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Background: The WHO recommends the establishment of sustainable and evidence-based surveillance systems are recommended for the prevention of microbial resistance. For these surveillance systems, all medical microbiology laboratories are required to participate an external quality assessment (EQA) program that covers antimicrobial susceptibility testing (AST). Clinical microbiology EQA panels with 3 isolates have been provided 3 times per year to antimicrobial resistance (AMR) sentinel laboratories in Cambodia since 2012. We evaluated the performance of laboratory testing implemented between 2016 and 2019, based on 4 years EQA results to highlight the main sources of unsatisfactory analytical processes and to suggest areas for improvement. **Methods:** We analyzed the results of microbiology EQA in 7 AMR surveillance sentinel laboratories from 2016 to 2019, which were coordinated by the National Institute of Public Health (NIPH) under the program of Pacific Paramedical Training Centre (PPTC) from New Zealand. All participating laboratories were required to identify bacteria to the species level, to verify AST results, and to answer a case study question on parasitology. Feedback results and appropriate corrective actions were reviewed to identify the root cause of nonconformity and to suggest areas for improvement. **Results:** Proficiency test results of participating laboratories from 9 cycles with 27 isolates were analyzed. The overall average of EQA result was 94.0%. The laboratories failed to identify the isolated pathogens in 7.0% of the tests and failed to interpret the inhibition zone of AST (ie, resistant, intermediate or susceptible) in 6.0% of tested strains. The main causes of erroneous of PT results were either preanalytical (ie, handling of the samples, timing of analysis, equipment and reagent management), analytical (ie, quality control, unsuitable methods, confusion of samples, or errors of confirmation), or postanalytical mistakes (eg, interpretation guideline, cross-checking of results, or the information management system). Followed by the root causes, internal quality control and inventory management were the highest-priority suggestions for improvement. **Conclusions:** All participating laboratories showed good performance on EQA for evidence-based AMR surveillance. The national antimicrobial

resistance data quality is sufficiently good and the data should be shared on national and international platforms. However, the regular monitoring of national AMR surveillance system should be conducted for continued quality improvement.

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Presentation Type:

Poster Presentation

Progress in Preventing Bloodstream Infections in Hemodialysis: Data From the National Healthcare Safety Network, 2014–2018

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Background: More than 450,000 patients receive outpatient hemodialysis in the United States. Patients on hemodialysis are at high risk of bloodstream infections (BSIs), which are associated with significant morbidity and mortality. National prevention efforts targeting hemodialysis facilities have resulted in widespread changes in practice, including modifications to central venous catheter (CVC) maintenance procedures. We analyzed dialysis event surveillance data submitted to the CDC NHSN to describe changes in BSI rates among hemodialysis outpatients from 2014 to 2018. **Methods:** Outpatient hemodialysis facilities report BSIs (ie, positive blood cultures collected in the outpatient setting or within 1 calendar day after hospital admission) and the number of hemodialysis outpatients treated during the first 2 working days of each month to the NHSN. For each BSI, the suspected source (ie, vascular access, another site, contamination, or uncertain) and vascular access type are indicated: CVC, arteriovenous fistula (AVF) or arteriovenous graft (AVG). Pooled mean rates (per 100 patient months) were calculated for BSIs, access-related BSIs (ARBSIs), and BSIs and ARBSIs were stratified by vascular access type. Annual BSI rate trends were

Figure Pooled mean bloodstream infection rates (per 100 patient-months), incidence rate ratios, and average annual percent change, by vascular access type, National Healthcare Safety Network (NHSN) Dialysis Event Surveillance, 2014–2018

Event	Access type						Annual Trends	
		2014	2015	2016	2017	2018	Incidence rate ratio (95% CI)	Average annual % change (95% CI)
BSI	ALL	0.64	0.60	0.56	0.51	0.47		
BSI	Fistula	0.26	0.24	0.22	0.21	0.18	0.92 (0.91, 0.93)	-8.2 (-9.1, -7.3)
	Graft	0.39	0.39	0.37	0.35	0.33	0.95 (0.93, 0.98)	-4.7 (-7.1, -2.2)
	CVC	2.16	2.01	1.86	1.72	1.46	0.90 (0.88, 0.93)	-9.5 (-11.5, -7.5)
ARBSI	ALL	0.49	0.45	0.42	0.39	0.36		
ARBSI	Fistula	0.16	0.13	0.13	0.12	0.11	0.93 (0.92, 0.94)	-7.2 (-8.3, -6.1)
	Graft	0.27	0.26	0.25	0.25	0.24	0.97 (0.94, 1.00)	-3.4 (-6.3, -0.3)
	CVC	1.83	1.68	1.57	1.46	1.24	0.91 (0.88, 0.93)	-9.4 (-11.7, -6.9)

ARBSI=Access-related bloodstream infection, BSI=Bloodstream infection, CVC=Central venous catheter, CI=Confidence interval

Fig. 1.

evaluated using a negative binomial regression model, which treated patient months as an offset variable and included access type, year, and an access-year interaction variable. **Results:** More than 6,000 outpatient hemodialysis facilities reported 134,961 BSIs from 2014 to 2018. Of these BSIs, 102,505 (76%) were categorized as access related. CVCs were present in 63% of BSIs and 70% of ARBSIs. Pooled mean BSI rates decreased 27% from 0.64 to 0.47 per 100 patient months; rates of ARBSIs decreased 27% from 0.49 to 0.36 per 100 patient months. Significant decreases in event rates occurred across vascular access strata (Fig. 1). The reduction in BSI and ARBSI burden was most pronounced among patients with CVCs. BSI rates in patients with CVCs decreased 32% from 2.16 per 100 patient months to 1.46 (annual average decrease, 9.5%), and ARBSI rates in patients with CVCs decreased 32% from 1.83 per 100 patient months to 1.24 (annual average decrease, 9.4%). **Conclusions:** Substantial reductions in BSI and ARBSI rates among hemodialysis outpatients occurred during this 5-year period, and these reductions appear to be most prominent among CVC and AVF patients. Improvements in infection prevention and control practices, including CVC care, have likely contributed to these reductions. Additional efforts to increase the uptake of known prevention practices and to identify new strategies for prevention might contribute to continued decreases in infections among this highly vulnerable population.

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Provision of Hepatitis A Vaccine by Paramedics During Noncritical Patient Interactions: Lessons Learned

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Background: Hepatitis A cases have been regularly increasing in Florida since 2016, after remaining relatively stable for several years. Between January 1, 2019, and October 19, 2019, 2,847 cases of hepatitis were reported to the Florida Department of Health, including 2,209 hospitalizations and 41 deaths due to infection with hepatitis A1. At least 93% of these cases was acquired within the state of Florida.¹ During this outbreak, Pasco County clearly emerged as a focal point for new cases. As of week 42 of 2019, Pasco County was the second-highest county for new cases ($n = 484$) and the leading county for deaths due to hepatitis A infection ($n = 8$). Risk factors identified from hepatitis A cases reported between January 1, 2019, and October 19, 2019, included any drug use (57%), injection drug use (37%), noninjection drug use (35%), homelessness (22%), and being a man who had sexual intercourse with other men (MSM, 4%).¹ Moreover, 33% of newly reported cases were interviewed and denied risk factors; 1 (20%) had recently been incarcerated or was currently incarcerated.¹ Individuals with these risk factors are often individuals who also require emergency medical services (EMS). On August 1, 2019, a public health emergency (PHE) was issued for the entire state of Florida. The existence of a PHE allows for paramedics to administer vaccine (with the approval of the fire rescue medical director). Pasco County Fire Rescue routinely operates 28 advanced life support (ALS) ambulances with either a crew of 2 paramedics or a paramedic/EMT pair. On October 7, 2019, the Pasco County Board of County Commissioners (BCC) approved a Memorandum of Understanding between the Florida Department of Health in Pasco County, the Pasco County Fire Rescue Medical Director, and the

BCC for ALS crews to provide hepatitis A vaccination to noncritical (ie, basic life support) patients during routine contact. This effort appears to be the first within the of Florida. Pasco County Fire Rescue (PCFR) began stocking hepatitis A vaccine on January 1, 2020 and ceased participation in the program on March 1, 2020. During the window of participation, PCFR responded to approximately 6,570 calls in which the patient would have been non-critical and eligible for hepatitis A vaccination. Twelve hepatitis A vaccinations (0.18%) were administered. Crews verbalized concerns about adding vaccination to their job description, feelings of being overwhelmed with existing emergency medical services (EMS) responsibilities, apathy regarding the potential benefit of provision of vaccine, and perception that successful participation in a vaccine campaign would lead to additional community paramedicine responsibilities. The vaccine program was terminated early due to the significant demands on EMS as SARS-CoV2 impacted Pasco County. This trial highlights the need for crew investments and buy-in for future partial or full community paramedicine initiatives.

1. Florida Department of Health, Hepatitis A Surveillance State Report, Week 42.

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Quality Improvement Measures to Reduce Central-Line-Associated Bloodstream Infections (CLABSIs) in a Neonatal Intensive Care Unit (NICU)

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Background: Central-line-associated bloodstream infections (CLABSIs) are a significant contributor to morbidity and mortality for neonates; they also increased healthcare costs and duration of hospitalization. This population is susceptible to infections because of their undeveloped immune systems, and they require intravenous access until they can tolerate enteral feedings, which for extremely premature infants can take several weeks (if not months) to achieve. Our hospital is a regional-referral teaching hospital with 772 licensed beds. The neonatal intensive care unit (NICU) is a

Figure 1.

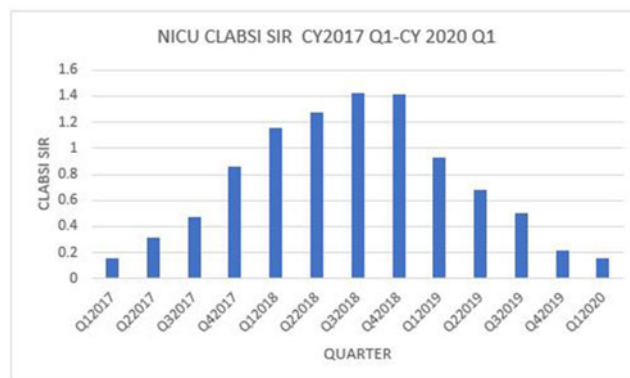


Fig. 1.