COVID-19 risk and mortality in hospitals: this is not a time to let our guard down

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Commenting on

The burden of nosocomial COVID-19 in Wales: results from a multicentre retrospective observational study of 2508 hospitalised adults.

Nosocomial infections are not a new entity. Prior to COVID-19, the prevalence of healthcare-associated infection in the developed world was 4%–7.1%.[1]

The pandemic brought hospital admissions to the forefront of public awareness. Who should be admitted to hospital, and who should stay at home? Emergency admissions significantly dropped, for fear of being exposed to the virus. This risk was real, as the earliest reports showed that the rate of COVID-19 acquired in hospital in all inpatients with the disease was as high as 12%.[2]

In this issue, Ponsford and colleagues[3] report outcomes of 2508 patients with COVID-19 in multiple Welsh hospitals during the first wave, based on likelihood of source of exposure. Although the majority of all cases acquired infection in the community, a significant proportion obtained it in hospital—and these people were more likely to have frailty and were hospitalised for weeks prior to being infected.

They showed that inpatient mortality is higher for those with nosocomial infection, than for those who acquire it in the community. The authors provide a clinical outcome 'sliding scale' based on likely source of exposure, stating that the source is indeterminate if one tests positive between 2 and 14 days from admission, reflected in differing public health case definitions. Ponsford *et al* compare their findings with Carter *et al*[4] and report similar findings. Debate over the definition of nosocomial COVID-19 throughout the UK has continued to offer uncertainty, with approximately 21% of UK NHS Trust cases 'probably' infected while in hospital.[5]

There may be many reasons for these statistics. A complex mode of transmission in hospital is due to uneven superspreading, where some individuals appear to be significantly more likely to transmit infection than others.[6] Early in the first wave, appropriate personal protective equipment (PPE) uncertainty and shortages, prolonged lead times for testing of SARS-CoV-2, and presymptomatic healthcare workers may all have contributed to nosocomial infection, despite non-pharmaceutical interventions.

The impact of nosocomial transmission must not be underestimated. This paper as well as others[3 4 7 8] highlight that those who acquire the infection in hospital are older and frailer. If these patients survive to discharge, they are more likely to have increasing care needs.[9] Onward community transmission of the infection from nosocomial cases may also have led to a substantial number of subsequent admissions.[10]

Recognition of this huge toll, and deficiencies in the infection-control armoury, has increased determination to address these issues. For example, it is now common practice for routine and frequent testing of asymptomatic patients and staff in hospitals. As the pandemic has evolved, so too has understanding of SARS-CoV-2 transmission. Virus particles can be airborne and linger for hours in the air,[11] giving rise to amended risk assessment guidance of ventilation in healthcare settings.[12] In addition, the introduction of vaccinations have reduced emergency hospital admission of COVID-19 by 37%–43%,[13] which will have had a significant impact on the rate of nosocomial infection during early 2021.

Over a year into this pandemic, the global community affected by COVID-19 has come a long way. Successful vaccination drives in many countries, and treatments such as dexamethasone and tocilizumab which attenuate the disease process, are proof that the efforts of the research community are fruitful. On the flipside, there is the ever-evolving threat of COVID-19 variants and populations which may never achieve herd immunity for many reasons. For those reasons, the importance of continuing to be vigilant in order to prevent nosocomial infection remains paramount.

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