

Evaluation of the impact of Point-Of-Care Testing using the Cepheid Xpert Flu/RSV assay in the Acute Medical Unit

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BACKGROUND

Influenza point-of-care testing (POCT) for patients has the potential to transform the initial assessment of patients with acute respiratory illnesses, resulting in faster isolation and treatment decisions, and subsequent prevention of secondary cases and hospital influenza outbreaks. This study aimed to assess the impact that POCT had on the management of patients with respiratory signs and symptoms.

METHODS

We performed a cohort study comparing the diagnosis and management of influenza patients before and after POCT was installed.

Adults with acute respiratory illness and fever ($> 37.5^{\circ}\text{C}$) presenting to the Acute Medical Admissions Unit (AMU) were swabbed and tested using Nucleic-Acid-Amplification-Technology (NAAT) for influenza A, influenza B and RSV.

In phase 1 of the study (01-01-17 until 18-01-17) samples were transported to the on-site laboratory, and batch tested by NAAT using Arrow/LIAISON® Ixt RNA extraction kit (DiaSorin, Saluggia, Italy) and SmartCycler® (Cepheid, Sunnyvale, CA, USA) system. 3 batches were run daily.

In phase 2 (29-01-17 until 13-02-17) samples were tested immediately on AMU using the GeneXpert® system tandem Xpert® Flu/RSV assay (Cepheid, Sunnyvale, CA, USA).

Contacts (defined as 4 hours or greater in the same bay) of confirmed influenza A cases were isolated and prescribed prophylaxis.

RESULTS

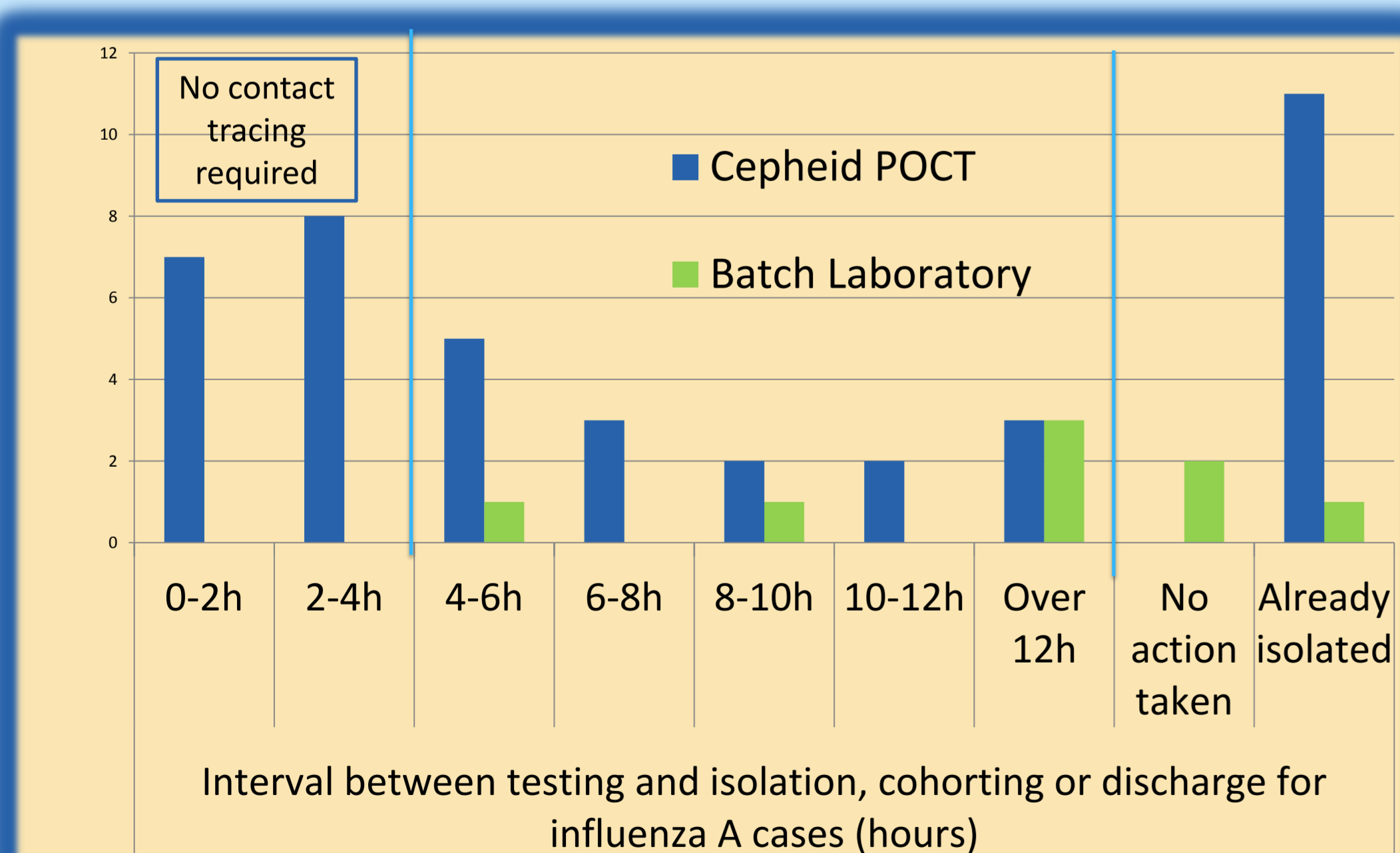
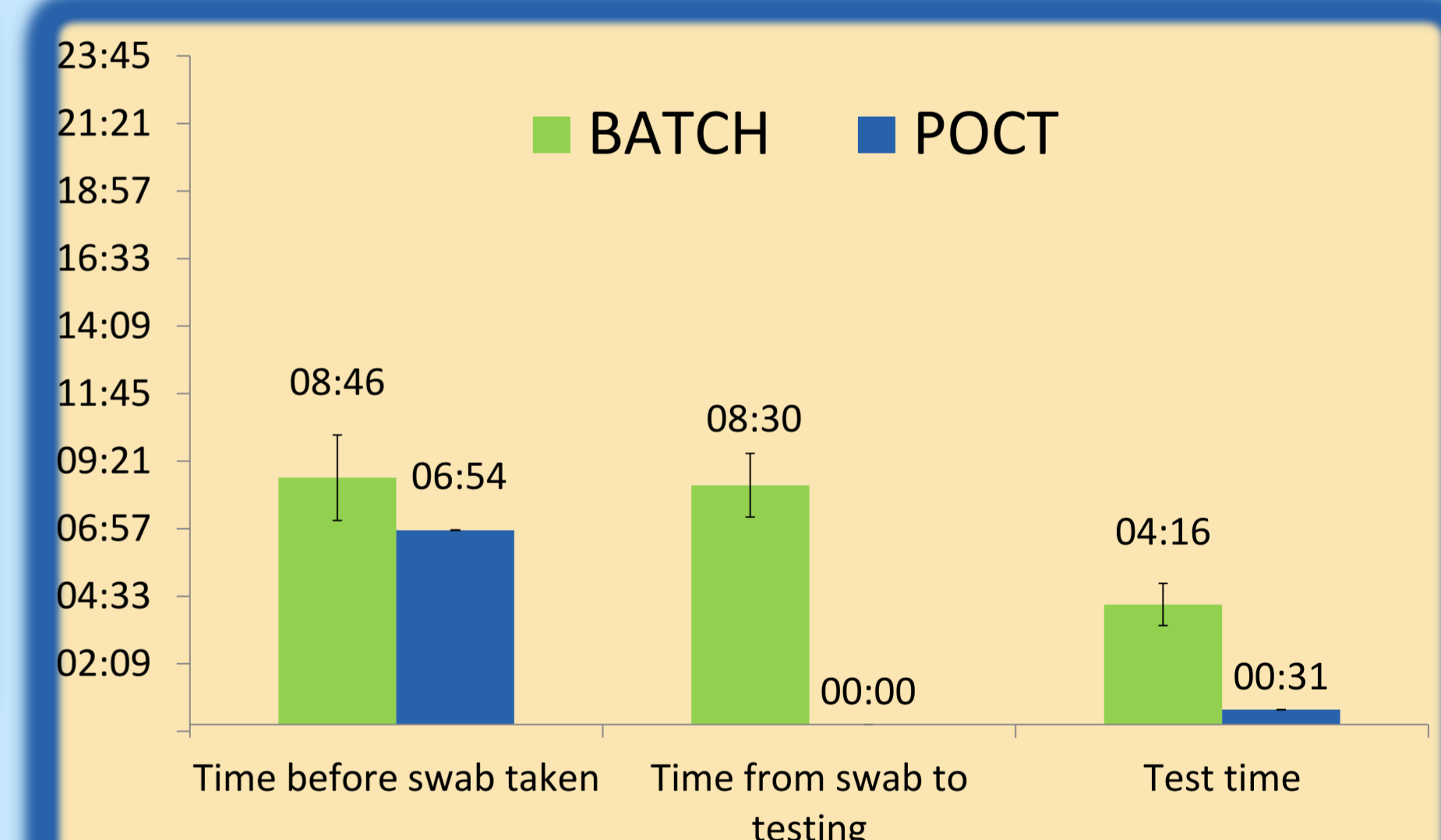
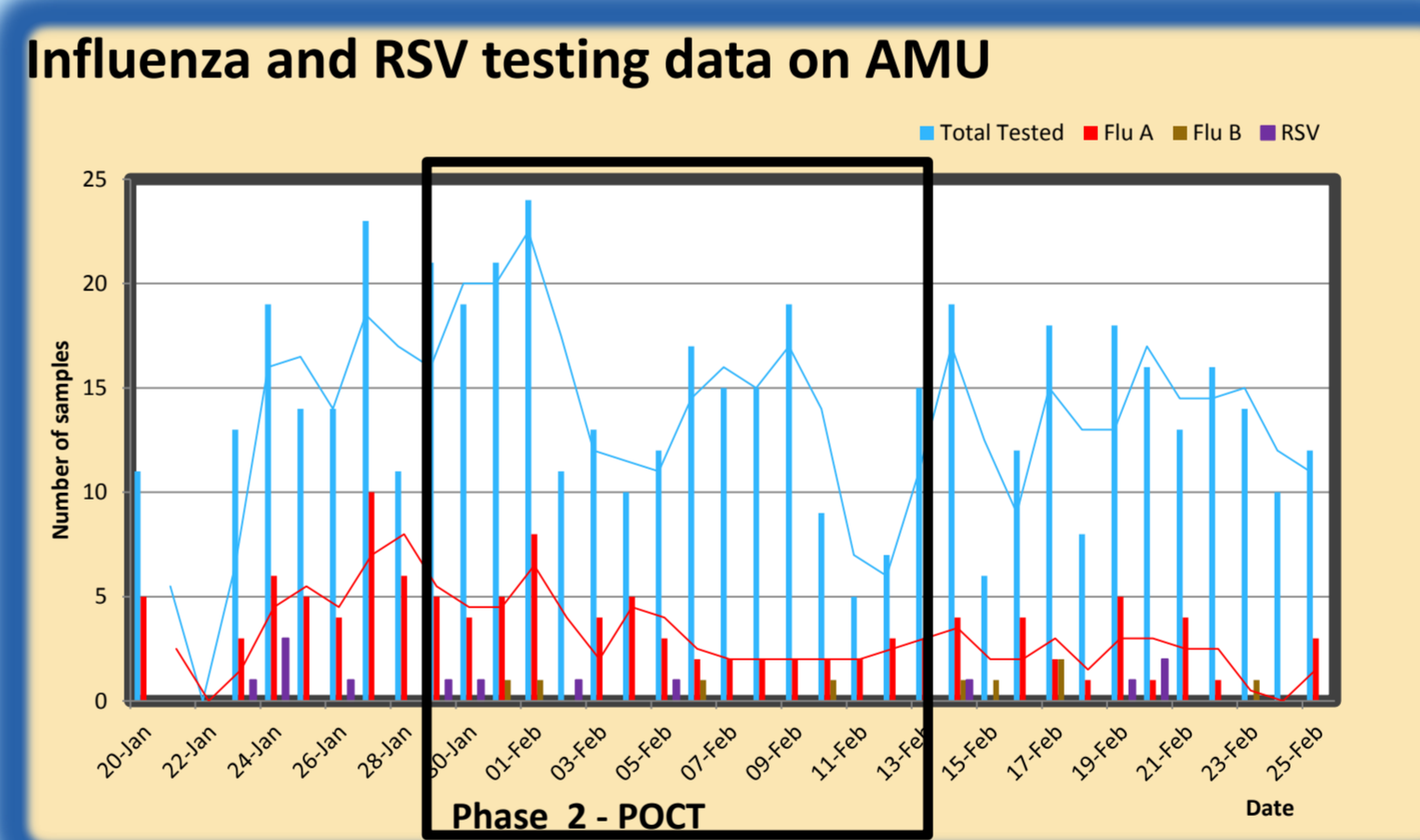
Of 35 patients tested in the laboratory in phase 1 of the study, eight were Influenza A positive and three were RSV positive.

167 patients were included in the phase 2 POCT analysis, and of these 42 were influenza A positive, three were influenza B positive and three were RSV positive.

Turn-around times from sample collection to result availability were significantly reduced from a mean of 12:46 hours in Laboratory phase 1, to a mean of 00:31 hours in POCT phase 2 mean ($p < 0.001$).

The proportion of positive influenza cases isolated or discharged within 4 hours of testing increased from zero (of 7 cases) to 50% (15 out of 30 cases; 11 already isolated at time of testing; 1 no timing data).

There were 28 contacts of the 8 influenza A positive cases in phase 1 (mean 4.5 per patient) compared with 83 contacts (mean 2 per patient) in POCT phase. There were no significant hospital outbreaks of infection during the study period.

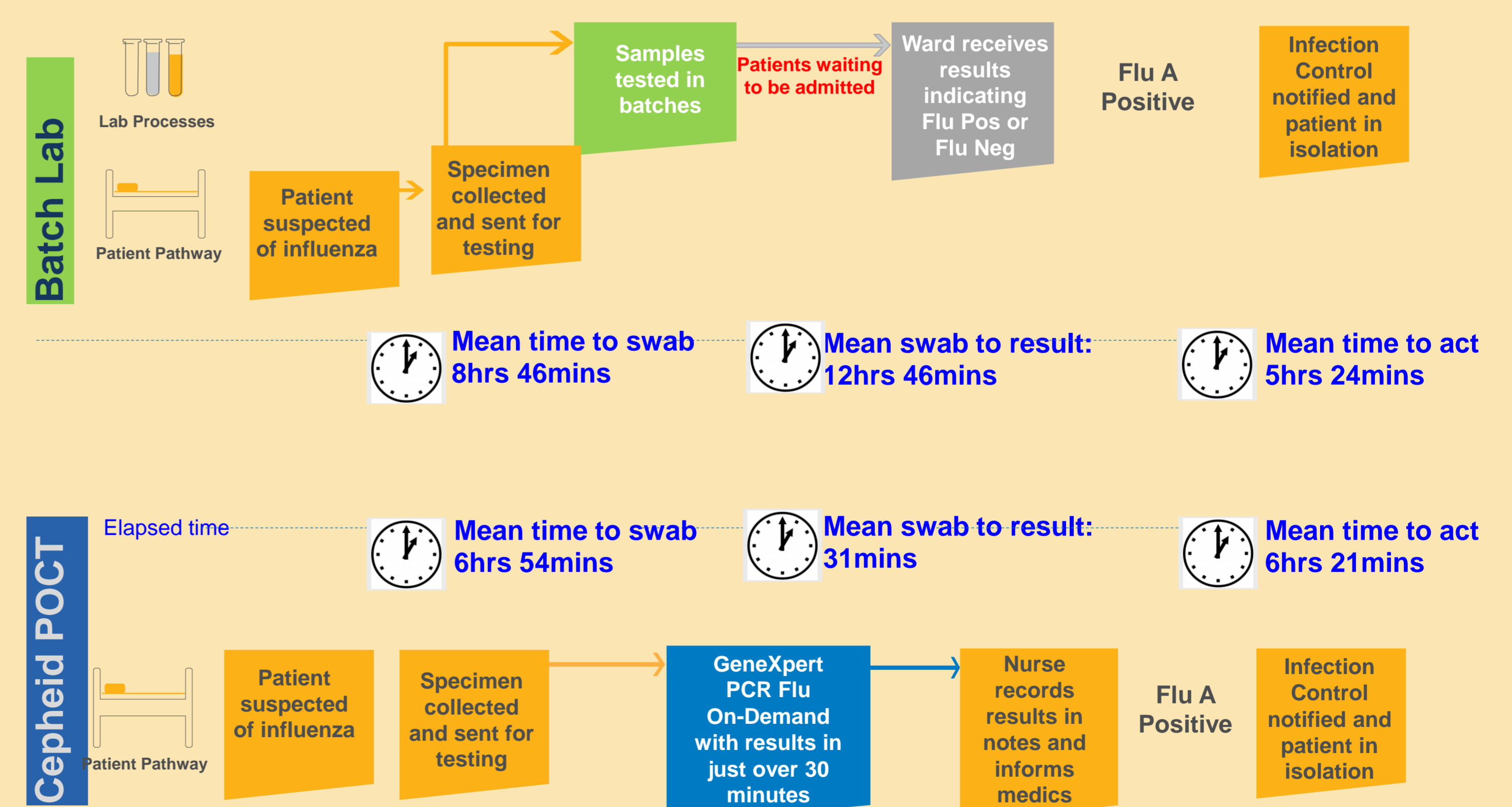


CONCLUSION

POCT has significantly reduced time to diagnosis of influenza; this has resulted in faster isolation and/or discharge, which has in turn reduced the number of contacts, with a parallel reduction in oseltamavir prophylaxis prescribing.

Reducing the time from presentation to testing will have further impact, but this is hampered by poor correlation between clinical presentation and influenza PCR positivity (data not shown). Enhanced training and education for frontline staff is underway for this Winter 2017-18.

Sample testing algorithms in Batch Laboratory and Cepheid POCT



References

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