Poster # M36

Importance of the Starplex S160-M (Swab and Viral Transport) in the Diagnosis of the 2003-2004 Influenza A Outbreak

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Abstract:

IMPORTANCE OF THE STARPLEX S160-M (SWAB AND VIRAL TRANSPORT) IN THE DIAGNOSIS OF THE 2003-2004 INFLUENZA A OUTBREAK

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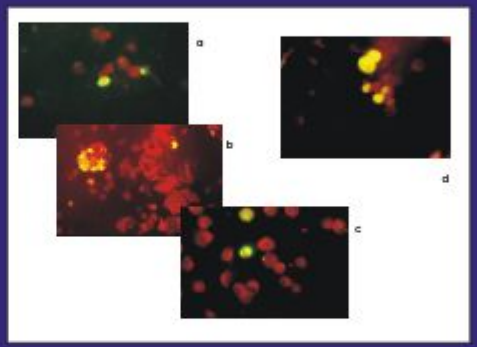
Background:
The emergence of the SARS virus not only impacted on the front-line nurses and physicians, but also on the routine clinical virology service in terms of providing rapid diagnosis for other viral respiratory diseases. For years, the only test requested was to rule out streptococcal infection but with the advent of direct fluorescent antibody testing for a number of respiratory viruses, obtaining specimens of appropriate quality has been a constant problem. A heightened concern about screening respiratory illnesses combined with an early intense Influenza season resulted in over 500 requests for respiratory virus diagnosis in 43 days. Early in this situation it was realized that a simple viral sample collection system was critical as most people assigned to collect samples were poorly trained in terms of specimen requirements. Starplex Scientific Inc. produces a viral transport media coupled with a male (urethral) collection swab in one sterile package (S160-M), but the versatility of the swab's design made it a perfect fit for collecting respiratory samples. Storage conditions of the product recently changed from 4 C to room temperature, which was paramount in making the product visible and utilized.

Results:
Using the Starplex system, our lab received high quality respiratory samples. Over 94% of swabs received were of adequate quality to perform rapid direct fluorescence testing for seven viral antigens and shell vial culture backup. The design of the swab made it very easy to collect a quality sample from the appropriate area and the "snap and screw cap" design reduced to near zero the number of leaking specimens. Room temperature storage meant that the product was readily accessible for use in examination rooms and other specimen collection areas. Compliance for submitting samples in this manner was extremely high.
Conclusion: Clinical diagnostic virology laboratories are now involved in primary care diagnostic work and are in need of products that are easy to use, convenient to store and provide for high quality specimens. The Starplex product enabled us to report accurate and significant patients results with a minimum of specimen rejection.

Procedure

In the wake of SARS screening, viral swab collection has gone from selected individuals to entire nursing units. To aid these individuals our laboratory not only supplied swab and transport media collection systems, but equipped patient care areas with written instructions on proper collection techniques. Swabs were submitted from the four main campuses of the London teaching hospitals as well as long-term care facilities, regional hospitals and selected physicians offices. When the swabs arrived in the laboratory the liquid media was transferred from the transport tube and placed into a 2.0 ml centrifuge tube and spun at 10,000 rpm for 3 minutes. Supernatant was transferred to a labeled patient specimen bijou and the cell pellet was reconstituted in approximately 200 ul of PBS. Each patient sample was spotted onto three multi-well microscope slides and after a minute the excess liquid/cell suspension was removed by Pasteur pipette and added back to the sample bijou. The slides were air-dried within the biological safety cabinet where the sample processing takes place. The slides are then fixed in acetone (-20 C) for ten minutes. Slides were stained for Respiratory Syncytial Virus (PathoDx RSV Kit catalogue number PKRS1), Influenza A and B (SimulFluor Flu A/Flu B catalogue number 3121) and Parainfluenza 1,2,3 and Adenovirus (SimulFluor Para 1,2,3/Adeno product number 3299). Technologists using a standard fluorescence microscope using a FITC filter set then read the smears.



Photography Legend:

(a) Direct Smear Positive for Influenza A (b) Direct Smear Positive for Respiratory Syncytial Virus (c) Direct Smear Positive for Parainfluenza 1,2,3 (d) Direct Smear Positive for Influenza B

Observations

Interpretation of the smears proved to be relatively easy and any laboratory with staff members experienced in reading fluorescence would find them a clean read. Smears from processed swab samples had many advantageous traits, which included good cellular distribution, reduced non-specific fluorescence (with the reduction of mucous) and reduced processing time over aspirates that contained any quantities of mucous. Sample collection by primary care providers was also quicker and easier than aspiration and created less aerosols.

As of the start of April 2004 the Influenza A outbreak has been followed by an RSV outbreak and currently a Parainfluenza 3 outbreak. Respiratory swab sampling has played a key role in early diagnosis of all these outbreaks. This laboratory has now processed well over 1100 respiratory samples with the majority now being submitted using the Starplex Multitrans System. Samples are rarely lacking cellular material for staining purposes with a 94% adequacy rate during the Influenza A outbreak and 97% currently.