patient. Among confirmed incident cases, we abstracted medical charts for 30 randomly selected patients. We assessed infection prevention and control (IPC) practices and sampled the hospital environment to identify potential reservoirs. **Results:** We identified 70 confirmed and 52 suspect incident cases between January and September. Median patient age was 70 years (range: 19–91 years); 67 (55%) were female. Within 90 days before incident case collection, 28 of the patients with charts abstracted (93%) received care at Hospital A; 27 (90%) received radiologic imaging, mostly CT scans (17/30; 57%) and transthoracic echocardiograms (16/30; 53%). We observed gaps in hand hygiene, personal protective equipment usage, and environmental cleaning. ESBL-K. pneumoniae was recovered from 23 environmental samples, including radiology equipment. WGS revealed that these isolates clustered with patient isolates, showing 0-26 pairwise high-quality single nucleotide variants across a 95.73% core genome. Following the implementation of IPC recommendations, the average number of monthly cases was 21% lower compared to the 9 months prior. **Conclusions:** Our investigation linked the outbreak to gaps in IPC practices and contamination of the healthcare environment, highlighting the often-overlooked role of the environment in the spread of ESBL-producing pathogens.

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Presentation Type:
Top Poster Abstract
Subject Category: Medical Informatics

Clinical Decision Support Systems for Infection Prevention and Control: A Survey of Adoption, Maturity, and Barriers to Implementation‡

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Background: Effective infection prevention and control (IPC) strategies are essential for reducing the risk of transmission of infection in healthcare settings. Traditionally, implementation and discontinuation of transmission-based precautions (TBP) have relied on manual review by infection preventionists (IPs) or physicians with IPC expertise. During the COVID-19 pandemic, rapidly evolving protocols and surges in patient volume strained IPC teams, highlighting the need for scalable, automated IPC workflows. Many healthcare systems have adopted clinical decision support systems (CDSS) built into the electronic health record to support non-IPC workflows; however, the extent of CDSS use for IPC is not known.? **Methods:** We conducted this national survey of healthcare facilities within the SHEA Research Network to broadly assess CDSS use in IPC, identify automated features, and define barriers to implementation. The survey captured IPC tasks supported by CDSS, including initiation and discontinuation of TBP and perceived impact of CDSS on clinical and operational outcomes. To enable cross-institutional comparisons, we defined an "IPC Automation Index" (IAI) score as the number of automated IPC functions at a facility across 7 core tasks assessed. **Results:** Fifty facilities completed the survey (42% response rate); of these, 42 (84%) reported using a CDSS tool for IPC. Although most used multiple CDSS tools for IPC, automation was largely concentrated at the front-end of workflows, particularly for automated initiation of TBP. In contrast, automated discontinuation of TBP was uncommon, with the majority of facilities relying on manual review. Over 55% of facilities had an IAI score of at least 2, indicating at least 2 fully automated IPC functions by CDSS (Figure A). Automation feature combinations varied widely, with 31 distinct configurations observed among 42 facilities and no dominant combination observed. Facilities with higher IAI scores were more likely to report perceived reductions in workload and cognitive burden among IPs. Finally, the most frequently reported barriers to CDSS adoption included personnel constraints (~45%), challenges integrating CDSS into the EHR (~43%), and financial limitations (~36%). **Conclusions:** This study provides the first national assessment of CDSS use for IPC, highlighting current practices, key barriers to adoption, and opportunities. We propose a CDSS automation model that conceptualizes IPC workflows along a continuum of low-to-high automation (Figure B). Anchored by the IAI score, this framework enables comparisons of CDSS use for IPC across healthcare facilities and highlights opportunities to advance CDSS adoption for IPC.

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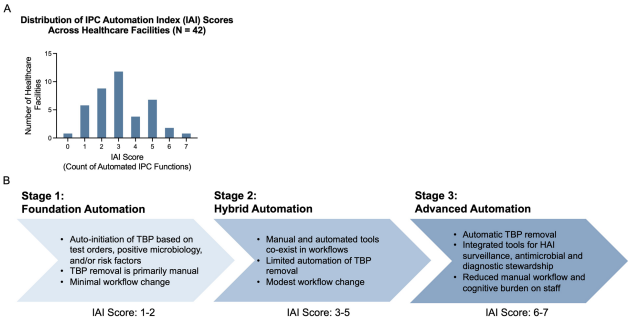


Figure Legend: (A) Distribution of IPC Automation Index (IAI) scores across 42 surveyed healthcare facilities. IAI score quantifies the number of fully automated IPC functions implemented at each facility (maximum score = 7). (B) Three-stage model depicting progressive CDSS automation for infection prevention and control. Each stage is defined by key features and an IAI score (1-7)

IPC, infection prevention and control; IAI, IPC Automation Index; TBP, transmission-based precautions; HAI, healthcare-associated infection; CDSS, clinical decision support systems

Presentation Type:
Top Poster Abstract
Subject Category: Molecular Epidemiology

Genomic Epidemiology Demonstrates that Decolonization reduces Staphylococcus aureus transmission in a Neonatal Intensive Care Unit‡

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Background: Staphylococcus aureus is a leading cause of healthcare-associated infections and is associated with high mortality. While decolonization has been effective in reducing methicillin-resistant S. aureus (MRSA) infections in adult and neonatal intensive care units (NICUs), little is known about the impact of decolonization on transmission of S. aureus. Here, we evaluated whether weekly screening and targeted decolonization reduce genomically defined transmission of S. aureus in a NICU. **Methods:** Infants admitted in 2022-2024 to the NICU at Tisch Hospital received weekly screening cultures of the nares, axilla and groin for MRSA and methicillin-susceptible S. aureus (MSSA). Colonized infants received topical decolonization with chlorhexidine 2% bathing and nasal, buttock, and umbilical mupirocin, with frequency and duration of decolonization based on postmenstrual age (gestational plus chronological age). Genome sequencing was used to identify transmission events, defined as genetically linked S. aureus isolates with <20 single nucleotide variants identified in two infants with overlapping stays. Transmission risk was analyzed using time-to-event (TTE) analyses, and the absolute risk reduction and number needed to treat (NNT) were estimated. **Results:** Among 1,597 screened infants, 188 (11.8%) were colonized with S. aureus (85.6% MSSA; 14.4% MRSA). Colonized infants had a median NICU length of stay of 96 days, and 39 (20.7%) were involved in at least one transmission event. Of these infants, 84.6% received full decolonization. Across the cohort, 389 conversions from colonization negative to positive were observed, including 97 recolonization events; 55 (56.7%) of these infants became colonized ? 3 times during their stay, indicating sustained exposure and transmission pressure. TTE modeling predicted a 30-day transmission risk of 0.6% if all patients were decolonized, and 8.9% risk if no patients were decolonized. This corresponds to a 30-day absolute risk reduction for transmission of 8.2% and an NNT of 12; decolonizing 12 infants prevented one

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S. aureus transmission. **Conclusions:** Genomically informed modeling indicates that weekly screening and targeted decolonization reduce S. aureus transmission in the NICU. Frequent recolonization supports the importance of weekly S. aureus screening and suggests that decolonization prevents infection partly by limiting spread to susceptible hosts, with implications for the spread of resistant strains. Future analyses incorporating time-varying eligibility and exposure will further refine these transmission estimates.

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Presentation Type:
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Subject Category: Occupational Health
Leadership Experiences of Infection Prevention and Control Professionals: LEAD-IP Study‡

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Background: Infection preventionists (IPs) increasingly lead systemwide healthcare epidemiology functions integrating infection prevention, antimicrobial stewardship, and preparedness for emerging pathogens. The Advanced Leadership Certification in Infection Prevention and Control (AL-CIP) is the first credential to formally assess advanced IPC leadership competencies, yet the leadership practices, epidemiologic decision-making, and risk management strategies employed by certified professionals have not been empirically described. **Methods:** The Leadership Evaluation and Development for Infection Preventionists (LEAD-IP) study used an observational nested cohort design. Secondary portfolio data from AL-CIP applicants across two 2025 certification cycles were analyzed to characterize demographic and professional attributes. A nested cohort of certified professionals (18%) completed a structured 60-minute qualitative interview via Microsoft Teams. Interviews followed the IRB-approved 34-item LEAD-IP instrument assessing leadership behaviors, healthcare epidemiology decision-making, antimicrobial stewardship engagement, risk assessment practices, communication strategies, and preparedness for emerging pathogens. Data were managed in REDCap and analyzed using Braun and Clarke's inductive thematic analysis with a structured codebook, triangulation, and verification of thematic saturation. **Results:** Thirty AL-CIP–certified leaders across healthcare systems, public health agencies, and academic settings participated. Across seven themes, participants described a shift from task-based practice to systems-level healthcare epidemiology leadership, integrating surveillance data, antimicrobial resistance patterns, and organizational risk indicators into strategic direction-setting. Leaders emphasized dashboards, analytic tools, and improvement models to detect outbreaks earlier, evaluate stewardship interventions, and guide resource allocation. Transparent communication and psychological safety facilitated early escalation of HAI clusters, antibiotic misuse, environmental risks, and emerging pathogen concerns such as Candida auris. Participants reported persistent public health infrastructure limitations, including fragmented reporting pathways, inconsistent data-sharing with health departments, and delays in organism identification that impeded timely epidemiologic response. Significant antibiotic stewardship gaps were also identified—particularly limited analytic capacity, insufficient infectious disease support, and low organizational prioritization. Structural barriers such as staffing shortages and limited protected time constrained proactive IPC and stewardship leadership. Inclusive engagement of under-resourced teams improved situational awareness and intervention success. Proactive risk management—monitoring construction, airflow disruptions, MDRO trends, and public health alerts—was viewed as essential. AL-CIP certification strengthened leadership identity, credibility, and strategic influence. **Conclusions:** AL-CIP–certified professionals demonstrated advanced capabilities in healthcare epidemiology, antibiotic stewardship, and public health preparedness through systems thinking, data-driven decision-making, inclusive engagement, and proactive risk management. The AL-CIP credential enhanced leaders' confidence and organizational impact, supporting a more resilient and prepared healthcare epidemiology workforce.

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Presentation Type:
Top Poster Abstract
Subject Category: Outbreaks
Partnering for Prevention: A Public Health & Academic Collaboration to Address Measles Outbreaks in Kentucky‡

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Background: The 2025 Measles outbreak has affected over 1900 people across the United States. Close collaborations between public health entities and training institutions can increase public knowledge and trust, promote vaccination, optimize options for testing, and reduce exposures. **Methods:** The Lexington Fayette County Health Department (LFCHD), Kentucky Department for Public Health (KDPH), and the University of Kentucky (UKY) partnered in February 2025 to develop a comprehensive plan to address measles in Kentucky. Priorities for the partnership were: community and provider education, delineation of roles/responsibilities between the health department and UKY, streamlined pathways for testing and post-exposure management, and centralized communication. Standardized educational sessions were developed and deployed widely to outline testing and post-exposure prophylaxis (PEP) resources. Infection Prevention and Control (IPAC) physicians triaged all testing requests in partnership with the health department using CDC criteria for testing. Measles, Mumps, and Rubella (MMR) vaccination campaigns were conducted, focusing on prevention and post-exposure management. For healthcare workers (HCW) at UKY, Epic® electronic health record (EHR) templates and order sets outlining CDC and KDPH algorithms were developed and distributed widely. **Results:** From March through October 2025, the standardized educational talk was given to 398 public health and medical professionals (Table 1). Six public health and

Table 1: Standardized Educational Sessions

Date (MM/DD/YYYY)	Training	Audience	Number(s) reached
04/28/2025	Family Medicine Review	Family medicine providers – regional	25
05/10/2025	Central Bluegrass IPAC-Epi Public Health Conference	Regional epidemiologists and public health specialists, healthcare providers from small/medium sized hospitals	38
05/24/2025	UKY Infectious Diseases Educational Meeting	Adult and Pediatric infectious diseases physicians, providers, nurses, pharmacists	30
07/01/2025	All-UKY Provider Meeting (MD/APP)	All clinical providers (inpatient/outpatient)	Attendance not collected
7/2/2025	KY – AETC - local	Public health, infection prevention, nursing, medical, dental, and behavioral health providers	49
8/14/2025	UKY Emergency Department – residents	Emergency department residents and faculty	30
9/18/2025	KY- AETC - regional	Public health, infection prevention, nursing, medical, dental, and behavioral health providers	98
10/14/2025	Vanderbilt AETC	Public health, infection prevention, nursing, medical, dental, and behavioral health providers	128
Total			**398**

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