



## Does Bedspacing Affect Quality of Care?



Overcrowding is an ongoing concern across hospitals. When the number of patients requiring hospital admission exceeds the number of available department-allotted beds, patients are often placed in a different specialty's inpatient ward, a practice known as "bedspacing". For example, patients admitted to the general internal medicine (GIM) service might be physically placed on a non-GIM ward. While medical care is the responsibility of the admitting service, allied health services (e.g., nursing and physiotherapy) are typically administered by the "host" service.

Bedspacing is a routine occurrence in many hospitals, though it is unclear whether this practice compromises patient care. As care needs may differ between GIM and non-GIM patients, non-GIM "host" services may have less experience with GIM patients, and ultimately, bedspaced patients may have compromised quality of care (for example, with poorer nursing adherence to quality measures). Moreover, the coordination of allied health care may be affected, including timely access to pharmacy medication reconciliation and assessment by physiotherapy, which may impact length of hospitalisation.

A recent study published in PLoS One aimed to prove the hypothesis that bedspacing represents a physical clinician-patient barrier, resulting in longer hospital stays and increased rates of return to the Emergency Department (ED) after discharge. The authors used explicit general and disease specific process measures and 30-day patient outcomes to determine whether bedspacing affects quality of care in hospitalised GIM inpatients.

### Method

Hospital databases were used to identify consecutive GIM admissions for congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), and pneumonia at St. Michael's Hospital in Toronto, Canada, from 2007 to 2011. The data were further sorted into admission date, admission physician, and hospital bedspace location in order to obtain matched pairs for each diagnosis (i.e., one patient remaining on the GIM wards and the other patient bedspaced off the GIM wards). This study was conducted prior to the hospital implementation of computerised order entry and diagnosis-specific order sets.

Each pair was admitted with the same admitting diagnosis (CHF, COPD, or pneumonia), during the same call shift under the same attending physician, in order to control for temporal differences as well as physician differences in clinical management. These diagnoses were chosen as they are among the top five GIM admission diagnoses at the hospital.

The primary outcome was the ratio of the actual to the estimated length of stay (ELOS). The ELOS is a computed estimated value defined by the Canadian Institute for Health Information that reflects the expected

length of hospitalisation, adjusted for age, diagnosis, medical comorbidities and in-hospital resource intensity weights for Canadian acute care hospitals.

The authors evaluated 10 general quality measures: (1) nursing adherence to vital sign measurement; (2) frequency of respiratory rate documentation as 20 breaths per minute; (3) frequency of missing daily medical progress notes; (4) frequency of documented physical exam findings; (5) frequency of progress notes charted before noon; (6) early documentation of pharmacy medication reconciliation; (7) early documentation of patient's resuscitation status; (8) early ordering of deep vein thrombosis (DVT) prophylaxis (or rationale as to why not); (9) early ordering of physical therapy; and (10) early assessment by physical therapy.

Disease specific measures for CHF, COPD, and pneumonia (e.g., fluid restriction) were evaluated, as well as 30-day ED and hospital readmissions. If bedspaced, when GIM ward beds eventually became available, patients were subsequently transferred to the GIM wards. The authors referred to this process as "repatriation", and noted if and when repatriation occurred for every bedspaced patient.

## Results

Overall, 1,639 consecutive admissions were reviewed, and 39 matched pairs for CHF, COPD and pneumonia were studied. Differences in both general and disease specific care measures were not detected between groups. For many disease-specific comparisons, ordering and adherence to quality of care indicators was low in both groups.

Bedspaced patients had a similar length of hospital stay compared with GIM ward patients (4.9 vs. 6.0 days, median 5.0 vs. 4.0,  $p = 0.30$ ). The mean calculated ELOS for bedspaced patients was 6.6 days, compared with 7.0 for GIM ward patients (median 6.0 and 6.0,  $p = 0.92$ ).

One-fifth of bedspaced patients (20.5 percent or 8/39) as compared with one-third of GIM ward patients (30.8 percent or 12/39) represented to the ED within 30 days (RR 0.67; 95 percent CI 0.35–1.25). Median representation times showed that bedspaced patients returned to the ED at 6.5 days post discharge compared with 8.0 days if originally admitted to the GIM ward ( $p = 0.68$ ).

Notably, in the GIM subgroup, half of GIM repeat patients (6/12 or 50 percent) were given exactly the same diagnosis as their previous admission, and a further quarter of patients (3/12 or 25 percent) had provisional diagnoses that were easily extrapolatable to their original admission diagnoses (i.e., "dyspnea" in a COPD admission, "chest discomfort" in a pneumonia patient). For bedspaced patients, only 1/8 had the same diagnosis as in their original admission.

## Conclusion and Discussion

The authors were unable to detect differences in quality of care between bedspaced and nonbedspaced patients. However, this may reflect the small sample sizes with limited statistical power. In particular, for disease specific quality of care measures, frequency of ordering these indicators was so low in both groups that further analysis was precluded. It is possible that several of the study parameters may have achieved statistical significance with increased sample sizes.

As high patient volumes and hospital overcrowding remains, bedspacing will likely continue. More research is required in order to determine if quality of care is compromised by this ongoing practice. Until then, hospitals must be aware of this possibility and continue to ensure that patients receive the same high standard of medical care regardless of their location in the hospital.

Image Credit: Wikipedia

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