



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



## Letter to the Editor

### The early test catches the case. Why wait? Frequent testing of close contacts aids COVID-19 control



Sir,

One of the significant challenges in hospitals during the coronavirus disease 2019 (COVID-19) pandemic has been prevention of nosocomial transmission. As the pandemic evolved, the hospital infection prevention and control (IPC) approach has differed considerably from previously, including the implementation of universal SARS-CoV-2 admission testing and asymptomatic patient and staff testing as part of ward outbreak management [1,2]. As shared patient accommodation along with staff movement enhances SARS-CoV-2 transmission, timely identification and management of positive patients and close contacts has been key [3].

Of 820 beds in our institution, only 136 are single rooms, 77% with en-suite facilities and 12 airborne isolation rooms. Most accommodation is multi-occupancy; comprising six-, four- or two-bedded rooms, with one shared bathroom. All patients in a shared bay are considered COVID-19 close contacts when a positive 'index' patient is detected in that bay, day 0 being the date of index patient positivity. Close contacts are either isolated or cohorted for 14 days, or advised to restrict movements if discharged within 14 days. Up to November 2020, close contact patients were tested on day 0 and day 7 after index patient detection. Aside from close contact testing, indications for repeat SARS-CoV-2 testing included surgery, discharge to another healthcare facility and development of symptoms.

Because of the five-day median incubation period, we were concerned that undetected potentially infectious close contacts remained in multi-bedded bays until tested on day 7 [4]. Likewise, undetected patients who became positive thereafter could pose an IPC risk. Effective November 18<sup>th</sup>, 2020, we commenced testing inpatient close contacts every 48 h up to day 14 and now describe our experience to February 14<sup>th</sup>, 2021. Inpatients deemed a COVID-19 close contact in the community were excluded, as 'day 0' could not be reliably ascertained. For each close contact, day 0 was the date of exposure to the index patient. For any contact who became SARS-CoV-2 positive, the interval between day of index patient exposure and day of

positive result was recorded. For patients with more than one exposure, the interval was calculated as the date of first exposure to the date of positive polymerase chain reaction (PCR) result. Data on symptoms were not collected.

Of 340 close contacts, 53% ( $N = 180$ ) had a positive PCR result within 14 days of index patient exposure (Figure 1), the majority ( $N = 141$ , 78%) in the first six days with 16% positive within the first 48 h, enabling prompt IPC action in advance of a day 7 test. All patients had a negative admission screen. There were 26 contact patients (14.4%) detected as SARS-CoV-2 positive after day 8, who would have been missed without testing beyond day 7. The combination of frequent testing and rapid isolation of newly detected COVID-19 patients likely contributed to 47% (160) close contacts remaining PCR negative.

Previous studies have demonstrated the correlation between hospital ward design and nosocomial infection rates [5]. Limited isolation facilities are a reality across Europe, with the median proportion of hospital single rooms at 24.2% [6]. Patients with nosocomial COVID-19 tend to be older and frailer with higher mortality, highlighting the need to maximize IPC efforts to prevent cross-transmission [7]. Frequent testing of hospitalized close contact patients is especially important in our institution, because of our infrastructure. While we have no patient symptom data, IPC action is required irrespective, because of infectivity during the incubation period [4]. To date, there is surprisingly little in the literature regarding optimal testing schedules for inpatient close contacts. With the dominance of the delta variant with higher infectivity and

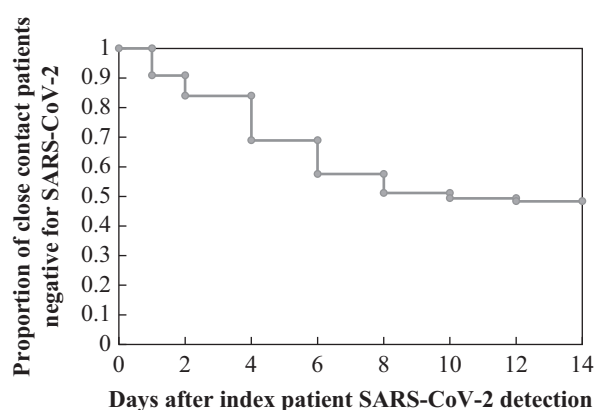


Figure 1. Time to positive SARS-CoV-2 results for 180 close contact inpatients.

shorter median incubation periods (four days), rapid detection and isolation of asymptomatic COVID-19 patients will become especially important as winter approaches [8].

#### Conflict of interest statement

None declared.

#### Funding sources

None.

#### References

- [1] Burns K, Foley M, Skally M, Cafferkey J, Duffy F, Sweeney E, et al. Casting the net wide: universal testing of emergency admissions for SARS-CoV-2 to prevent onward transmission. *J Hosp Infect* 2021;107:64–6.
- [2] Moynan D, Cagney M, Ni Dhuthaigh A, Foley M, Salter A, Reidy N, et al. The role of healthcare staff COVID-19 screening in infection prevention and control. *J Infect* 2020;81:e53–4.
- [3] Rickman HM, Rampling T, Shaw K, Martinez-Garcia G, Hail L, Coen P, et al. Nosocomial transmission of coronavirus disease 2019: a retrospective study of 66 hospital-acquired cases in a London teaching hospital. *Clin Infect Dis* 2021;72:690–3.
- [4] Lauer SA, Grantz KH, Bi Q, Jones Fk, Zheng Q, Meredith H, et al. the incubation period of coronavirus disease 2019 (COVID-19) from publicly reported confirmed cases: estimation and application. *Ann Intern Med* 2020;172:577–82.
- [5] Stiller A, Salm F, Bischoff P, Gastmeier P. Relationship between hospital ward design and healthcare-associated infection rates: a systematic review and meta-analysis. *Antimicrob Resist Infect Control* 2016;5:51.
- [6] European Centre for Disease Prevention and Control. Point prevalence survey of healthcare associated infections and antimicrobial use in European acute care hospitals. Stockholm: ECDC; 2013. Available at: <https://www.ecdc.europa.eu/sites/default/files/media/en/publications/Publications/healthcare-associated-infectionsantimicrobial-use-PPS.pdf> [last accessed July 2021].
- [7] Ponsford M, Jefferies R, Davies C, Farewell D, Humphreys I, Jolles S, et al. Burden of nosocomial COVID-19 in Wales: results from a multicentre retrospective observational study of 2508 hospitalised adults. *Thorax* July 22nd 2021.
- [8] Li B, Deng A, Li K, Hu Y, Li Z, Xiong Q, et al. Viral infection and transmission in a large well-traced outbreak caused by the Delta SARS-CoV-2 variant. *medRxiv* July 12th 2021.

J. Walsh<sup>a,\*</sup>

M. Skally<sup>a</sup>

F. Duffy<sup>b</sup>

G. Kalukondanahally<sup>b</sup>

B. Dinesh<sup>a</sup>

K. O'Connell<sup>a</sup>

E. de Barra<sup>c,d</sup>

K. Burns<sup>a</sup>

F. Fitzpatrick<sup>a,e</sup>

<sup>a</sup>Department of Microbiology, Beaumont Hospital, Dublin, Ireland

<sup>b</sup>Department of Infection Prevention and Control, Beaumont Hospital, Dublin, Ireland

<sup>c</sup>Department of Infectious Diseases, Beaumont Hospital, Dublin, Ireland

<sup>d</sup>Department of International Health and Tropical Medicine, Royal College of Surgeons in Ireland, Ireland

<sup>e</sup>Department of Clinical Microbiology, The Royal College of Surgeons in Ireland, Dublin, Ireland

\* Corresponding author. Address: Department of Microbiology, Beaumont Hospital, Dublin, Ireland. Tel.: +35 3861010030. E-mail address: [Jenniferwalsh41@gmail.com](mailto:Jenniferwalsh41@gmail.com) (J. Walsh)

Available online 14 August 2021