©WESTWICK-FARROW MEDIA REPRODUCED WITH PERMISSION

How safe are you in hospital?

Staffing levels and infection prevention

Brett Mitchell*



©stock.adobe.com/au/Syda Productions

For patients receiving care in healthcare settings there is a risk of unintended harm. These potential harms include falls, medication errors, pressure injuries, failure to respond quickly when a person's condition deteriorates and healthcare associated infections. These adverse events have spawned an entire industry charged with attempting to keep people safe from the dangers associated with being the consumers of health care.

In Australia, these unintended harms have recently being coined 'hospital-acquired complications' (HACs) by the Australian Commission on Safety and Quality in Health Care. A HAC refers to a complication for which clinical risk mitigation strategies may reduce (but not necessarily eliminate) the risk of that complication occurring.[1] A list of 16 HACs have been developed for Australian hospitals. One HAC, 'Healthcare associated infections', includes a subset of eight different infections.

In Australia, there are an estimated 165,000 HAIs each year.[2] It is important to remember that not all HAIs are preventable, but there are approaches to reduce the risk. These include but are not limited to hand hygiene, appropriate use of personal protective equipment and having a clean environment.

What about staffing levels and the risk of infection?

A decade ago, a systematic review of the literature was undertaken, to explore the relationship between staffing levels of healthcare workers and the incidence of HAIs.[3] Researchers found that the majority of studies they identified reported a significant association between the nurse staffing levels and risk of HAIs. In the lead-up to and since this publication, there has been concerted effort internationally to reduce the risk of HAIs for hospitalised patients, with numerous articles exploring staffing and the risk of infection.

What is new? Findings from a new study

A recent systematic review of the literature, exploring this same topic was recently undertaken and published in a leading patient safety journal.[4] The objective was to understand and synthesise the most recent research on the relationship of hospital staffing and HAI risk. Fifty-four articles were included in the review with the majority exploring nurse staffing levels and HAI risk.

Overall, the findings suggest that increased levels of nurse staffing seem to be associated with a decrease in the risk of acquiring HAIs. The majority of studies in the review identified that the use of permanent nurse staff was connected to a decrease in risk of HAI acquisition, non-permanent nurse staff being linked to an increase. This is consistent with other literature;[3] however, the generalisability of the non-permanent nurse staff finding is limited, given the small number of studies and setting on these studies.

Three studies that investigated relationships between level of physician staffing and risk of HAIs were identified, with only one finding an association between the level of physician staffing and infections.

Limitations

There were a number of complicating factors when trying to understand studies included in this review. These included different approaches to measure levels of staffing, variation in definitions and methods to measure infections and a lack of risk adjustment in many studies.

Take home messages

This latest review provides further evidence demonstrating the relationship between staffing characteristics and the risk of HAIs. Of course, preventing infection is multifaceted and staffing levels are just one component of facilitating high-quality care. However, the latest evidence again supports advocacy efforts for appropriate staffing resources, as one element of improving patient safety, in this case, the prevention of infections.

References

1. Australian Commission on Safety and Quality in Health Care. Hospital-acquired complications. Australian Commission on Safety and Quality in Health Care; 2018.
2. Mitchell BG, Shaban RZ, MacBeth D, Wood C-J, Russo PL. The burden of healthcare-associated infection in Australian hospitals: A systematic review of the literature. *Infection, Disease & Health*. 2017;22(3):117-28.
3. Stone PW, Pogorzelska M, Kunches L, Hirschhorn LR. Hospital Staffing and Health Care–Associated Infections: A Systematic Review of the Literature. *Clin Infect Dis*. 2008;47(7):937-44.
4. Mitchell BG, Gardner A, Stone PW, Hall L, Pogorzelska-Maziarz M. Hospital Staffing and Health Care–Associated Infections: A Systematic Review of the Literature. *The Joint Commission Journal on Quality and Patient Safety*. 2018.

**Professor Brett G Mitchell is a Professor of Nursing and Director of the Lifestyle Research Centre at Avondale College of Higher Education. Twitter: @1healthau*