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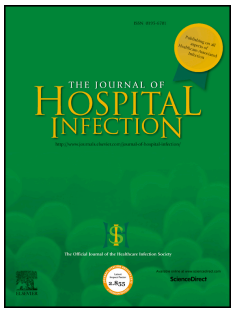

Minimising intra-hospital transmission of COVID-19: the role of social distancing

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Minimising intra-hospital transmission of COVID-19: the role of social distancing

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Sir,

In the ongoing COVID-19 pandemic caused by the novel coronavirus, SARS CoV-2, early isolation of hospitalised inpatients with suspected COVID-19 is important to reduce the likelihood of nosocomial spread. However, patients with COVID-19 may present with respiratory syndromes indistinguishable from those caused by common respiratory viruses. [1] This poses a challenge for early isolation and containment, especially during significant ongoing community transmission. While isolation ward beds are prioritized for suspected COVID-19 cases, unsuspected cases of COVID-19 without suspicious contact or travel history may initially be nursed outside of dedicated isolation wards prior to detection. Given that patients outside the isolation ward may not be subject to movement restrictions and share common facilities, social mingling represents a potential route for nosocomial spread, especially as COVID-19 cases may present with mild symptoms and remain relatively well.[1] While social distancing has been identified as crucial for containment in the community,[2] social distancing within hospitals is equally vital in reducing nosocomial spread, especially in hospitals where the majority of patients are nursed in multi-bedded cohort rooms, rather than in single-occupancy rooms.

In Singapore, a globalised Asian city-state, the first imported case of COVID-19 was reported in end-January 2020; followed by the first case of local transmission in early February 2020. [3] At our institution, the Singapore General Hospital (SGH), the isolation ward was reserved for confirmed/suspected cases of COVID-19. However, given rising numbers of locally-transmitted cases, from 4 February, our institution placed individuals admitting with respiratory symptoms but without suspicious contact or travel history in respiratory surveillance wards (RSWs) where COVID-19 was first excluded and healthcare workers (HCWs) used full personal protective equipment (PPE) including N95 masks, disposable gowns, gloves and faceshields. Despite this resource-intensive containment effort, it was recognised that some cases of COVID-19 with mild symptoms might be initially admitted to the general ward. Our institution therefore emphasised hospital-wide social distancing measures. For patients admitting to the RSW, as the risk of a potentially unsuspected case of COVID-19 was higher, patients were advised to avoid mingling and to wear surgical

masks at all times; with no visitors were allowed. Additionally, infrastructural modifications were instituted to facilitate social distancing. In the RSWs, patients were nursed in cohort rooms with three patients to a room, spaced at least ~2 metres apart, and partitions were placed between patient beds (Figure 1). In the general ward, shared communal facilities (eg. day rooms) were closed during the duration of the ongoing COVID-19 outbreak, and patients were limited to one visitor at any time. HCWs in the general ward wore surgical masks. Hospital-wide, in common areas such as waiting areas, pharmacies, food and retail outlets, patients were directed to keep one metre apart from one another, using visual cues (eg. floor markings and markings on seats) to guide waiting and queuing in both seated and standing areas.

Over a 3-month period from 4 January to 4 April 2020, a total of 75 confirmed cases of COVID-19 were diagnosed in our institution. While the majority of cases (84.0%, 63/75) were admitted to isolation wards, 12 cases of COVID-19 were initially admitted outside of the isolation ward. Of these, the majority (91.6%, 11/12) were admitted to the RSW. One patient was initially admitted to the general ward and nursed in a cohorted cubicle with 5 other patients, as respiratory symptoms were initially mild. The patient was transferred to an RSW 19 hours after admission, where the diagnosis of COVID-19 was made. At diagnosis, the cycle threshold (Ct) value for SARS-CoV-2 on rt-PCR (polymerase chain reaction) testing of oropharyngeal swab samples was 18, an inverse surrogate for high viral load and potential infectivity; this was in keeping with data suggesting peak viral shedding in the first week of symptoms. [4] A total of 18 patients in the general ward and 2 patients in the RSW had shared a room or common toilet with the index case; all were deemed to be exposed, (Figure 1) given potential contamination of the shared air and surface environment from droplet and fomite spread.[5] A total of 8 HCWs in the general ward had cared for the patient while wearing surgical masks. However, none of the exposed patients or HCWs developed COVID-19 within the estimated incubation period, [6] despite being closely followed up for 14 days. Of note, the patient had complied with social distancing measures and had not interacted with any of the other exposed patients. At the patient's initiative, he had worn a mask throughout the admission as an added precaution to minimise infection.

Minimising nosocomial transmission of COVID-19 remains a challenge, given the wide spectrum of respiratory syndromes and mild respiratory symptoms at presentation. [1] Influencing patient behaviour to reduce the risk of patient-to-patient spread remains crucial. Social distancing between inpatients is important during an ongoing outbreak and should be reinforced in higher-risk areas.

Conflict of interest statement

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Figure 1: Comparison of ward layout and social distancing measures employed in general ward and respiratory surveillance ward, during COVID-19 outbreak