

# Implementation of Rapid Respiratory Polymerase Chain Reaction (PCR) on site versus routine testing of respiratory viruses.



Western Health

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## Introduction

Both nationally and internationally, the economic and health burdens associated with acute respiratory infections caused by influenza and Respiratory syncytial viruses (RSV) are quite significant Wabe N, et al (2019). An effective laboratory test for confirmation of respiratory viral infections is Polymerase chain reaction (PCR).

In Victoria, there have been 22,277 confirmed cases of influenza with 37 people dying from the virus so far this year (Department of Health & Human Services, 2019). During the 2017 peak flu season (July – September) an average of 17 Respiratory Virus Polymerase chain reaction (RVPCR) tests were performed per day across our health service. Western Health (WH) anticipated an increased demand for testing of influenza in 2018 and introduced Xpert® Flu/RSV, a Rapid respiratory virus test, to improve the turnaround time (TATs) of influenza results from 24 hours to 90 minutes. This project aligns with our Organization Strategic Plan: Growing and improving the delivery of safe, high quality care, delivering consistent care aligned with the Best Care Framework.

## Aim

The rapid respiratory PCR test will be made available for a select group of patients from the Emergency Department (ED), Maternity Assessment Centre (MAC) and Intensive Care Unit (ICU). This will assist with decision making of patient placement and Transmission Based Precaution (TBP) requirements.

## Method

This study includes both retrospective and prospective audits of existing and current medical record audit results.

**A Retrospective audit:** reviewed existing medical records, collected as part of routine care. The retrospective audit reviewed the existing medical records to Non –Rapid Respiratory Virus test results for all patients across Western Health in 2017 (Figure 1).

**A Prospective audit:** reviewed current and new medical records, collected as part of routine care. The prospective audit reviewing current and new patient medical records for patients admitted or presenting with respiratory symptoms. Total number of Rapid Respiratory PCR tests requested in ED’s at Sunshine, Footscray and Williamstown Hospitals including 2018 and 2019 – from 1st recorded date or from beginning of October 2018 (Figure 2). Also, compared with the Non-Rapid Respiratory PCR tests from 2018-19 (Figure 3). **Inclusion Criteria:** Patients with Respiratory symptoms/ Influenza like Illness (ILI). **Exclusion Criteria:** Patients with pneumonia- such as hospital acquired pneumonia (HAP).

ED directors developed a flow chart to support decision making regarding testing of patients presenting with influenza like illness with the goal of being able to support patients in their home environment directly from ED (Chart 1). Rapid Respiratory PCR analysers have been installed at two of our health services sites.

Chart 1 – Flowchart

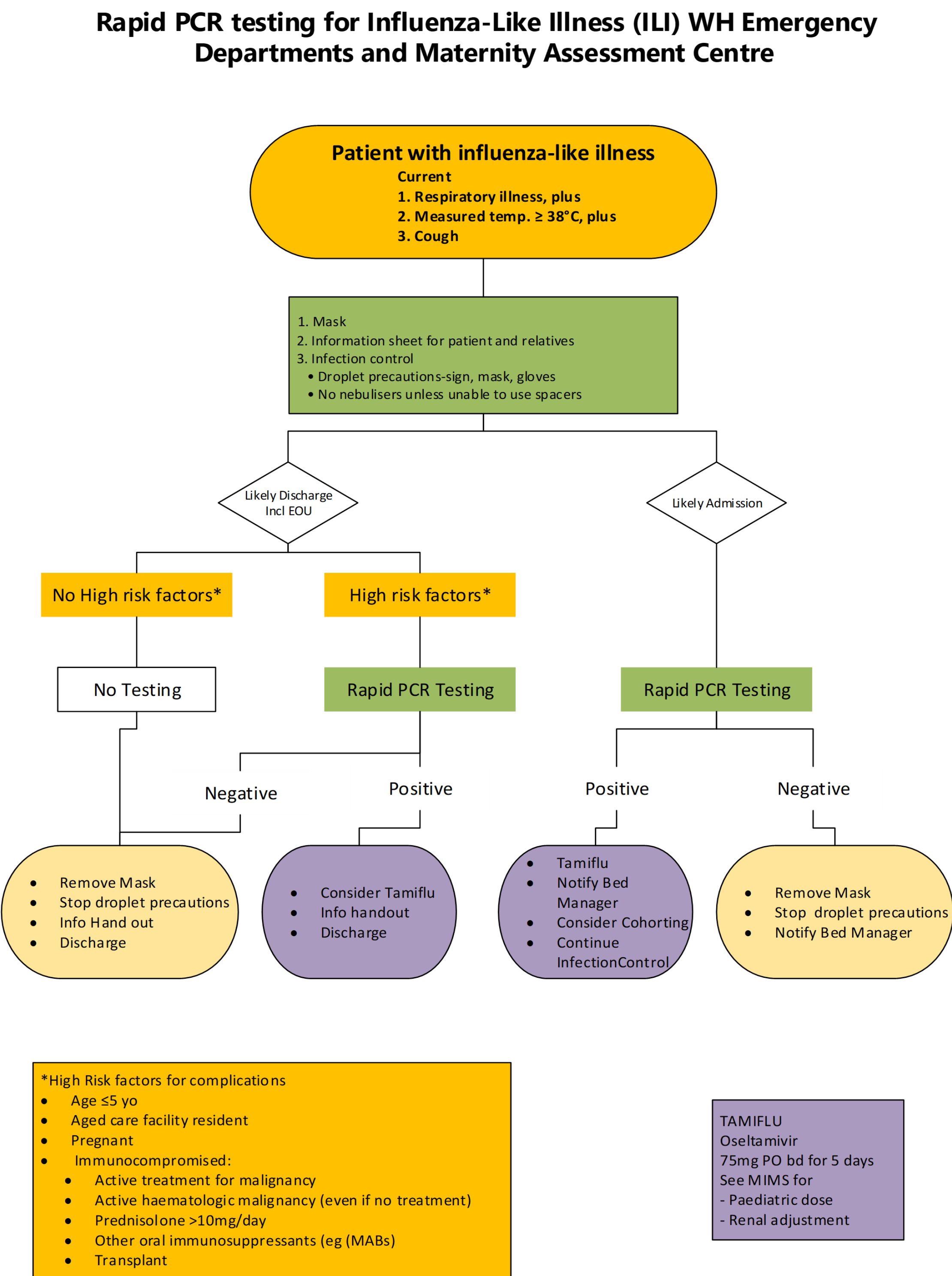


Figure 2

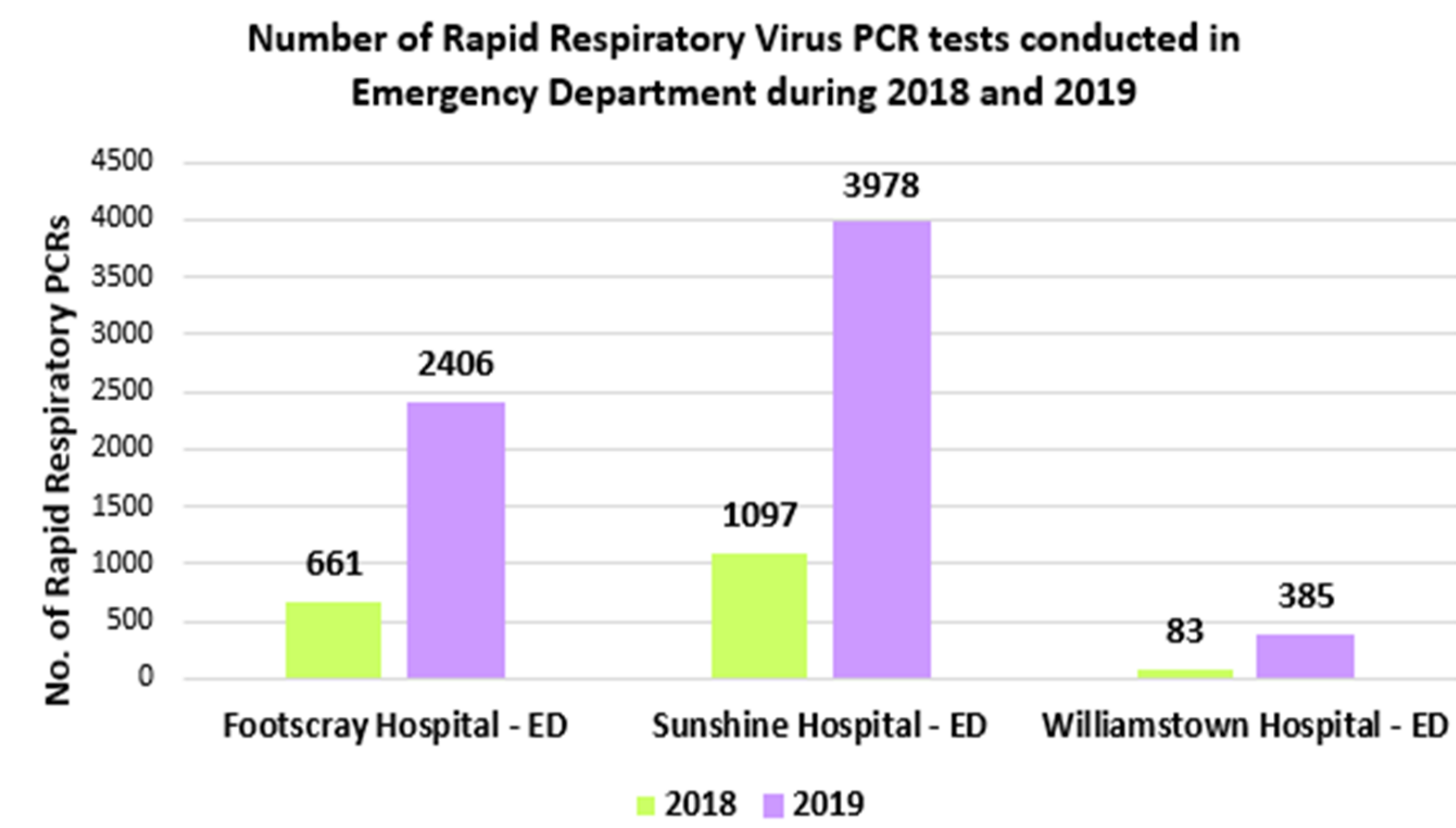
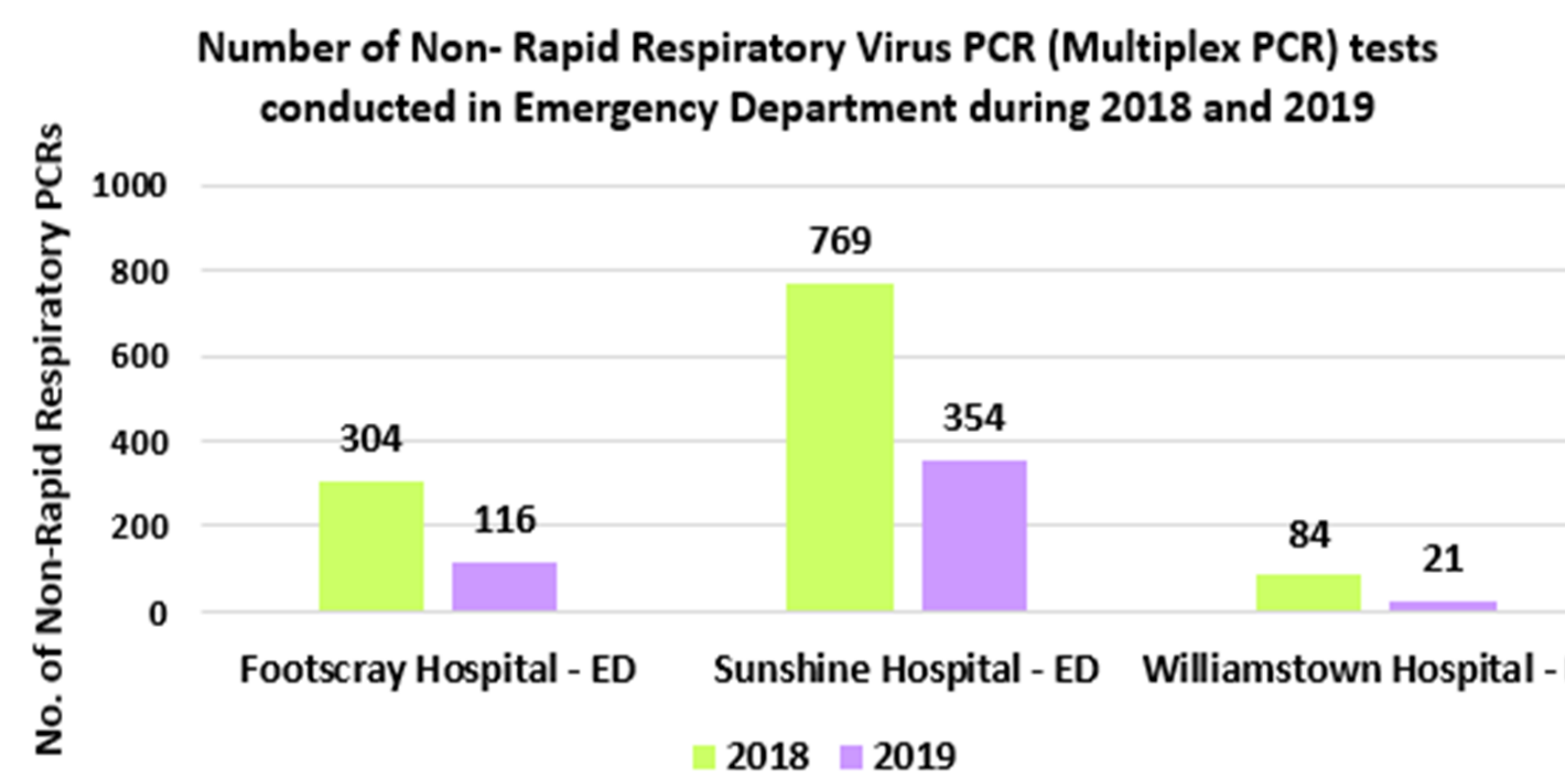


Figure 3



## Conclusion

The introduction of Rapid Respiratory PCR testing has provided timely results, decreasing unnecessary use of single rooms in hospital. Furthermore, it assisted in the timely discharge of patients from ED.

PCR testing technology is fast developing to target wider panels. Faster more accurate and comprehensive results support rapid treatment and infection prevention.

## References

Wabe, N., Li, L., Lindeman, R., Yimsung, R., Dahm, M. R., Clezy, K., . . . Georgiou, A. (2019). The impact of rapid molecular diagnostic testing for respiratory viruses on outcomes for emergency department patients. Medical Journal of Australia, 210(7), 316-320.

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