

LETTER

# Efficiency of transmission-based precautions (TBPs) against SARS-CoV-2 501Y.V2 variant transmissibility in the ICU



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Dear Editor,

The rapid spread of SARS-CoV-2 variants has raised widespread concerns about the efficiency of transmission-based precautions (TBPs) for healthcare workers (HCWs) protection [1, 2]. Increased transmissibility of the UK variant 20I/501Y.V1 (also known as VOC 202012/01, or B.1.1.7) lead the medical community to call on Public Health England for a wider use of FFP3 mask outside of procedures at risk for viral aerosolisation [3]. The 20H/501Y.V2 variant (formerly 20C/501Y.V2, or B.1.351 lineage), first reported in South Africa, is preliminarily estimated to be significantly more contagious, the risk of higher disease severity is undervalued. Awaiting more scientific information, HCWs in the intensive care units (ICUs) are faced to an increased fear to be contaminated.

On the 5th of January 2021, the first patient detected in France with 20H/501Y.V2 and requiring critical care was admitted in our ICU. She presented with acute respiratory distress syndrome (ARDS) and positive nasopharyngeal Cycle Threshold (CT) Real Time-PCR (23–27 depending on gene). Since she was back from the Republic of Mozambique 9 days earlier, the 20H/501Y.V2 variant was suspected and confirmed by sequencing. She was managed by high-flow nasal cannula oxygenation (HFNCO: 60 L/70% FiO<sub>2</sub>) and dexamethasone. She required intubation on day-2. RT-PCR on distal lung was 39 on day-11, she was successfully extubated on day-13 and SARS-CoV-2 serology was positive on day-14.

During the same period of time, the 20I/501Y.V1 variant was identified in another patient managed by HFNCO (50 L/50%) for 2 days. At that time, patients with coronavirus disease 2019 (COVID-19) represented 50% of admitted patients in our 14 ICU-beds.

Our single rooms are at negative pressure (– 4 Pa with air change rate of 5 per hour) without airlock for protective equipment removal. None is dedicated for COVID-patients. The uncertainties on the high risk of transmission lead us to assess the effectiveness of TBPs we are routinely applying (see Table 1) in accordance with national and international guidelines [2, 4]. No additional measure was applied for the management of the two cases. A SARS-CoV-2 RT-PCR was performed in 48 volunteers (i.e. 75% of the 67 HCWs who worked at least 1 day during patient stay) between day 7 and day 10 after last exposure. Screening encompassed 10/15 HCWs in charge of the 20H/501Y.V2 case and 5/8 in charge of the 20I/501Y.V1 case. Only one HCW, with SARS-COV-2 family contact, but not being in charge of cases, was found to be positive; neither 20H/501Y.V2 nor 20I/501Y.V1 variant was detected by sequencing. The absence of HCW contamination must be interpreted in light of available rooms at negative pressure and of measure compliance. We did not assess measures compliance; however, indirect markers suggest good application. Since March 2020, we have admitted 153 COVID-patients, 7 HCWs were punctually detected positive for SARS-COV-2, of whom only one was suspected to be hospital-acquired. After the first wave of crisis in June, screening for SARS-CoV-2-specific antibodies in asymptomatic HCWs showed that no additional HCW had been contaminated.

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**Table 1 Characteristic and organisation of our 14 ICU-beds****Staff composition (n = 87)**

Experimented healthcare workers in critical care (n = 54), reinforcement nurses redeployed from medical wards as needed (n = 22), residents (n = 5), medical and nurse students (n = 6)  
All workers are specifically and repeatedly trained to protective measures

Nurse: COVID-patient ratio

1 for 2 intubated patients, 1 for 3 patients with high-flow nasal cannula or NIV

**Transmission-based precautions (TBPs) against SARS transmission**

*Personal protective equipment for caring proven or suspected patients with ARDS related to SARS-COV-2*

Wear FFP2 mask with user seal check (no fit check)

Gown for care with large contact, otherwise apron

Wear goggles and mobcap

Hand hygiene (WHO 5 moments), wear gloves only for procedure at risk of body fluid exposure

*Other preventive measures for care provision*

High-efficiency particulate air filter on the inspiratory and expiratory ventilator circuit

Closed system for tracheal suctioning

Room doors kept closed

Work bench tops decontamination after each use

Surface decontamination of closed environment of patients/12 h

Opening room window 10 min/6 h

Protective measure for COVID-waste handling with separate collection and discharge

*Preventive measures outside care provisions*

Wear surgical mask all the time except when alone in your office

Respect the maximal number of authorised peoples indicated on each room door according to the surface of the room

Respect 2-m social distancing for lunch time

Surface cleaning after room occupation

Despite a non-comprehensive screening test of exposed HCWs, our experience is reassuring for the efficiency of TBPs to prevent spreading of new SARS-COV-2 variants with increased transmissibility, even when performing manoeuvres at high risk of aerosolization. Our results cannot be transposed outside the ICU.

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**Declarations****Conflicts of interest**

Authors have no conflict of interest to declare.

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