1164. Influenza Clinical Diagnostic Testing and Antiviral Treatment among Children Hospitalized with Acute Respiratory Illness During the 2015–16 Influenza Season

Angela P. Campbell, MD, MPH, FPIDS, FIDSA[1]; Craig McGowan, MS[1]; Brian Rha, MD, MSPH[2]; Julie A. Boom, MD[3]; Janet Englund, MD, FIDSA[4]; Natasha B. Halasa, MD, MPH, FPIDS[5]; Rangaraj Selvarangan, PhD[6]; Mary A. Staat, MD, MPH[7]; Geoffrey A. Weinberg, MD, FIDSA, FPIDS[8]; Parvin H. Azimi, MD[9]; Eileen J. Klein, MD, MPH[4]; Monica McNeal, MS[7]; Leila C. Sahni, MPH[3]; Monica N. Singer, MD, MPH[9]; Laura Stewart, PhD[5]; Peter G. Szilagyi, MD, MPH[8,10]; Christopher J. Harrison, MD, FAAP, FPIDS[6]; Daniel C. Payne, PhD, MSPH[2] and Alicia M. Fry, MD, MPH[1]; [1]Influenza Division, Centers for Disease Control and Prevention, Atlanta, Georgia, [2]Division of Viral Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia, [3]Texas Children's Hospital, Houston, Texas, [4]University of Washington/ Seattle Children's Hospital, Seattle, Washington, [5]Vanderbilt University School of Medicine, Nashville, Tennessee, [6]Children's Mercy Hospital and Clinics, Kansas City, Missouri, [7]Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, [8]University of Rochester Sch. of Medicine and Dentistry, Rochester, New York, [9]UCSF Benioff Children's Hospital Oakland, Oakland, California, [10]University of California at Los Angeles, Los Angeles, California

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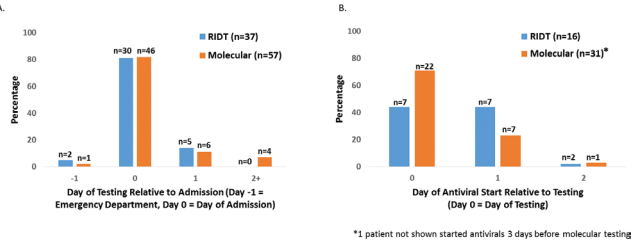
Background. Although antiviral therapy is recommended for hospitalized patients with suspected or confirmed influenza, clinicians often rely on test results to determine management. Rapid influenza diagnostic tests (RIDTs) have suboptimal sensitivity; use of molecular assays may improve care. We evaluated clinical influenza testing and antiviral treatment practices in hospitalized children.

Methods. Children aged <18 years with acute respiratory illness (ARI) were enrolled through active surveillance at 7 hospitals in the New Vaccine Surveillance Network between November 2015 and June 30, 2016; analysis was restricted to the influenza season. Preliminary data were analyzed for children who had clinical influenza diagnostic testing with a rapid influenza diagnostic test or molecular assay on nasopharyngeal or nasal swabs or nasal washes. Children who had received antivirals prior to hospitalization were excluded.

Results. Of 2267 children, 1165 (51%) had clinical diagnostic testing on upper respiratory samples: 276 (24%) by RIDT alone, 780 (67%) by molecular testing alone, and 109 (9%) by both. The use of molecular testing alone varied by site, from 10% to 100% of samples tested. Of 116 (10%) children testing positive for influenza, 60 (52%) were treated; by site, treatment of children positive for influenza ranged from 25% to 83%. Antiviral treatment was given to 16/20 (80%) of those admitted ≤2 days from symptom onset vs. 44/96 (46%) children admitted >2 days after onset. Among 94 children tested by one method who were positive, >80% had samples collected in the emergency department or on day of admission, and 47 started treatment (Figure, A): 16/37 (43%) and 31/57 (54%) were treated when tested by RIDT alone and molecular testing alone, respectively. Of those positive children treated, 7/16 (44%) tested by RIDT vs. 22/31 (71%) by molecular testing started treatment on the day of testing (Figure, B).

Conclusion. Half of hospitalized children with ARI who tested positive for influenza received antiviral treatment. Although there was high variability in testing and treatment by site, in positive patients who were treated the use of molecular testing appeared to be associated with prompt antiviral therapy. Understanding clinician reasons for relatively low treatment overall will require further investigation.

Figure. Among 94 patients positive by RIDT or molecular testing alone: A) Timing of testing relative to day of hospital admission; B) Timing of antiviral initiation relative to testing date



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1165. Analytical and Clinical Performance of a Real-time Screening PCR Assay Identifying Congenital CMV Infection

Benjamin Rohde, BS[1,2]; Maria Carillo-Marquez, MD[1,3]; Ryan Tomlinson, BS[1,3]; Jacqueline Blanch, CNA[1,3]; Young-In Kim-Hoehamer, PhD[1,3]; Hema Patel, MT[2]; Chirag Patel, MT[2]; Gita Zanalian, MT[2]; Gertrude Osborne, MT[2]; Joseph Davis, MBA[2]; Anami Patel, PhD[1,2] and John P. Devincenzo, MD[1,2,3,4]; [1]Children's Foundation Research Institute, Le Bonheur Children's Hospital, Memphis, Tennessee, [2]Molecular Diagnostics Laboratory, Le Bonheur Children's Hospital, Memphis, Tennessee, [3]Department of Pediatrics, University of Tennessee School of Medicine, Memphis, Tennessee, [4]Department of Microbiology, Immunology, and Molecular Biology, University of Tennessee School of Medicine, Memphis, Tennessee

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Background. Congenital CMV infection (cCMV) is the most common identifiable cause of mental retardation in the United States but requires early diagnosis to define the infection and to institute effective antiviral therapy. Traditional identification strategies including hearing screens and physical exams likely miss many patients with cCMV. We therefore developed and evaluated the performance of a PCR assay optimized for low cost, specimen collection at time of dried blood spot collection, and detection thresholds below the salivary CMV concentrations known to occur in cCMV patients.

Methods. We utilized a real-time CMV PCR assay (Simplexa™ CMV)(DiaSorin, Cypress CA) amplifying the UL83 gene and the 3M Integrated Cycler. Saliva was collected from volunteers (Copan swab), and spiked with known concentrations of CMV culture supernatant quantified by COBAS Ampliprep™. (Roche Diagnostics). Additionally, saliva was collected by copan swab from all births within a single multi-hospital system from 3/21/16 – 5/4/17. Newborns who were initial screen PCR positive were subsequently evaluated by urine CMV PCR by an outside laboratory for confirmation of cCMV.

Results. Analytical threshold of detection was well below 4 log copies/ML, with 100% of samples testing positive at 3.5 log copies/ML (Fig 1). 6127 newborn saliva samples were evaluated and 61 were PCR positive (£40 CT). 47 of these tests were confirmed by urine PCR (Fig 2) (PPV 0.9792, NPV 0.9988, Sens 0.8704, Spec 0.9998). Screen positive tests which were not confirmed by urine PCR had CT values £36. Adjusting the definition of a positive to CT £36 further improved the performance (PPV >0.9999, NPV 0.9997, Sens 0.9592, Spec >0.9999).

Conclusion. We demonstrate good performance of a congenital CMV methodology thus facilitating an effective universal newborn screening program

Figure 1

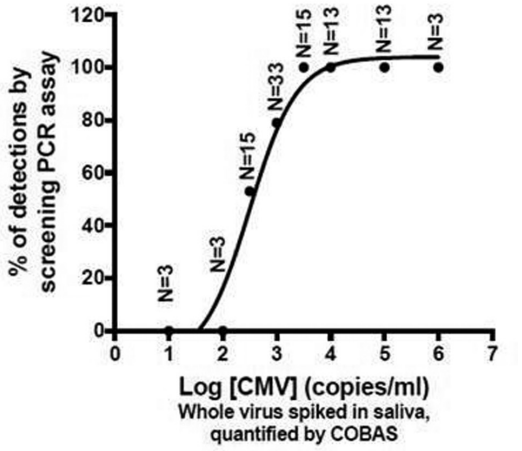
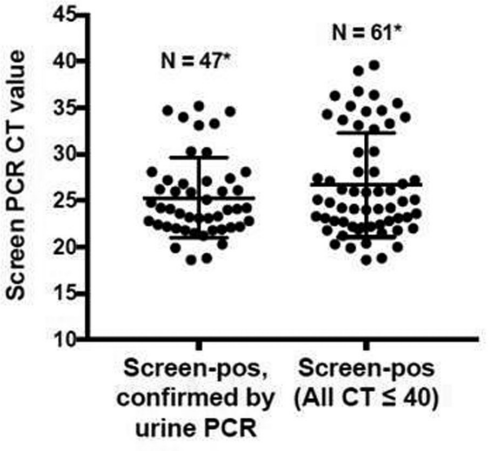


Figure 2



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