

# Nosocomial SARS-CoV-2 Outbreaks Despite Self- Reported Adherence to Universal Surgical Mask Use by Healthcare Workers



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## BACKGROUND

- Universal surgical mask wearing of healthcare workers (HCW) was introduced to try and prevent the onward transmission of SARS-CoV-2.
- During the second wave there were two nosocomial outbreaks in our institution, despite self- reported adherence to the universal use of surgical masks.

## RESULTS

### Epidemiological

- Our index case was an asymptomatic gentleman on ward A , who was admitted before the introduction of universal SARS-CoV-2 admission screening.
- On day two of admission, the patient developed new respiratory symptoms, was then isolated and subsequently tested positive for SARS CoV-2 .
- Prior to isolation he was mobilising around the ward. He was noted to be a very sociable gentleman who enjoyed chatting to the nurses at the nurses station.
- Epidemiological investigation revealed that there was no link between this patient and ward B which subsequently had an outbreak .
- There was, however, overlap with the medical teams who attended to patients on both wards, it is likely that this patient infected the medical team, who then transmitted it to patients in ward B.
- It was noted that nursing staff between both wards shared accomodation.
- Three patients died from hospital-acquired SARS CoV-2 infection.

### Whole Virus Genome Sequencing

- WvGS identified highly related strains of SARS-CoV-2 between the two wards and between staff and patients.
- 30 out of 30 HCW reported 100% compliance with universal surgical mask wearing while interacting with patients.
- 90% of HCW reported having prolonged close physical contact with patients.

## METHODS

- An epidemiological investigation was undertaken for all hospital acquired cases of COVID-19 on the two outbreak wards from 20<sup>th</sup> October until 12<sup>th</sup> November 2020.
- Twenty eight patient and HCW samples in which SARS-CoV-2 RNA was detected, were analysed by Whole Virus Genome Sequencing (WvGS) and their phylogenetic relationship established.
- A retrospective audit on adherence to PPE was undertaken in the two wards.

## DISCUSSION

- There were two epidemiological links between ward A and ward B; the medical teams and the nursing staff who shared accomodation.
- Assuming HCWs reported adherence correctly , universal surgical face masks did not prevent transmission of SARS CoV-2.
- 75% of HCW found it difficult to communicate with elderly patients while wearing a surgical mask and needed to raise their voices to compensate.
- We cannot exclude patient to patient transmission in this outbreak, but the acquisition of hospital acquired cases in multiple patient rooms is suggestive of HCW to patient transmission.

## CONCLUSION

- This study provides evidence of the transmission of SARS-CoV-2 from HCW to patient despite adherence to the wearing of surgical masks.
- Patients who are capable and willing to wear surgical masks should be encouraged do so.
- The introduction of universal FFP2 masks in outbreak scenarios and for prolonged patient contact needs to be discussed .

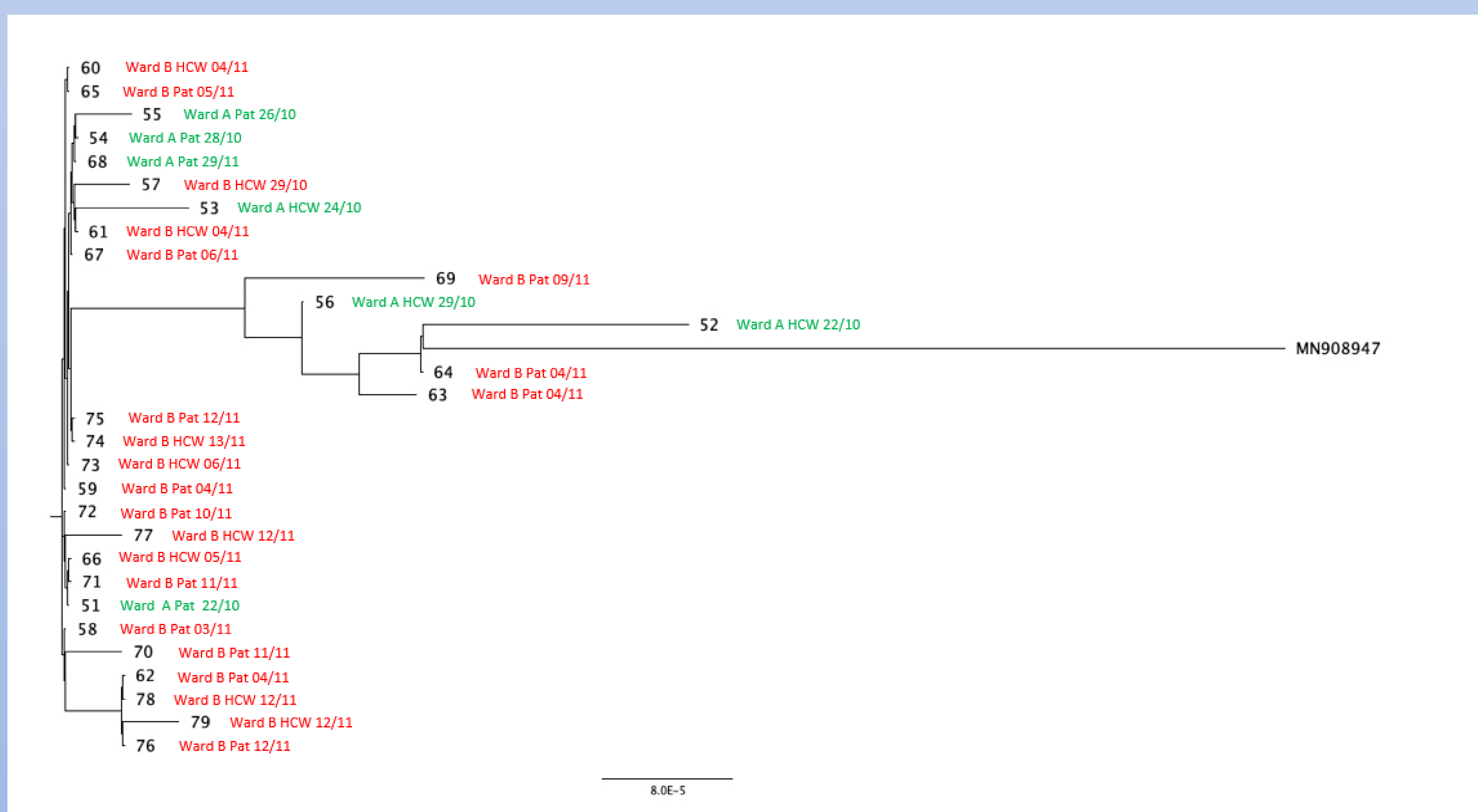


Figure 1. Maximum likelihood phylogenetic tree. Virus samples are coloured according to the ward and the reported date of a positive COVID test. All samples on the left are part of the same cluster. MN908947 is the Wuhan strain.

HCW, healthcare worker, PAT, patient