

Poster Section: Surveillance and Diagnostics, with an Update on Rapid Diagnostics

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Poster Title: Comparison of Electronic Microarray to Enzyme Hybridization Assay for Multiplex RT-PCR Detection of Common Respiratory Viruses in Children

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The NGEN RVA (Nanogen, Inc, San Diego) is a pair of analyte specific reagents that allow for the multiplex RT-PCR and electronic microarray detection of flu A and B, respiratory syncytial virus (RSV) A and B, and human parainfluenza virus (HPIV) types 1, 2, and 3. We evaluated these reagents as an assay in our laboratory in comparison with the Hexaplex (Prodesse, Inc, Waukesha, Wisconsin), a multiplex RT-PCR-EHA. Comparisons included the detection of respiratory viruses from whole virus stocks (ATCC) and from frozen pediatric respiratory specimens collected at Children's Hospital of Wisconsin between 1991 and October 1998. The whole virus stocks demonstrated analytical limits of detection (LOD) for the RVA of 10^{-2} (HPIV-2), 10^{-1} (HPIV-1, flu B, RSV A), 10^0 (RSV B), 10^1 (flu A), and 10^2 (HPIV-3) TCID₅₀/mL, respectively. The Hexaplex had better analytical LOD overall. A total of 420 respiratory specimens were evaluated. The agreement on positive samples, negatives samples, and 95% confidence intervals between the RVA and Hexaplex assays was: flu A 88% (72-97), 100% (99-100); flu B 97% (82-100), 100% (99-100); RSV 91% (79-98), 100% (99-100); HPIV-1 100% (90-100), 100% (99-100); HPIV-2 69% (39-91), 100% (98-100); HPIV-3 82% (65-93), 100% (99-100), respectively. After the retesting of 6 indeterminants and 20 discrepant, overall agreement improved to 96% on the positives and 100% on the negatives, with only 8 specimens still discrepant. Cost comparison demonstrated that the Hexaplex was favored in low-volume use, but the RVA used much less technician time