

A Quantitative Analysis of Clinical Handovers Between Emergency Medicine Physicians

T. Mac Mahon, J. O'Sullivan

Emergency Department, Tallaght University Hospital, Dublin 24.

Dear Editor,

Miscommunication during handover of patient care between clinicians is known to be a significant source of risk, with emergency department (ED) handovers especially susceptible to interruption-related communication errors.^{1,2} However, no information exists on the current volume or characteristics of handovers between emergency medicine (EM) physicians in Irish EDs, limiting evaluation of any improvement activities.

We quantified the levels of clinical handover between EM physicians at a single centre and explored any association between handover occurrence and ED length of stay, patient complexity (using triage category as a surrogate marker) or need for hospital admission. All adult patient care episodes at the emergency department of Tallaght University Hospital, Dublin during October 2019 were included for analysis. Exclusion criteria were attendances at the minor injuries area, patients presenting for direct review by an inpatient team, or patients who did not wait to be seen.

The clinician responsible length of stay (CrLOS) was calculated as the time difference between initial patient contact with an EM clinician, as recorded on the ED clinical information system, and the earliest of three subsequent time points, namely time of referral to a speciality, time of discharge or time of leaving the department. This time interval is the subset of a patient's total ED stay potentially influenced by handover between EM physicians; it differs from a patient's overall ED length of stay which has many extrinsic determinants such as hospital bed capacity.

Attendances were stratified into the number of handovers per individual attendance, with alpha set at 0.05, and lengths of stay presented as means \pm one standard deviation. Two-sample t-testing assuming unequal variances was used to investigate correlation between CrLOS and handover number, with a Bonferroni correction for multiple comparisons. Pearson's chi-squared test was used to analyse the relationship between number of handovers and triage category.

3,854 attendance episodes were extracted of which 2,421 met the inclusion criteria. 262 handovers were identified as having taken place (6.8% of total attendances). Patient care episodes with no clinical handover had a mean CrLOS of 2.6 ± 1.84 hours (95%CI 2.59-2.75). For those whose care episodes included one, two or three handovers, their CrLOS was 4.79 ± 3.37 (95%CI 4.36-5.23), 6.89 ± 4.64 (95%CI 4.94-8.85) and 13.36 ± 2.98 (95%CI -13.43-40.15) hours respectively.

Two-sample t-testing showed a significant difference in overall length of stay between patient care episodes with zero and one handover ($p=1.69 \times 10^{-18}$) and between care episodes with zero and two handovers ($p=0.00018$). Pearson's chi-squared test showed a significant association between number of handovers in a care episode and more urgent triage categories ($p=0.024$). There was no significant trend towards care episodes with higher numbers of handovers being associated with increased admission rates.

This study has for the first time quantified the proportion of attendances at an Irish ED where patient care is handed over between EM physicians by using a novel metric of clinician responsible length of stay. It provides a methodology by which other Irish EDs can measure and benchmark their handover activity and informs efforts to develop ED-specific handover protocols.

Corresponding Author:

Thomas Mac Mahon
Emergency Department,
Tallaght University Hospital,
Dublin 24.
E-Mail: tmacmahon@gmail.com

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