INTRODUCTION & PURPOSE

In France, influenza surveillance in the general population is carried out with the GROG network that includes general practitioners and paediatricians. These practitioners collect clinical samples (nasal swabs) with Σ-Virocult®. The samples are sent to the laboratory by post with an average delay of 4 days.

Objective: In this study, we compared the performance of 4 different swab collection devices over 4 days for the detection of the pandemic A/California/7/2009 virus using an in-house RT-PCR technique. The devices used were Sigma-Virocult® with polyurethane foam bud swab (SVF), Sigma-Virocult® with Hydraflock Swab (VHF), Sigma-VM® with Hydraflock Swab (VCF) and Copan UTM® with Floccled Swab (CLF).

MATERIAL & METHOD

A fresh MDCK cell culture of the pandemic A/California/7/2009 was prepared as seed stock. The strain selected for the study was obtained from Dr Alan Hay, World Influenza Centre, London. According to the protocol, 10-fold dilutions of the virus suspension from 10^2 to 10^6 were seeded with 10μl to 4 transport devices.

Each dilution was duplicated on devices and the last testing was repeated. The experimental samples were prepared and tested for influenza on the same day and after 4 days storage at ambient temperature by RT-PCR. We used the same protocol as for the GROG clinical samples. Nuclic acid was extracted using the NucliSense easyMAG® system (bioMérieux). The PCR was an in-house one step real-time RT-PCR targeting the M gene on the Applied Biosystems 7500 Fast platform. The viral load was determined for all experimental samples, devices and dilutions, on the same run.

The graph represents the medium value results for each tested dilution day 4 and for each device.

RESULTS

Influenza is a seasonal respiratory illness responsible for winter epidemics. In France surveillance in the general population relies on clinical samples collected by general practitioners and paediatricians. Nasal or nasopharyngeal swabs are collected by the doctors from patients presenting an acute respiratory infection. Samples are sent to the laboratory by post. The clinical samples arrive at the NIC within an average delay of 4 days.

In the laboratory, diagnostic methods include influenza detection by real-time reverse transcription polymerase chain reaction (RT-PCR) and cell culture. Upon arrival, the swabs are processed for viral RNA extraction on NucliSens easyMAG® instrument (bioMérieux) and for inoculation on MDCK cells for virus isolation. The highly sensitive PCR assays allow rapid detection and identification of influenza viruses.

For many years Σ-Virocult® were used for the sampling. This has a wound rayon fibre bud on a standard (150mm) plastic or wire shaft, and a tube containing a sponge pad premoistened with virus transport medium. More recently new devices have become available with either virus transport medium (eg Sigma-Virocult® or Virocult easyMAG®) for viruses, chlamydia and mycoplasma (eg Sigma VM® and Copan’s UTM®). New bud materials have also become available such as open-cell foam (Sigma Virocult and VCM, Flock (Copan) and Hydraflock (Medical Wire)). Floct type devices have demonstrated the ability to collect more respiratory epithelial cells and also the release of both cellular and cell-free material more effectively. The aim of the present study was to evaluate the efficiency of Sigma-Virocult foam bud for the transport of Influenza A/H1N1 pdm09, together with Sigma-Virocult with Hydraflock swab, Sigma-VM® with Hydraflock (all Medical Wire), and also UTM with Flock swab (Copan).

CONCLUSIONS

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A/California/7/2009 Persistence

<table>
<thead>
<tr>
<th>Device</th>
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A/California/7/2009 – A/H1N1 pdm09

REFERENCES