

# Transmission of COVID-19 from Healthcare Worker to Patients in the Presence of Universal Masking

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## BACKGROUND:

COVID-19 is predominantly transmitted during close contact with others who are infected with the virus and can occur even in the absence of symptoms. Studies have indicated that well-fitting masks are one of the most effective measures to protect ourselves and others from COVID-19. As per the Ontario Ministry of Health COVID-19 Guidance for Acute Care, in addition to a point-of-care risk assessment, all health care workers were required to practice universal masking upon entry to the hospital.

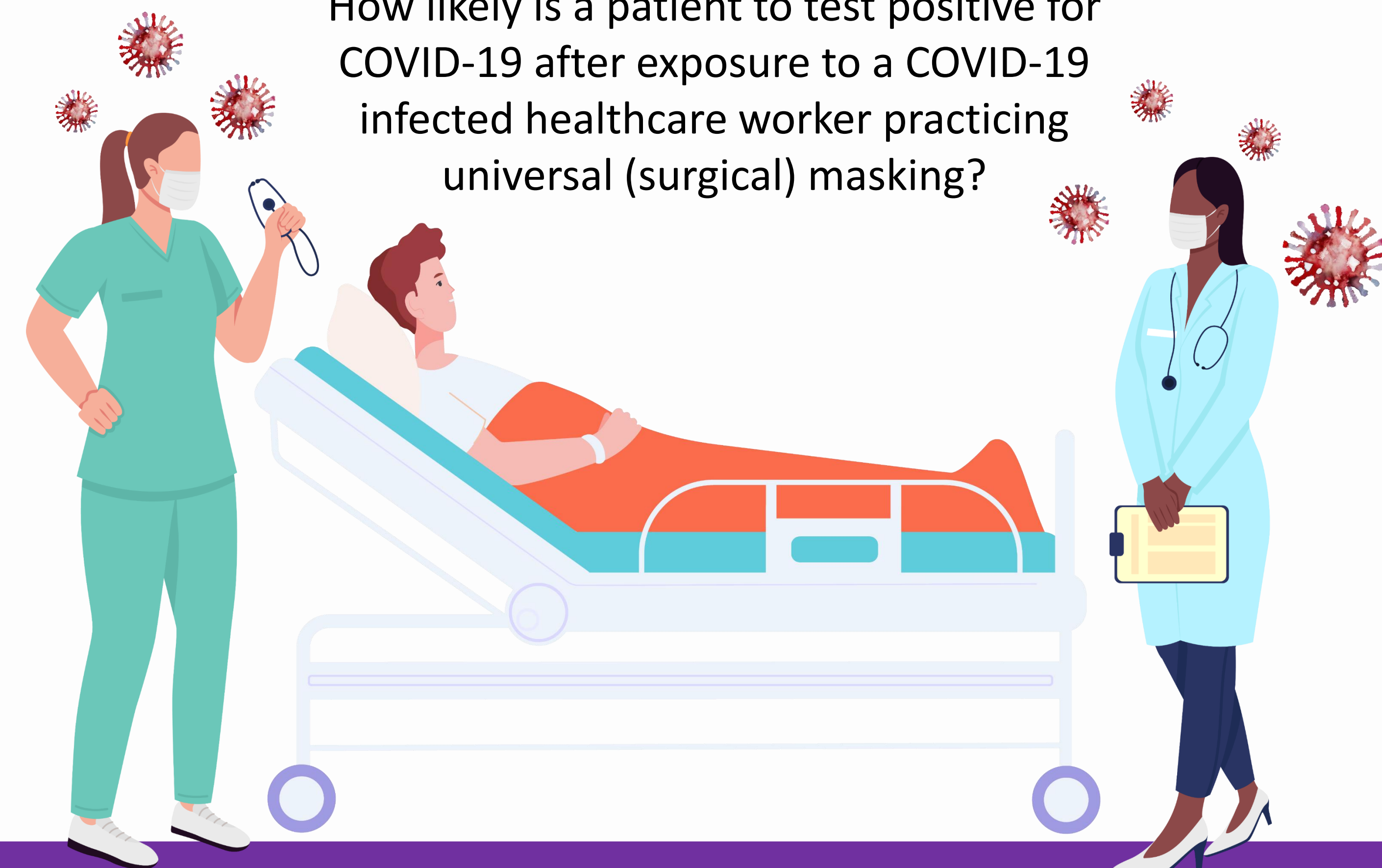
In our 600-bed community hospital, when a patient facing HCW was identified to have acute COVID infection with lab-confirmation, contact tracing was performed to identify any exposed patients cared for by the HCW during their period of communicability, which was defined as 48 hours prior to symptom onset or specimen collection date, if asymptomatic. These exposed patients were deemed to have low risk exposure (LRE).

### Patients with LRE:

- were placed in a single room on N95 droplet/contact precautions. Precautions were discontinued if their day 8 swab was negative and the patient remained asymptomatic.
- were swabbed for COVID-19 upon notification and on 8th day post exposure or at onset of respiratory symptoms
- electronic charts were flagged with "LRE to COVID" until completion of follow up. The chart was automatically unflagged by the system 15 days post flag date.
- visitation was limited and granted by exception
- non-urgent elective procedures were often delayed

## STUDY QUESTION:

How likely is a patient to test positive for COVID-19 after exposure to a COVID-19 infected healthcare worker practicing universal (surgical) masking?



## METHODS:

A retrospective review of patients with LRE between May 1, 2021 to October 2022 was conducted to determine the risk of secondary transmission of COVID-19 from an infected HCW practicing universal masking.

A report of patients with LRE flag were pulled from the electronic patient care record and an in-depth chart review was performed for patients who tested positive for COVID-19 within 11 days post their LRE. Information on their test result, symptom onset and possible source were collected.

Further analysis was done to differentiate positivity rate during pre-omicron (May 1, 2021-December 18, 2021) and omicron (December 19, 2021-October 31, 2022) and during circulation of more transmissible Omicron variants BA. 4 and 5 variants (June 1, 2022-October 31, 2022). These timelines were chosen based provincial data on COVID cases (table 1) and primary circulating variant of concern (VOC) from Public Health Ontario.

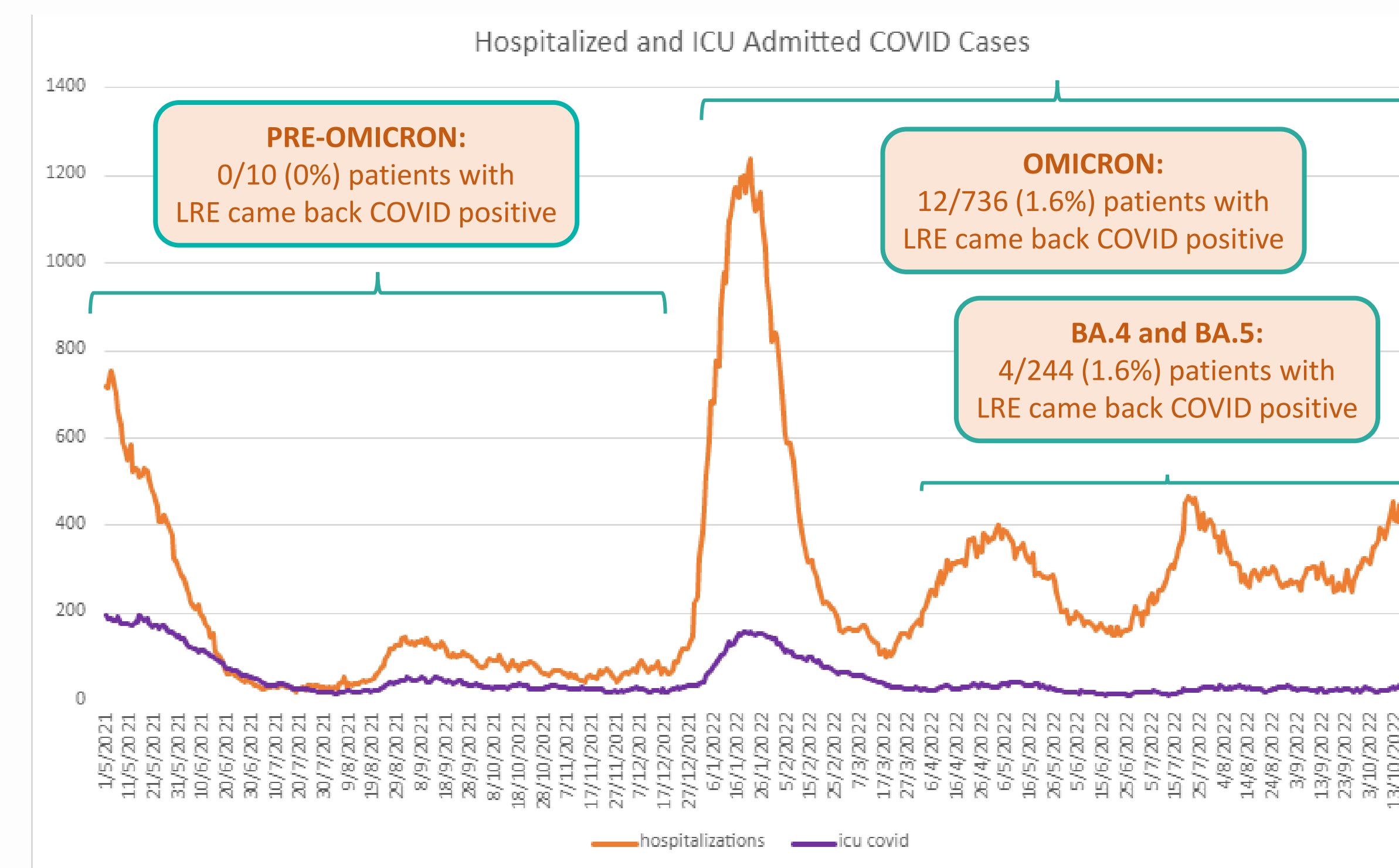


Table 1: Public Health Ontario COVID-19 data on hospitalized and ICU admitted patients from May 1, 2021-October 23, 2022. <sup>1</sup> The orange line represents number of cases requiring hospital admissions while the purple line represents ICU admissions. The data on the orange box represents our facility's COVID conversion data post LRE.

## RESULTS:

A total of 1,169 patients were identified to have had an LRE from May 1, 2021-October 31, 2022 from 1,058 of COVID positive (28 HCWs pre-omicron and 1030 HCWs omicron timeline), masked patient-facing HCWs. 423 patients were discharged (419 patients) or deceased (4 patients) prior to completing follow up. 746 (63.8%) patients with LRE completed their 8 days post exposure follow up. This theoretically contributed to 5,968 isolation days.

A total of 12 (1.6%) of 746 patients were found to be COVID positive and deemed related to their LRE. None of the patients with LRE during the pre-omicron timeline

came back positive for COVID-19 during the follow up period. All positive cases were identified during the omicron period (see table 1).

There was no change in COVID-19 positivity rate following LRE before (8/492 [1.6%]) and during (4/244 [1.6%]) the circulation of BA.4 and BA.5 variants.

## COVID-19 Positive Post Low Risk Exposure During Omicron

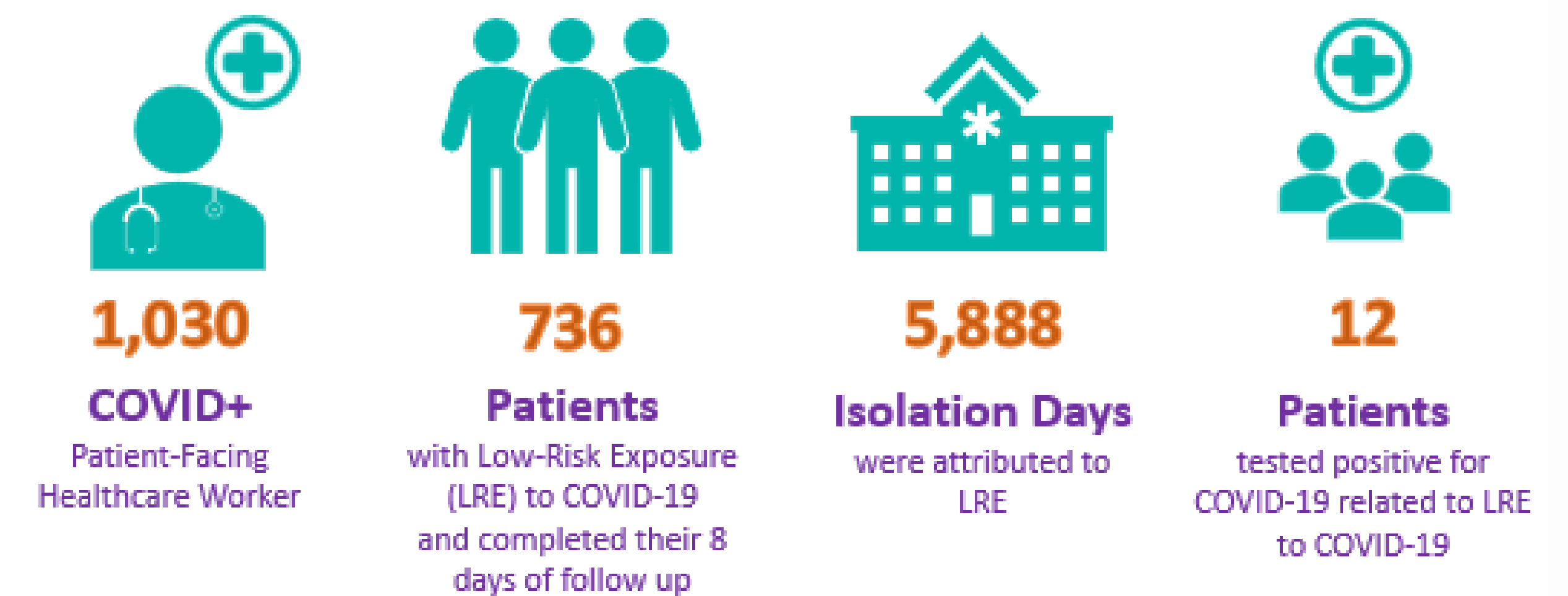


Table 2: Summary of COVID positive post LRE during the omicron time period.

## CONCLUSION:

Based on our data, the risk of acute COVID-19 infection after an exposure to a masked COVID-19 positive healthcare worker is low. Similar findings were found in other literature.<sup>2</sup> Patient positivity rate post LRE remained the same throughout the circulation of more transmissible omicron variants.

Our findings indicate that initiation of additional precautions for patients who have had a LRE may not be warranted given the current challenges in hospital resources including patient flow, human resources, limited private rooms, impact of additional precautions to workload and patient care and experience.

This study, however, does not account for other confounding factors such as: type HCW, type of care provided, duration of exposure, type of COVID variant the HCW is infected with, vaccination status of the patient and HCW, type of mask used during their POC and all other unknown higher risk exposures (e.g. visitor exposure) cannot be excluded.

## REFERENCES:

1. Public Health Ontario. Ontario COVID-19 DataTool. <https://www.publichealthontario.ca/en/Data-and-Analysis/Infectious-Disease/COVID-19-Data-Surveillance/COVID-19-Data-Tool>
2. Williams, V.R., Maze Dit Mieusment, L., Tomiczek, N., Chan, A.K., Salt, N., Leis, J.A. (2021) Risk of SARS-CoV-2 transmission from universally masked healthcare workers to patients or residents: A prospective cohort study. American Journal of Infection Control, 49(11).

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