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Real Time Detection of Influenza and Response in a Long-Term Care Facility

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BACKGROUND

- **Influenza-like Illness (ILI) outbreaks are common occurrences among patients in long-term care facilities (LTCF), often with devastating consequences.[1]**
- Several post-hoc studies have been conducted, but no research has been done on real-time influenza surveillance outcomes in LTCF settings.[1]
- Studies have shown that influenza rapid testing and relaxed symptom criteria have resulted in earlier detection of influenza outbreaks and faster initiation of control procedures.[2]

METHODS

- The primary outcome was feasibility of real-time influenza detection within an 85-bed LTCF, and included facility engagement, training of nursing staff in patient identification and nasal specimen collection, and overall reaction to this intervention.
- Following on-site specimen collection, a member of our team was contacted, retrieved the specimen, and assessed for influenza using an off-site Quidel Sofia Influenza A+B FIA RIDT analyzer with wireless connectivity.
- The Sofia® platform (Quidel, Inc.) is a point-of-care lateral flow immunoassay with an automated fluorescent reader that is CLIA-waived for influenza A +B Detection.
- Results were sent immediately to the LTCF and conveyed to public health.

RESULTS

Figure 1. Age Distribution of Respiratory Infections in LTCF

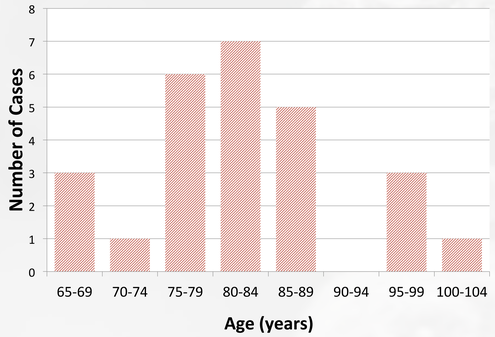


Figure 2. Acute Respiratory Infections and Influenza at a LTCF (infection control initiated with 1st Influenza case on 12/15/2014)

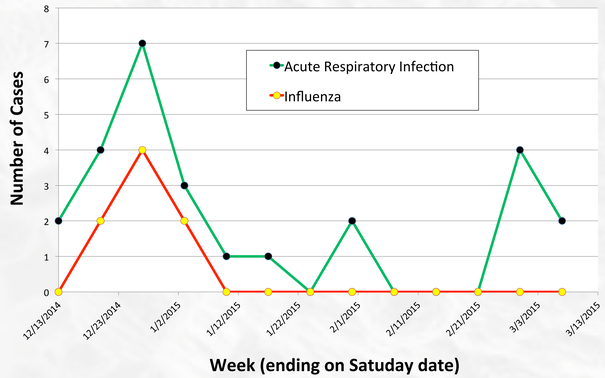
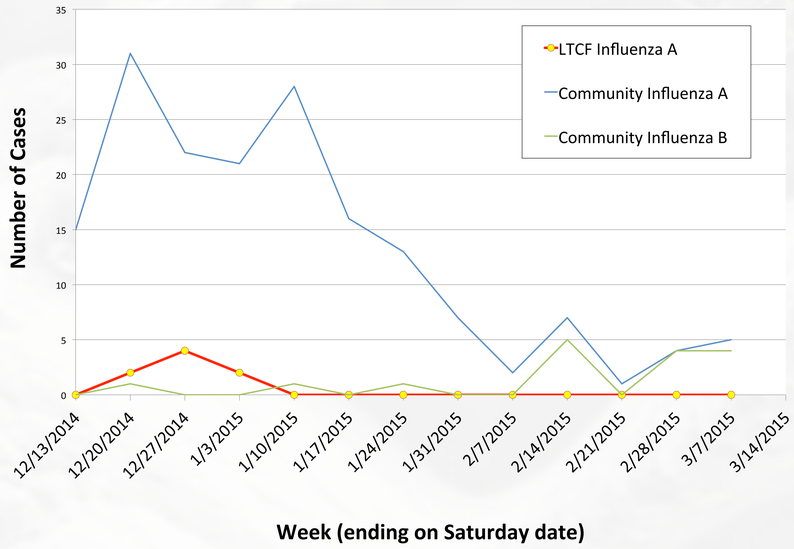


Figure 3. Community patterns of Influenza compared to Influenza at a LTCF (infection control initiated with 1st Influenza case on 12/15/2014)



To date, 26 RIDT tests have been performed on specimens from residents aged 69 to 102 years (figure 1). Five of these specimens tested positive for influenza over a three week period, with the first positive noted on 12/15 (figure 2).

Three additional influenza cases were identified by RT-PCR.

Due to wireless connectivity, epidemiologists at the Wisconsin Division of Public Health were notified in near real-time. Based on results, influenza antiviral prophylaxis was initiated for all eligible residents on the affected LTCF wing.

DISCUSSION

This approach was shown to be highly feasible:

- Staff training occurred on 12/08/2014
- Supplies were delivered on 12/12/2014
- The first specimen collection occurred on 12/12/2014
- The first influenza (+) case was identified on 12/15/2014
- Infection control was initiated starting on 12/16/2014
- Last case of influenza was documented on 12/29/2014

-There was high "buy-in" by administration and staff
-RSV and Parainfluenza viruses were also detected
-Sofia identified 5 of 8 cases (sensitivity = 62.5%)

CONCLUSION

- Early detection of an influenza outbreak in a LTCF occurred through the use of RIDT coupled with immediate wireless transmission of results.
- **Availability of this information in symptomatic residents, well in advance of any transfer to an emergency department or hospital, allowed for rapid implementation of prevention and control measures.**
- This approach of real-time influenza detection in LTCFs is feasible and could be enhanced by on-site testing.
- Coupling technology with wireless transmission of results to public health allows early intervention in a highly vulnerable population.

REFERENCES/ACKNOWLEDGEMENTS

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2. http://www.ncbi.nlm.nih.gov/pubmed/10501266
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