that promotes quicker infection surveillance via AI-assisted clinical and WGS data analysis. The algorithm suggests clusters based on a combination of similar minimum inhibitory concentration (MIC) data, timing of sample collection, and shared location stays between patients. It helps to proactively guide IPC professionals during investigation of infectious outbreaks and surveillance of multidrug-resistant organisms and healthcare-acquired infections. **Methods:** Our team established a 1-year workgroup comprised of IPC practitioners, clinical experts, and scientists in the field. We held weekly roundtables to study lessons learned in an ongoing surveillance effort at a tertiary care hospital—utilizing Philips IntelliSpace Epidemiology (ISEpi), an AI-powered system—to understand how such a tool can enhance practice. Based on real-time case discussions and evidence from the literature, a workflow guidance tool and checklist were codified. **Results:** In our workflow, data-informed clusters posed by ISEpi underwent triage and expert follow-up analysis to assess: (1) likelihood of transmission(s); (2) potential vector(s) identity; (3) need to request WGS; and (4) intervention(s) to be pursued, if warranted. In a representative sample (spanning October 17, 2019, to November 7, 2019) of 67 total isolates suggested for inclusion in 19 unique

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cluster investigations, we determined that 9 investigations merited follow-up. Collectively, these 9 investigations involved 21 patients and required 115 minutes to review in ISEpi and an additional 70 minutes of review outside of ISEpi. After review, 6 investigations were deemed unlikely to represent a transmission; the other 3 had potential to represent transmission for which interventions would be performed. **Conclusions:** This study offers an important framework for adaptation of existing infection control workflow strategies to leverage the utility of rapidly integrated clinical and WGS data. This workflow can also facilitate time-sensitive decisions regarding sequencing of specific pathogens given the preponderance of available clinical data supporting investigations. In this regard, our work sets a new standard of practice: precision infection prevention (PIP). Ongoing effort is aimed at development of AI-powered capabilities for enterprise-level quality and safety improvement initiatives.

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Poster Presentation
Qualitative Visual Assessment of Hand Hygiene Product Effectiveness

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Background: Effective hand hygiene (HH) is an essential preventative measure for the reduction of hospital-acquired infections (HAIs). Commonly used HH products include alcohol-based hand rubs (ABHRs), antimicrobial soaps, and nonantimicrobial soaps. In vivo clinical studies have demonstrated that levels of bacterial reduction can vary based on the HH product type, formulation, and dose. It has been reported that ABHRs provide the greatest reduction in bacteria, followed by antimicrobial soaps. **Objective:** We examined the effects of products representative of 3 HH categories on artificially soiled hands, using a hand-stamp procedure. The hand-stamp images provide a clear visualization of product effectiveness and can be used as an educational tool to promote the importance of proper hand hygiene using different product formats. **Method:** Three commercially available formulations were evaluated in this study, a mild nonantimicrobial soap, an antimicrobial soap containing chloroxylenol (PCMX), and an ABHR containing 70% v/v ethanol. Prior to the hand stamp procedure, the participant's hands were prewashed with 5 mL of a nonantimicrobial soap and dried. An inoculum of *Serratia marcescens* containing ~1 × 10^9CFU/mL was prepared as described in ASTM E2755. A 0.2-mL aliquot of the inoculum was dispensed onto the palm of the subject's hand and spread by rubbing over the entire surface of both hands. Following a 30-second dry time, one of the subject's hands was gently pressed onto the surface of a large petri dish containing tryptic soy agar to obtain a baseline image. Following the baseline sample, 1 pump of the selected test product (~0.9 mL for soap or 1.1 mL for ABHR) was applied to the participant's hands. For soap applications, hands were vigorously rubbed for 30 seconds followed by a 30-second water rinse. For ABHR, product was rubbed by the user until dry. The hand-stamp procedure was repeated following product application using the participant's other hand. **Results:** Clear qualitative reductions in bacteria were observed with each of the HH interventions. The greatest reduction was observed following the application of ABHR. Antimicrobial soap was less effective than ABHR but more effective than nonantimicrobial soap. **Conclusions:** The qualitative visual model demonstrates the effectiveness of various HH interventions and correlates with log reductions observed in traditional efficacy test methods. Future efforts should explore hand-stamp repeatability and image utilization to support HH improvement efforts in healthcare systems.

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Poster Presentation
Rapid Ultrasensitive Detection of *Clostridiodes difficile* Toxins in Stool Samples Using A Single-Molecule Counting Method

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Background: *Clostridiodes difficile* infection is considered an urgent antibiotic resistance threat by the CDC, accounting for

Fig. 1.