

# Surveillance of Respiratory Viruses in Long Term Care Facilities

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## Objective

To assess the feasibility of conducting respiratory virus surveillance for residents of long term care facilities (LTCF) using simple nasal swab specimens and to describe the virology of acute respiratory infections (ARI) in LTCFs.

## Introduction

Although residents of LTCFs have high morbidity and mortality associated with ARIs, there is very limited information on the virology of ARI in LTCFs [1,2]. Moreover, most virological testing of LTCF residents is reactive and is triggered by a resident meeting selected surveillance criteria. We report on incidental findings from a prospective trial of introducing rapid influenza diagnostic testing (RIDT) in ten Wisconsin LTCFs over a two-year period with an approach of testing any resident with ARI.

## Methods

Any resident with new onset of respiratory symptoms consistent with ARI had a nasal swab specimen collected for RIDT by nursing staff. Following processing for RIDT (Quidel Sofia Influenza A+B FIA), the residual swab was placed into viral transport medium and forwarded to the Wisconsin State Laboratory of Hygiene and tested for influenza using RT-PCR (IVD CDC Human Influenza Virus Real-Time RT-PCR Diagnostic Panel), and for 17 viruses (Luminex NxTAG Respiratory Pathogen Panel [RPP]). The numbers of viruses in each of 7 categories [influenza A (FluA), influenza B (FluB), coronaviruses (COR), human metapneumovirus (hMPV), parainfluenza (PARA), respiratory syncytial virus (RSV) and rhinovirus/enterovirus (R/E)], across the two years were compared using chi-square.

## Results

Totals of 164 and 190 specimens were submitted during 2016-2017 and 2017-2018, respectively. RPP identified viruses in 56.2% of specimens, with no difference in capture rate between years (55.5% vs. 56.8%). Influenza A (21.5%), influenza B (16.5%), RSV (19.0%) and hMPV (16.5%) accounted for 73.5% of all detections, while coronaviruses (15.5%), rhino/enteroviruses (8.5%) and parainfluenza (2.5%) were less common. Specific distribution of viruses varied significantly across the two years (Table:  $X^2=48.1$ ,  $df=6$ ;  $p<0.001$ ).

## Conclusions

Surveillance in LTCFs using nasal swabs collected for RIDT is highly feasible and yields virus identification rates similar to those obtained in clinical surveillance of ARI with collection of nasopharyngeal specimens by clinicians and those obtained in a school-based surveillance project of ARI with collection of combined nasal and oropharyngeal specimens collected by trained research assistants. Significant differences in virus composition occurred across the two study years. RSV varied little between years while hMPV demonstrated wide variation. Simple approaches to surveillance may provide a more comprehensive assessment of respiratory viruses in LTCF settings.

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## References

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**Distribution of respiratory viruses in LTCFs over two sequential seasons.**

Respiratory Virus Season	Virus Category (percent of specimens)						
	FluA	FluB	COR	hMP V	PAR A	RSV	R/E
2017/2018	17.6	24.2	20.9	0	5.5	18.7	13.2
2017/2018	24.8	10.1	11.0	30.3	0	19.3	4.6
Combined	21.5	16.5	15.5	16.5	2.5	19.0	8.5



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