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

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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.

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

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)

Disclosures. Randall Hayden, MD, Abbott Molecular: Advisory Board; Quidel: Advisory Board; Roche Diagnostics: Advisory Board.

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

cobas®LIAT® PCR system. Performing saliva swabs will result in less discomfort and distress to children who are tested for GAS. Further study is needed to determine the sensitivity and specificity of saliva swabs for the detection of GAS in children presenting with acute pharyngitis.

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

2180. Novel Method for Determining Rapid E.coli Antibiotic Susceptibility (AST) Results for Urinary Tract Infections

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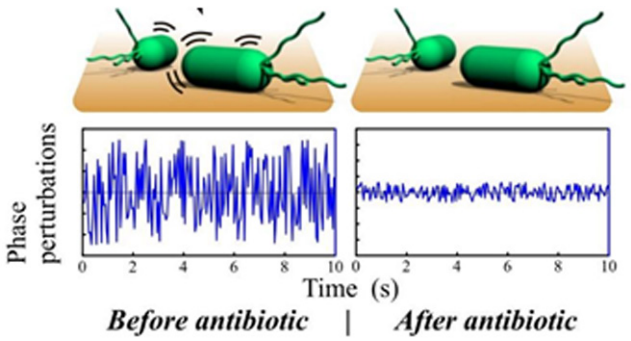
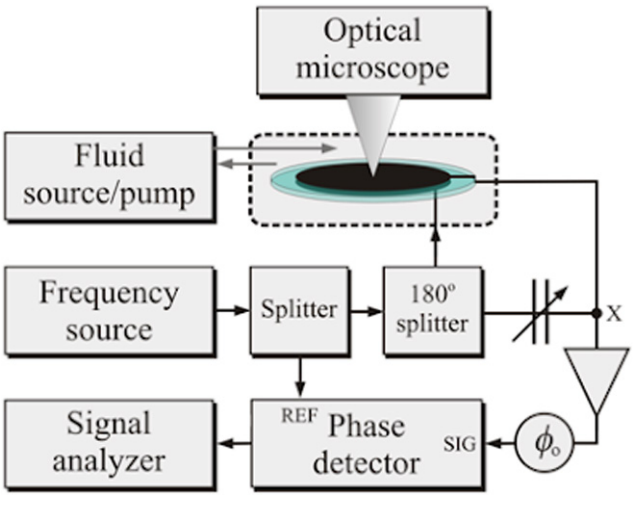
Background. Measuring changes in phase noise from bacteria on a quartz crystal resonator has been shown to effectively distinguish viable from non-viable *E. coli*. We report using this method to rapidly perform AST for *E. coli* isolated from a leftover clinical urinary tract infection (UTI) specimen.

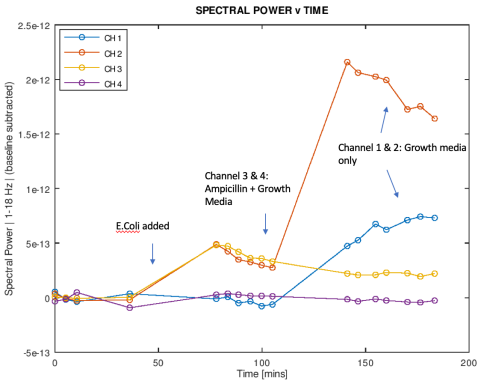
Methods. An experimental system was designed to sense changes in bacterial mechanics through changes in phase noise generated by bacterial cells (Figure 1). The system includes a quartz-crystal resonator with thin-film gold electrodes on opposite surfaces housed within a module. The module provides electrical contact to the crystal's electrodes, and incorporates channels through which fluids can be pumped (Figure 2). *E. coli* was isolated from a leftover positive urine culture specimen, cultured overnight and resuspended in phosphate-buffered saline (PBS). The suspension was run through the experimental system. E.coli cells were adhered to the surface of the quartz resonant crystal coated with a cationic polymer. After a growth phase, the cells were exposed to antibiotic (ampicillin). Phase noise was monitored throughout the test. The power spectral density of the noise was averaged each 5 minutes. E.coli was classified as ampicillin susceptible if the spectral power of the added phase noise was at least 50% lower compared with controls. Controls were in growth media only (Figure 3). Automated microscopy was utilized to monitor cell growth.

Results. The method correctly classified the E.coli as ampicillin susceptible. Power spectral density increased in untreated cells and dropped or stayed steady in cells treated with Ampicillin. Corresponding loss of E. coli viability was confirmed microscopically. Results were compared with standard of care antibiotic susceptibility testing.

Conclusion. The phase noise measurement method correctly identified ampicillin susceptible E.coli isolated from a leftover patient urine sample in three and one half hours. It shows promise for providing rapid AST results to treat UTIs.







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

2181. Yield and Impact of Molecular Diagnostics for Pathogen Detection in Pediatric Patients: 16/18S rRNA PCR and Noninvasive Assays

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Background. Molecular diagnostic tests can identify bacterial and fungal pathogens from clinical samples. Nucleic acid detection tests include 16S and 18S rRNA gene PCR (16/18S PCR) and plasma next-generation sequencing (NGS). Other assays (fungal galactomannan and 1,3-β-D-glucan) detect structural factors. Our objective was to assess the utilization, yield, and impact of molecular diagnostics in pediatric patients who had samples sent for 16/18S PCR.

Methods. Sterile site fluid or tissue specimens were collected as part of standard care at Lurie Children's Hospital, cultured, and sent to Northwestern Memorial Hospital for 16/18S PCR as clinically indicated. Medical records were reviewed for diagnostics, antibiotics, and clinical course.

Results. From 1/2016–8/2018, 236 samples were sent for 16 and/or 18S PCR from 183 patients. 83% had a concurrent ID consult. 16S PCR was done on 215 samples, 42 (20%) were positive, and 36 yielded species identification (Table 1). Antibacterial agents were administered prior to specimen collection in 73% and did not affect likelihood of positive 16S PCR. 18S PCR was sent on 163 samples; 12 (7.4%) were positive (Table 2) of which 10 were from immunocompromised hosts. 40% of patients were on antifungals prior to sample acquisition. 16/18S PCR impacted antimicrobial decision-making in 70 cases (30%). A pathogenic fungus was detected by PCR but *not* culture in 2 cases. Time to positivity of fungal culture was 1–15 days. Fungal culture was positive in 5 cases with-negative 18S PCR. Seventeen patients had positive serum 1,3-ß-D-glucan and/or galactomannan: 3 of which had positive 18S PCR, 5 with fungal growth, 5 presumed infection based on imaging, 1 *Nocardia*, and 3 noninfectious etiology. Plasma NGS was sent on 45 cases, was positive in 34, and affected clinical management in 10.

Conclusion. 16S PCR can identify bacterial pathogens in the setting of negative culture and impact clinical care. Abscess, bronchial/pleural fluid, and brain/organ tissue were high yield specimens. 18S PCR can provide expeditious fungal identification in cases of suspected invasive disease, but fungal culture and serum molecular testing increase diagnostic yield. No single fungal test is comprehensive. Plasma NGS had relatively high yield and clinical impact in selected patients.

Table 1: Yield of 16/18S PCR from Sterile Site Samples

Sample source	Total (n=236)	16S PCR positive: # +/# sent (%)	16S PCR organisms identified	18S PCR positive: # +/# sent (%)	18S PCR organisms identified
Osteoarticular (fluid or tissue sample)	60	12/58 (21%)	*Acinetobacter spp., Bartonella henselae, CONS, Enterobacter cloacae, E coli, Fusobacterium nucleatum, Kingella kingae, S agalactiae, S pneumoniae*	0/32	
Cerebrospinal fluid	38	5/36 (14%)	*S pneumoniae, Ureaplasma parvum*	1/21 (5%)	*Rhodotorula spp.*
Pleural fluid	34	9/32 (28%)	*Fusobacterium spp., Porphyromonas spp., Prevotella spp., S aureus, S pneumoniae*	1/20 (5%)	*Rhizomucor spp.*
Lung tissue	23	0/21		2/22 (9%)	*Aspergillus fumigatus + Cunninghamella, Blastomyces dermatitidis*
Other organ/tissue†	14	4/14 (29%)	*Pseudomonas aeruginosa, Prevotella spp, Serratia marcescens*	1/12 (8%)	*Blastomyces dermatitidis*
Abscess	13	6/12 (50%)	*B fragilis, Fusobacterium nucleatum, Pseudomonas aeruginosa, S aureus, S anginosis, S mitis*	2/7 (29%)	*Candida albicans, Lichtheimia ramosa*
Lymph node biopsy	9	1/8 (13%)	*S aureus*	0/8	
Respiratory/bronchial	9	3/7 (43%)	*Gronulicatella spp., Haemophilus influenzae, Porphyromonas spp.*	0/9	
Bone marrow	8	0/8		0/8	
Peritoneal/biliary fluid	8	0/6		0/5	
Skin biopsy	8	0/4		4/8 (50%)	*Aureobasidium pullulans, Candida lucitaniae, Rhizopus spp.*
Brain biopsy	7	3/6 (50%)	*S intermedius, S pneumoniae*	0/6	
Sinus aspirate	3	0/1		1/3 (33%)	*Aspergillus spp.*
Pericardial fluid	2	0/2		0/2	

† Organ tissue biopsies: arytenoid/larynx (1), chest mass (3), kidney (1), liver (3), mediastinum (1), parotid (1), spleen (4)