TABLE 2: Laboratory findings of SARS-CoV-2 patients at before and after Tocilizumab treatment

TABLE 2 Laboratory findings of SARS-CoV-2 patients at before and after Tocilizumab treatment

Variables	Days	Median (IQR)	Wilcoxon Signed Rank	P-value
C-reactive protein (CRP)	CRP Day 0 (pre) CRP Day 3 (post)	11 (6 -18.75) 5 (2 - 13)	5.720	< 0.00001**
	CRP Day 0 (pre) CRP Day 6 (post)	11 (6 - 18.75) 2 (1 - 4)	6.744	< 0.00001**
	CRP Day 3 (post) CRP Day 6 (post)	5 (2 - 13) 2 (1 - 4)	6.362	< 0.00001**
Ferritin	Ferritin Day 0 (pre) Ferritin Day 3 (post)	595 (311.25 - 1022.50) 558 (368 -1009)	0.003	0.998
	Ferritin Day 0 (pre) Ferritin Day 6 (post)	595 (311.25 - 1022.50) 432.50 (234 - 676)	3.225	0.001**
	Ferritin Day 3 (post) Ferritin Day 6 (post)	558 (368 -1009) 432.50 (234 - 676)	4.536	< 0.00001**
Lactate dehydrogenase (LDH)	LDH Day 0 (pre) LDH Day 3 (post)	364 (278 - 543) 366 (265 - 502)	0.969	0.333
	LDH Day 0 (pre) LDH Day 6 (post)	364 (278 - 543) 328 (234 - 432)	2.645	0.008**
	LDH Day 3 (post) LDH Day 6 (post)	366 (265 - 502) 328 (234 - 432)	3.280	0.001**
D-Dimer	D-Dimer Day 0 (pre) D-Dimer Day 3 (post)	1.065 (0.65 - 2.3) 1.2 (0.92 - 2.05)	0.321	0.748
	D-Dimer Day 0 (pre) D-Dimer Day 6 (post)	1.065 (0.65 - 2.3) 1.2 (0.66 - 1.84)	1.426	0.154
	D-Dimer Day 3 (post) D-Dimer Day 6 (post)	1.2 (0.92 - 2.05) 1.2 (0.66 - 1.84)	2.080	0.038**

**Statistically significant (P<0.05)*
Abbreviations: (pre), prior to tocilizumab use; (post), post tocilizumab use.

Conclusion: Early use of TCZ may reduce the need for MV and decrease CRP, ferritin, LDH, and D-dimer levels, which may be useful inflammatory indices in the management of SARS-CoV-2 patients. Furthermore, the sequential use of methylprednisolone for 72 hours seems to potentiate the effect and prolong the suppression of the cytokine storm. The use of IL-6 levels may be helpful as a prognostic tool and in the management of acutely ill SARS-CoV-2 patients.
Disclosures: **All Authors**: No reported disclosures

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683. Molecular Detection of *Enterovirus D68* among Children with Acute Respiratory Tract Infection in Ghana
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Session: P-27. Diagnostics: Virology

Background: Acute respiratory tract infections of viral origin remain a leading cause of morbidity, mortality and economic loss regardless of age or gender. A small number of acute respiratory tract infection cases caused by *enterovirus D68* (*EV-D68*) have been reported regularly to Centers for Disease Control and Prevention since 1987 by countries in North America, Europe and Asia. However, in 2014 and 2015, the number of reported confirmed *EV-D68* infections was much greater than in previous years. The National Influenza Centre (NIC), Ghana carries out surveillance of respiratory infections, focusing on those caused by influenza virus; however, there is inadequate information on other viruses causing respiratory infections in Ghana, including *EV-D68*.
Objectives: To investigate the association of *EV-D68* with Severe Acute Respiratory Infections (SARI) and Influenza-Like Illness (ILI) in Ghana.
Methods: This was a retrospective cross-sectional study which involved archived human respiratory specimens stored at -80ºC at the NIC from 2014 to 2015. Using a random sampling method, oropharyngeal and nasopharyngeal swabs from patients with SARI and ILI that were negative by real-time PCR for human influenza viruses were screened for *EV-D68* using real-time reverse transcription-polymerase chain reaction (rRT-PCR).
Results: *Enterovirus D68* was detected in 4 (2.2%) out 182 SARI samples tested. *EV-D68* was detected in children younger than 5 years (4-100% of positives) and was not detected in children older than 5 years. *Enterovirus D68* was detected more frequently in SARI cases (3%) than in ILI cases (1.2%).
Conclusion: This study has shown for the first time the presence of *EV-D68* in acute respiratory infection in Ghana. The results confirmed minimal *EV-D68* circulation in the Ghanaian population.
Disclosures: **All Authors**: No reported disclosures

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684. The impact of rapid molecular respiratory testing on provider and parental decision making for children with respiratory illness evaluated in an ED setting
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Session: P-27. Diagnostics: Virology

Background: Rapid respiratory testing (RRT) can decrease ancillary testing, length of stay and antibiotic use for hospitalized children. Less is known regarding the impact of RRT in the emergency department (ED).

Our objectives were to determine if RRT impacts ED provider clinical decision making, family acceptance, and subsequent healthcare visitation for children with influenza-like illness (ILI).
Methods: Randomized controlled trial of children 1 month-18 years of age presenting to a tertiary care pediatric ED with ILI. All children received a nasopharyngeal swab and RRT and were randomized to the intervention group (RRT result given to clinicians/families) or control group (results not available unless obtained clinically). Outcomes included provider decision-making (anti-infective prescribing, ED diagnostic testing, disposition), family acceptance of RRT (willingness to undergo future testing) and repeat healthcare visits (clinic or ED). Providers in the intervention group were surveyed after RRT results were available, and families in both arms were contacted 1 and 10 days later.
Results: There were 920 ED visits from 908 enrolled children; 629 (68%) families from both arms and 443 (96%) providers from the intervention arm completed surveys. Most providers (33%) were ED trained and < 5 years post-training (37%). Clinical decisions were changed in 17% of visits based on RRT results, most commonly by ED trained physicians, advanced practice providers, and those < 5 years post-training (Table). The most common decision changes were antiviral use and avoidance of diagnostic tests (Figure). Families were more willing to undergo future RRT if they were in the intervention group, or if RRT results were available in 20 minutes. In the control arm, 22 families (7%) stated they would not have sought additional medical visits if RRT results were available. In the intervention group, 20 families (6.7%) reported that the RRT influenced how their child received care, and 14 families (17%) sought additional care due to RRT results.

Figure. Provider Clinical Decision Making Based on Results of Rapid Respiratory Testing, n = 443
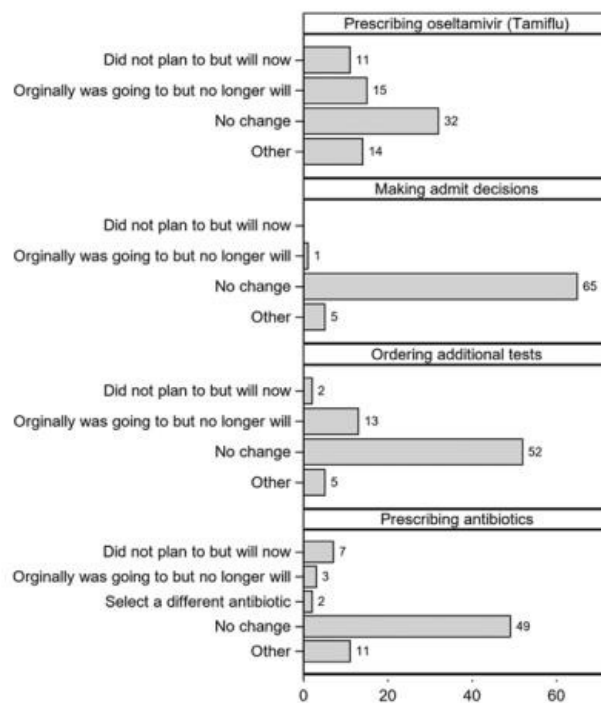
Characteristics of providers and patients by provider decision type

Characteristic	No Change in Clinical Decision Making (n=363)	Change in Clinical Decision Making (n=72)	P-value[a]
STUDY PARTICIPANT CHARACTERISTICS			
Median age in months, (IQR)	24.8 (10.8,58.8)	35.3 (14.2,81.0)	0.077[b]
High-risk medical condition present	121 (33)	33 (46)	0.04
Pathogen result			
Bacterial	7 (2)	8 (11)	<.0001
Influenza Virus	62 (17)	22 (31)	
Other Respiratory Virus	240 (66)	35 (49)	
Negative	52 (14)	7 (10)	
Appropriate antibiotic therapy based on diagnosis			
Antibiotics not indicated	285 (79)	44 (61)	<.0001
Antibiotics probably indicated	62 (17)	13 (18)	
Antibiotics definitely indicated	16 (4)	15 (21)	
Antibiotics prescribed	80 (22)	28 (39)	0.0025
Antivirals prescribed	14 (4)	16 (22)	<0.0001
Hospitalized from ED	55 (15)	21 (29)	0.0045

a-Pearson's Chi Square unless otherwise specified
b-Wilcoxon Rank Sum test
c- Categories were formed based on diagnoses for which antibiotics were indicated or not indicated as follows:
Antibiotics definitely indicated- sepsis, rule out sepsis, shock, pneumonia
Antibiotics probably indicated – pharyngitis, otitis media
Antibiotics not indicated – URI, LRTI, croup, bronchiolitis, reactive airway disease, extrapulmonary manifestations, other, dehydration

Conclusion: RRT impacts clinical decision making for 1 in 5 ED visits, specifically antiviral prescribing and reduced diagnostic testing. Most families were in favor of RRT, which impacts additional health care visits after the ED encounter.
Disclosures: **Suchitra Rao, MD**, **BioFire** (Grant/Research Support) **Molly Lamb, PhD**, **BioFire** (Grant/Research Support) **Rakesh Mistry, MD, MSCE**, **BioFire**

685. Comparison of Singleplex qPCR and the Luminex MAGPIX Platform for the Detection of Viral Pathogens

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Session: P-27. Diagnostics: Virology

Background: Various respiratory molecular assays are available, each with different characteristics and advantages that make them uniquely valuable. The objective of this study was to compare rates of viral detection using singleplex and multiplex platforms in a research setting.

Methods: A prospective viral surveillance study was conducted in Davidson County, TN. Infants under one year who presented with fever and/or respiratory symptoms were enrolled from the outpatient, emergency department and inpatient settings. Nasal swabs were collected and tested for influenza A (FluA), influenza B (FluB), human metapneumovirus (MPV), respiratory syncytial virus A and B (RSVA and RSVB), human adenovirus (AdV), parainfluenza 1, 2, 3, and 4 (PIV1-4) and SARS-2-CoV by both singleplex qPCR and the Luminex NxTAG Respiratory Pathogen and NxTAG CoV Extended panels. The rhinovirus/enterovirus, human bocavirus, *Chlamydophila pneumoniae*, *Mycoplasma pneumoniae* and coronavirus HKU1, NL63, 229E and OC43 results from the Luminex panel were excluded because singleplex qPCR was not performed on those targets. For singleplex qPCR results, cycle threshold (Ct) values were used as a surrogate for viral load, with a higher Ct value indicating a lower viral load.

Results: A total of 112 nasal specimens were tested by both singleplex qPCR and Luminex, of which 65 were positive for at least one virus by either platform and 56 had a virus detected on both platforms **(Figure 1)**. Seven specimens were positive by singleplex qPCR only and two were positive by Luminex only **(Figure 1)**. The targets positive by singleplex qPCR only included FluB, RSVA, AdV and PIV2 and those positive by Luminex only included FluA H1N1 and RSVB **(Figure 2)**. Specimens that were positive only on the singleplex assay had a higher average Ct value than those that were positive on both assays, indicating a lower viral load **(Figure 3)**.

Figure 1

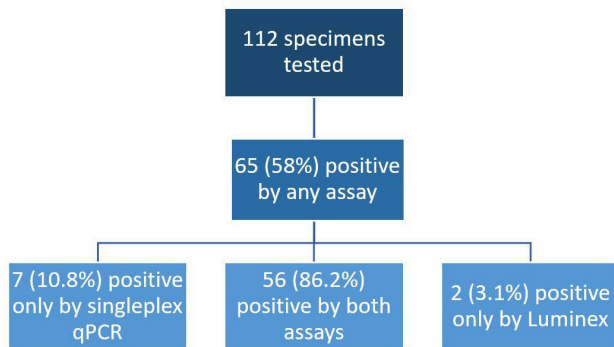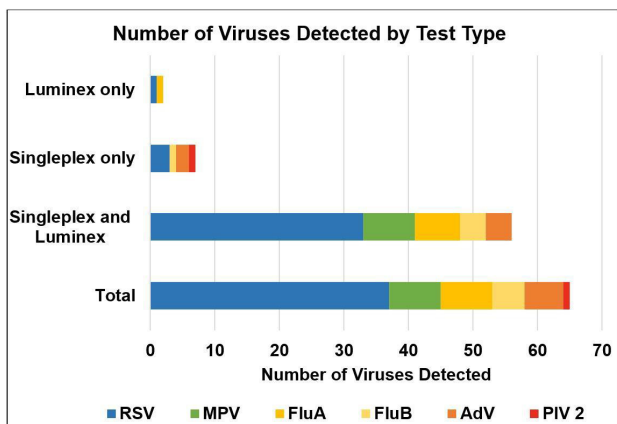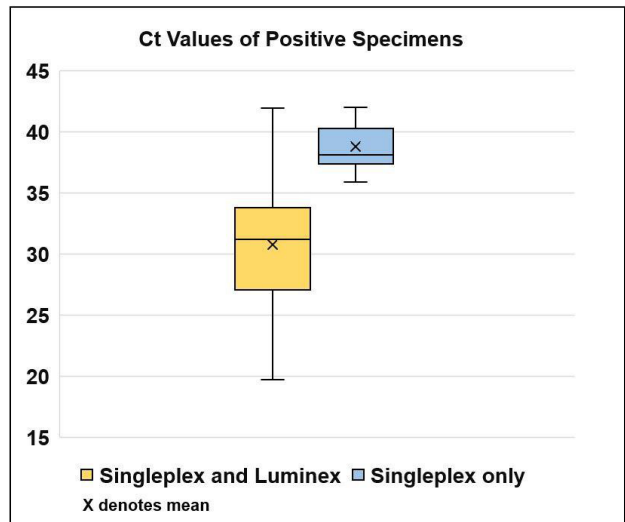#### Number of Viruses Detected by Assay

Figure 2

Figure 3

Conclusion: The multiplex assay identified 89% of the total viruses detected while singleplex qPCR identified 97% of the total viruses detected. Lower viral loads may contribute to false negative results on the multiplex platforms. Future studies with larger sample sizes are needed in order validate our findings.

686. Elevations in TNFα and IL-18 are Associated with Increased Risk of Probable Cytomegalovirus Tissue Invasive Disease in Solid Organ Transplant Recipients

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Session: P-27. Diagnostics: Virology

Background: Human cytomegalovirus (CMV) continues to cause significant morbidity and mortality in solid organ transplant (SOT) recipients despite prophylaxis. Tissue invasive CMV disease (TI-CMV) can lead to end-organ damage and graft loss. Diagnosing TI-CMV can be challenging as CMV viral load in the blood does not always correlate with episodes of TI-CMV and therefore definitive diagnosis often requires an invasive procedure such as bronchoscopy or colonoscopy. The purpose of this study was to determine if proinflammatory cytokines, including IL-18, are elevated in SOT recipients with probably TI-CMV as a way to identify patients at risk for this severe form of CMV disease.

Methods: The electronic medical record was searched for adult SOT recipients who were tested for CMV via blood qPCR during an 11-month period.Twenty-nine SOT recipients were identified that had episodes of CMV DNAemia without other concomitant infections during this time period. Patients were divided into those that had probable TI-CMV and those with CMV DNAemia alone, by chart review. Inflammatory cytokines (IFNγ, TNFα, IL-1β, IL-2, IL-4, IL-6, IL-8, IL-10, IL-12p70, IL-13, IL-18, and IL-1RA) were measured in residual plasma from these patients using a commercially available multiplex assay for at least two time points during the study period. Wilcoxon-Rank-Sum, logistic regression, and principal component analysis was performed comparing patients with and without probable TI-CMV.

Results: Patients with probable TI-CMV had significantly higher IL-18, TNFα, and IL-1β than patients with CMV DNAemia alone ($p < 0.001$, < 0.001, and < 0.05 respectively). When adjusting for transplant type and CMV recipient serostatus, elevations in TNFα (OR 1.43, 95% CI 1.07-1.92) and IL-18 (OR 2.00, 95% CI 1.06-3.75) were associated with increased odds of having probable TI-CMV. In principal component analysis the combination of CMV viral load, IL-18, TNFa, and IL-1β accounted for 80% of the variance in the data.