Background: The detection of viral respiratory tract infections has evolved greatly with the development of PCR-based commercial systems capable of simultaneously detecting a wide variety of pathogens. We evaluated the relative performance of two such systems for the detection of viral agents in respiratory tract specimens from immunocompromised patients.

Materials and Methods: Samples included 440 clinical respiratory tract specimens from 210 patients. Samples were deidentified and assayed in parallel using two different, broadly multiplexed PCR systems: ResPlex™ II Panel v2.0 (ResPlex), Qigjen, Hilden, Germany and FilmArray® Respiratory Panel (FilmArray™), Idaho Technology, Inc. Sample type included 440 nasopharyngeal specimens from 210 symptomatic pediatric oncology patients (Table 1). Following IRB review, samples remaining after clinical testing were de-identified and tested by the two multiplexed assays.

Methods: 440 nasopharyngeal specimens from 210 symptomatic pediatric oncology patients were collected for clinical diagnostic purposes from January 13th to May 4th, 2010. Samples included predominantly nasopharyngeal washes, as well as washes and treacheal aspirates (Table 1). Following RNA extraction and amplification after clinical testing were de-identified and tested by the two multiplexed assays.

Results: A total of 440 samples were collected from 210 patients (Table 1). 441 samples from 210 patients were tested by ResPlex. 417 of 419 samples were positive for at least one virus. Results for the individual viruses targets were grouped into seven categories: adenovirus (ADV), coronavirus (229E, NL63, OC43, HKU1), human metapneumovirus (hMPV), influenza A (FluA), parainfluenza virus (PIV), respiratory syncytial virus (RSV), and picornavirus (PCV), and respiratory syncytial virus (RSV). No samples were positive for influenza B virus. Positive concordance by patient required at least one virus detected in common between the two systems.

Conclusions: The detection and characterization of respiratory tract viral pathogens is of particular importance in an immunocompromised host where agents of typical seasonal respiratory tract infections can cause severe or life-threatening illness. Recently, molecular amplification assays have become a common means of laboratory diagnoses in these cases; however, use of single-target assays can be cumbersome, time-consuming and expensive as the number of infectious agents detected increases. Widely multiplexed assays attempt to address this issue by the simultaneous detection and identification of large numbers of different pathogens, several such assays have become available, but few direct comparative studies have been published, particularly in the immunocompromised patient population. The study compared the performance of the FilmArray Respiratory Panel (FilmArray™), Idaho Technology, Inc., Salt Lake City, Utah, and ResPlex II Panel v2.0 (ResPlex), Qigjen, Hilden, Germany with that of the FilmArray Respiratory Panel (FilmArray™), Idaho Technology, Inc., Salt Lake City, Utah.

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