



## **COMPLICATION RATES MORE ABOUT PATIENT THAN HOSPITAL**

EMBARGOED UNTIL 12:01am Monday 31 January 2022

HOSPITAL-acquired complications are frequent events, and variation in rates between hospitals is often interpreted as indicating differences in quality of health care. However, research published today by the *Medical Journal of Australia* shows that patient characteristics at admission were the major determinant of complication rates.

Every health care intervention and every disease include risks of serious complications during hospital care, increasing morbidity, delaying recovery, and increasing costs.

Dr Graeme Duke, a Senior Staff Specialist at Eastern Health in Melbourne, and colleagues set out to quantify the prevalence of hospital-acquired complications, and to determine the relative influence of patient- and hospital-related factors on complication rates.

"Examples of complications related to health care error include anaphylaxis following administration of a known allergen, venous thrombo-embolism because prophylaxis was neglected, and bowel perforation during diagnostic endoscopy," Duke and colleagues wrote.

"Complications related to patient factors include anaphylaxis elicited by a previously unknown allergen, thrombo-embolism despite optimal prophylaxis, and spontaneous bowel perforation caused by occult cancer."

Duke and colleagues analysed administrative data for multiple-day acute care episodes for adults across 38 major public hospitals in South Australia and Victoria, between 2015 and 2018.

"Complication rates were highest in tertiary referral hospitals (12.7 events per 100 episodes) and for episodes including intensive care components (37.1 events per 100 episodes)," they reported.

"For all complication classes, inter-hospital variation was determined more by patient factors (intraclass correlation coefficient [ICC], 0.55) than by hospital factors (ICC, 0.04) or hospital type (ICC, 0.01)."

In other words, during 2015-2018, hospital-acquired complications were reported for 9.7% of major hospital episodes in South Australia and Victoria. Patient characteristics on admission were the major determinant, explaining 55% of overall variance in rates, compared with 5% for hospital characteristics.

"Patient-related factors influenced the risk of hospital-acquired complications, but the degree of influence differed by complication class," Duke and colleagues wrote.

"The median age of patients who experienced complications was higher than for those who did not, larger proportions were frail or had other clinical conditions, their median hospital stay was longer, and their in-hospital mortality was greater."

The authors wrote that although the importance of patient-related factors for hospital complication rates had been reported in other countries, their finding that hospital factors had little influence was "unexpected".

The finding had implications for clinical practice, Duke and colleagues wrote.

"First, the influence of patient-related factors should be further examined in a multi-centre clinical audit of reported hospital-acquired complications.



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The Medical Journal of Australia

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"Second ... failure to differentiate between the two groups of factors may lead to practice changes that are clinically sound but ineffective in reducing complication rates.

"Increasing the funding of health care, improved clinical guidelines, and training and education may reduce rates of complications attributable to hospital factors and health care errors, but are unlikely to reduce those linked with patient-related factors.

"These require different solutions, including improved patient selection and risk assessment, more informed discussion of treatment risks and patient consent, and the investigation of therapeutic alternatives with lower risks and fewer side effects," they wrote.

"Third, we recommend that clinicians be engaged in developing clinical indicators, including access to the source data and methodology.

"Fourth ... higher complication rates may reflect more complex casemix and high performance, or health care errors and poor performance. Consequently, we should not abandon our national hospital-acquired complications model [the Australian Commission on Safety and Quality in Health Care algorithm for screening, monitoring, and research]."

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