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Routine molecular point-of-care testing for respiratory viruses in adults presenting to hospital with acute respiratory illness and its impact on antiviral and side room use: A pragmatic Randomised Controlled Trial

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Introduction

Early diagnosis of influenza is crucial to ensure early appropriate antiviral treatment[1] and patient isolation. Current laboratory testing takes 24-48 hours to generate a result leading to the empirical use of neuraminidase inhibitors (NAIs) and patient isolation before results are known. The development of rapid molecular test platforms make routine point-of-care testing (POCT) potentially feasible in acute care settings

Results

Table 1	POCT n=360 (%)	Control n=158 (%)	p value
No of patients tested for influenza	360 (100)	158 (45)	<0.0001
No of patients positive for influenza	61(17)	37(11)	0.012

Table 3	POCT n=191 (%)	Control n=194 (%)	p value
No of patients isolated	63 (33)	49 (25)	0.116
Isolated with confirmed viral infection	32 (17)	17 (8.8)	0.022

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Methods

The ResPOC trial was a pragmatic, parallel group, open-label, randomised controlled trial evaluating the clinical impact of POCT in adults presenting with acute respiratory illness (ARI) of ≤7 days duration, to a large acute hospital in the UK. ARI was defined as an acute pulmonary illness or an acute exacerbation of a chronic respiratory illness.

Between January 2015 and April 2016 720 adults were randomised (1:1) to receive POCT for respiratory viruses (n=362) or routine clinical care (n=358). Randomisation was done with internet-based, computer generated allocation using random permuted blocks. The primary outcome was the proportion of patients who received antibiotics. Secondary outcomes included; proportion of patient treated with NAIs, duration of NAIs, time to receipt of NAIs, proportion of patients isolated in a side room, time to isolation or de-isolation.

Table 2	POCT n=360 (%)	Control group n=354 (%)	p value
Number treated with NAI	66 (18)	51 (14)	0.156
Number of influenza positive patients treated with NAI	54 (82)	24 (47)	0.0001
NAI use in patients who did not have influenza, no of doses	2	6.1	0.006
No of hospitalised influenza positive patients	57	37	
No of hospitalised influenza positive patients who received NAI	52 (91)	24 (65)	0.003

Conclusion

Routine use of molecular POCT for respiratory viruses in adults presenting to hospital with ARI results in:

- a higher detection rate of influenza virus
- more appropriate use of antivirals, including increased use in influenza positive patients and reduction in empirical use in patients who do not have influenza
- an increase in appropriate allocation of isolation rooms

References

1. Muthuri SG, Venkatesan S, Myles PR et al Effectiveness of neuraminidase inhibitors in reducing mortality in patients admitted to hospital with influenza A H1N1pdm09 virus infection: a meta-analysis of individual participant data,The Lancet respiratory Medicine, Volume 2, No. 5, p395–404, May 2014