Methods. rtPCR test positivity rate and turnaround time were determined among 89 specimens tested at CDC from 54 outbreak patients with suspected psittacosis. rtPCR testing was performed on nucleic acid extracted from clinical specimens using oligonucleotides targeting the *C. psittaci* locus tag CPSIT_RS01985. Clinical information was collected by patient interview and medical record review.

Results. Positivity rates among the most common specimen types were 4.4% (2/46) for nasopharyngeal (NP) swab, 36.4% (8/22) for sputum, and 80.0% (4/5) for stool. Of 21 (24%) specimens with available data, the average time from patient symptom onset to specimen collection was 6 days (range 1–11 days). *C. psittaci* was detected in specimens from 13 of 54 outbreak patients tested (Table 1); all 13 patients had radiographically-confirmed pneumonia, and 7 were rtPCR-positive from a lower respiratory specimen only. Paired sputum and NP swab specimens were tested for 6 patients; *C. psittaci* was detected in all sputum but only 1 NP swab. The positive NP swab was from a patient requiring intensive care unit admission and intubation. All results were reported within 1 business day of specimen receipt in the lab.

Conclusion. These data suggest that lower respiratory specimens are more sensitive than NP swabs for rtPCR detection of *C. psittaci*; stool might be a suitable alternative. Widespread implementation of rtPCR testing using appropriate specimen types could improve psittacosis detection and inform timely public health interventions.

TABLE 1. Qualitative and cycle threshold (Ct [a]) results for outbreak patients with rtPCR detection of *C. psittaci*

	Lower Respiratory		Upper Respiratory	Gastrointestinal
Patient	Sputum	Bronchoalveloar lavage	NP Swab	Stool
1	Pos (26)		Neg	
2	Pos (30)		Neg	
3	Pos (30)		Neg	Pos (37)
4	Pos (26)		Neg	
5	Pos (28)		Neg	
6	Pos (27)		Pos (33)	
7	Pos (28)			Pos (32)
8	Pos (30)			Neg
9		Pos (30)		
10		Pos (31)		
11			Neg	Pos (38)
12			Pos (31) [b]	
13				Pos (32)

[a] Average Ct values for triplicate rtPCR tests are shown in parentheses

[b] Second NP collected 3 days later was negative

Disclosures. **All authors:** No reported disclosures.

2174. Comparison of the Verigene® and the ePlex® Blood Culture Identification Panels for Gram-Positive and Gram-Negative Bloodstream Infections

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Background. Rapid diagnostic testing for the management of bloodstream infections has become paramount to improving patient outcomes. The primary objective of this study was to assess the differences between 2 FDA approved instruments.

Methods. Retrospective study from August 2018 to April 2019 at the University of Maryland Medical Center. One positive blood culture from each patient was tested using the Verigene® blood culture Gram-positive (BC-GP) or Gram-negative (BC-GN) panels based on the Gram stain and then analyzed using the ePlex® Blood Culture Identification (BCID) Gram-positive (BCID-GP) or Gram-negative (BCID-GN) research-use-only panels and compared with culture results.

Results. The study consisted of 140 positive blood culture bottles. 14 bottles were excluded for a total of 55 GN and 71 GP bottles. Of the 55 GN bottles, 3 had 2 GN rods for a total of 58 GNRs. BCID-GN missed 1 *P. aeruginosa*, 2 *S. maltophilia*, and 1 *E. coli* for a 93% (53/57) positive agreement. The BCID-GN does not detect *A. junii* and therefore it was excluded. BC-GN did not identify 1 *K. pneumoniae* with a 98% (47/48) positive agreement. BC-GN does not include the detection of *S. maltophilia* (4), *Serratia* (4), *Morganella* (1), and *B. fragilis* (1)and these were excluded in the BC-GN analysis. CTX-M was the only resistant marker detected and both panels identified it correctly. 5 samples using the BCID-GN also detected Pan Gram-Positive; 3 grew GP organisms, the other 2 only grew *E. coli*. Of the 71 GP bottles, 3 had two GP bacteria totaling 74 GPs. BCID-GP missed 1 *S. aureus*, 1 invalid, and called an *E. faecalis* that was not identified by the reference method for a 99% (72/73) positive agreement. BC-GP does not detect *Micrococcus* (6) or *E. gallinarum* (1) and missed 1 *S. mitis/oralis* for a 99% (66/67) positive agreement. 18 samples were positive for mecA detected by both panels. 4 samples were vanA/B positive; 1 by BCID-GP was sensitive to vancomycin and not detected by BC-GP. BCID-GP detected 1 sample as Pan Gram-negative although a GNR was not detected.

Conclusion. BothVerigene® and ePlex® GP and GN panels have a high percent positive agreement. Laboratories should take into consideration the epidemiology of their bloodstream infections when deciding on panels for the rapid detection of bloodstream infections.

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2175. Rapid Detection of Carbapenemase Producing Organisms Directly from Blood Cultures Positive for Gram-Negative Bacilli

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Background. The rapid detection of carbapenemase-producing organisms (CPOs) directly from blood cultures (BC) positive for Gram-negative bacilli (GNB) may accelerate the appropriate treatment of at-risk patients. Our objective was to evaluate the performance of two commercial assays in the rapid detection of CPOs directly from BC positive for GNB.

Methods. BC positive for GNB, taken from patients within the Calgary Health Zone over a 3 month period, were tested for the presence of CPOs with βCARBA® and NG-Test® CARBA 5. A subset of sterile BC samples was seeded with multi-drug-resistant (MDR) GNB. BC were incubated using the Bact-Alert™ system. Positive BC from clinical and seeded samples was tested directly with βCARBA and CARBA 5 from BC pellets processed for direct testing using an ammonium chloride lysis and wash method. Sensitivity, specificity, negative predictive value (NPV) and positive predictive value (PPV) were calculated with 95% confidence intervals for binomial proportions.

Results. 65 samples were tested (30 clinical, 35 seeded). Seeded samples included 1 GES, 4 IMP, 6 KPC, 1 co-producing KPC and NDM, 9 OXA, 4 VIM, 5 NDM, and 5 non-CPO carbapenem-resistant organisms. βCARBA had a sensitivity, specificity, NPV and PPV of 100% (88.4% - 100%), 65.7% (47.8–80.9%), 100%, and 71.4% (61.3%–79.8%), respectively. CARBA 5 had a sensitivity, specificity, NPV and PPV of 90.0% (73.5%–97.9%), 100% (90.0%–100%), 92.1% (80.0%–97.2%), and 100%. When excluding GES, which is known not to be detected by CARBA 5, sensitivity and NPV increased to 93.1% (77.2%–99.2%) and 93.1% (78.0%–98.1%), respectively. False negatives for βCARBA occurred with 1 VIM-1 and IMP-14.

Conclusion. This study demonstrates that the detection of CPOs directly from positive BC can be accurately achieved. βCARBA had excellent sensitivity but suffered from poor specificity. CARBA 5 had good sensitivity and specificity but is unable to detect certain CPOs. Testing positive BC directly using βCARBA and/or CARBA 5 may be useful in rapidly detecting CPOs. Results of direct testing from the CARBA5 assay would quickly identify patients amenable to treatment with avibactam combination compounds.

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2176. A New Rapid Test for Detection of The Cefazolin Inoculum Effect (CIE) in Methicillin-*Susceptible Staphylococcus aureus* (MSSA)

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Background. Most MSSA harbor one of the four different variants of β-lactamase (BlaZ) (A, B, C and D). The CIE is defined as an MIC >16 μg/mL when a high inoculum (10^7 CFU/mL) is used and depends on the presence of BlaZ. The presence of the CIE has been associated with therapeutic failure in invasive MSSA infections. In some countries of South America, the prevalence of CIE is high, ranging from 36% to 51% (Colombia and Argentina, respectively). Type A BlaZ is most often associated with the CIE due to its high affinity for cefazolin. Here, we developed a rapid test based on the premise that the extracellular form of BlaZ is responsible for the CIE. We aimed to identify invasive MSSA that exhibit the CIE and validate the test in two cohorts of isolates from patients in Colombia and Argentina

Methods. 152 MSSA clinical isolates were collected from Colombia (n = 71) and Argentina (n = 81). We determined MIC at standard and high inoculum. We developed a test using induction of BlaZ with ampicillin (150 μg/mL) for 20 minutes and, using the supernatant for incubation with nitrocefin for 30 min. A change in color from yellow to red was considered positive. MSSA TX0117 (BlaZ +, with the CIE), ATCC 29213 (BlaZ-negative) and ATCC 25923 (BlaZ + lacking the CIE) were used as controls. BlaZ typing of all Argentinian isolates was available by sequencing

Results. A high proportion (43%) of MSSA exhibited the CIE (34% and 52% of Colombian and Argentinian isolates, respectively) by MIC. The rapid test identified 76% of isolates exhibiting the CIE and correctly ruled out all isolates lacking the CIE (sensitivity 80%, specificity 100%). Furthermore, the rapid test detected all isolates with the CIE that harbored Type A BlaZ from Argentina. Conversely, the test failed to identify the CIE in Argentinian isolates that produce type B and C BlaZ. The sensitivity and specificity of the rapid test for the Colombian isolates whose BlaZ type was unknown were 89% and 100%, respectively.

Conclusion. A rapid test of less than 2 h can readily identify MSSA isolates exhibiting the CIE. For isolates carrying type A BlaZ, which is highly associated with the CIE, the test had a sensitivity and specificity of 100%. Rapid identification of MSSA with the CIE may have important therapeutic consequences in deep-seated infections

Disclosures. **All authors:** No reported disclosures.

2177. The Impact of the BioFire® FilmArray® Gastrointestinal Syndromic Panel on the Management of Infectious Gastroenteritis due to Diarrheagenic *E. coli* Strains in a Large Community Hospital

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Background. PCR-based rapid diagnostic tests (RDTs) provide rapid and accurate infectious gastroenteritis (IGE) etiologies within hours. However, there are limited data evaluating the impact of these panels on the appropriate management for diarrheagenic *E. coli* strains (DECS). This study evaluated the impact of the BioFire® FilmArray® GI panel on the appropriate antimicrobial management of DECS.

Methods. A retrospective analysis was conducted at a large community hospital in San Antonio, TX. Patients with a positive infectious diarrhea diagnostic panel (IDDP) for DECS from October 1, 2016 through September 30, 2018 and admitted for ≥48 hours were included. Patients were excluded if they had a positive IDDP for multiple DECS. An algorithm based on all available literature was used to classify appropriate management of DECS, which included patients having prolonged diarrhea (≥7 days), immunocompromised hosts (ICHs), or the presence of systemic symptoms. Antimicrobial therapy changes based on IDDP results, presence of an ID consult, and incidence of hemolytic uremic syndrome (HUS) were evaluated.

Results. A total of 374 patients were included for analysis. Overall, the IDDP did not lead to a change of therapy in 290 cases. However, the IDDP resulted in 84 antimicrobial changes including initiation of appropriate antibiotics (n = 48) and de-escalation/discontinuation (n = 22), primarily in special populations, such as ICHs. The IDDP results led to appropriate therapy optimization in 63%, 17%, 16%, and 9% of enteroinvasive *E. coli* (EIEC), enteroaggregative *E. coli* (EAEC), enteropathogenic *E. coli* (EPEC), and enterotoxigenic *E. coli* (ETEC) cases, respectively. In contrast, 81% of Shiga toxin-producing *E. coli* (STEC) cases were inappropriately managed with antibiotics, and 33% developed HUS. Only 14% of all DECS cases generated an ID consult.

Conclusion. Of note, this study found that the IDDP did not lead to a change in the management of most pathotypes. However, it was associated with positive changes in the management of DECS in specific patients, particularly ICHs. RDTs assist providers in the timely identification and treatment of IGE pathogens, but both antimicrobial and diagnostic stewardship remain critical for the optimal management of DECS.

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2178. Sensitivity of Blood Cultures in Detection of Bacteremia in Febrile Neutropenia

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Background. Febrile neutropenia (FN) secondary to bacteremia is a treatable complication of chemotherapy that increases mortality if not promptly recognized and managed.

Methods. The sensitivity of blood cultures collected in pediatric oncology patients with FN was assessed and stratified based on the day of FN episode, culture media type, and the source of blood culture draw at a single US center between 2013 and 2018. Paired aerobic and lytic media bottles were inoculated with each culture draw using a weight-based volume of blood; anaerobic cultures were included with initial cultures starting in September of 2015.

Results. In a retrospective analysis of 10,596 patients, a total of 3,039 episodes of FN were identified. Of the FN episodes, 17.7% had at least one positive blood culture; 84.5%, 1.3%, 0.9% and 13.3% of positive cultures were collected on day 0, day 1, day 2 and ≥ day 3 of a febrile episode. Among the positive day 0 cultures, the median time to detection of an organism was 14.1 hours. Host characteristics of blood culture-positive FN episodes are summarized in Table 1. Bacteremia was identified in 537 FN cases; 18.1%, 11.9% and 2.6% of cultures were positive in only aerobic, lytic or anaerobic media cultures, respectively. The most commonly isolated organisms were *Escherichia coli*, coagulase-negative *Staphylococcus*, viridans group streptococcus, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. Fifteen percent of infectious episodes with a positive blood culture were polymicrobial.

Conclusion. In summary, the study findings have important clinical implications such as emphasizing the value of day 0 cultures and highlighting the importance of routinely collecting blood cultures in more than one media type. Despite an optimized blood culture approach, less than a fifth of FN episodes had a blood culture-based diagnosis.

Table 1: Host characteristics of those with blood culture positive FN episodes.

	Overall (n=537)
Sex (%)	
Female	245 (45.6)
Male	292 (54.4)
Race (%)	
White	404 (75.2)
Black	89 (16.6)
Asian	18 (3.4)
Native American	4 (0.7)
Multiple Race (NOS)	19 (3.5)
Other	3 (0.6)
Ethnicity (%)	
Hispanic	140 (26.1)
Not Hispanic	397 (73.9)
Age	
Mean (SD)	9.14 (6.05)
Median [IQR])	9.00 [4.00, 14.00]
Median [Range])	9.00 [0.00, 23.0]
Number of days culture was collected	
Mean (SD)	6.39 (5.84)
Median [IQR])	4.00 [3.00, 8.00]
Median [Range])	4.00 [2.00, 82.0]
Duration of Episode (days)	
Mean (SD)	8.97 (9.10)
Median [IQR])	6.00 [4.00, 11.00]
Median [Range])	6.00 [2.00, 82.0]
Admission Status (%)	
Inpatient	434 (80.8)
Inpatient and Outpatient	102 (19.0)
Outpatient	1 (0.2)
Service at Admission (%)	
Hematology Service	4 (0.7)
Leukemia Service	239 (44.5)
Neuro-Oncology	124 (23.1)
Solid Tumor Service	94 (17.5)
Transplant Service	76 (14.2)

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2179. Detection of Group A Streptococcus in the Saliva of Children Presenting With Pharyngitis Using the cobas®LIAT® PCR System

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Background. CLIA waived polymerase chain reaction (PCR) has recently become available as a point of care test for Group A Streptococci (GAS) in individuals presenting with pharyngitis, enabling rapid and accurate diagnosis. However, swabbing the pharynx results in discomfort and is often dreaded by young children which may result in poor quality sampling.

Objective: In order to assess the viability of saliva as a sample specimen for GAS, this study compared saliva samples with pharynx swabs of children with sore throat, using swabs inoculated by children sucking on them as they would a lollipop in the context of newly available very sensitive techniques.

Methods. We enrolled children ages 5–15 years presenting with sore throat and known to have a positive rapid streptococcal antigen detection test (RADT) performed on a posterior pharyngeal swab, at the discretion of the primary care provider. The RADT used was the SureVue® (Fisher Scientific) system. A second swab was obtained by having the child suck on the swab in the anterior mouth for 30 seconds and a third swab was obtained from the posterior pharynx. PCR was performed on these two additional swabs using the cobas®LIAT® (Roche) system according to the manufacturer's instructions.

Results. Seventeen children were enrolled in the study between January and April 2019. The mean age of enrollment was 9.6 years (range 6–15). By design all children were known to have a positive RADT for GAS. The LIAT posterior pharynx swab was positive in all 17 subjects. In addition, the LIAT saliva swab was positive in all 17 subjects.

Conclusion. In this small pilot study, there was 100% concordance between the RADT for GAS and both the posterior pharyngeal and saliva swab using the