Trauma and Orthopaedics: Are NHS Hospitals Overcrowded?

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Global trend: falling hospital beds per capita

OECD average: 5.5 to 4.8 beds per 1,000 population (13% reduction)
UK: 4.1 to 2.8 beds per 1,000 population (32% reduction)

Source: OECD (2015)
Widespread concerns over hospital crowding

- ‘Bed crisis a threat to patient safety [...] A decade-long drop in overnight hospital beds has created a mismatch between supply and demand in the NHS.’

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- Existing evidence is mixed: Erikkson et al (2017) find hospital ‘capacity strain’ is associated with worse outcomes in c.60% of 52 studies in highly developed countries
Research questions

1. Does hospital crowding cause worse health outcomes for patients?

2. How should policymakers respond to hospital crowding?

• Setting and data
  • Trauma and orthopaedic departments in England, 1997 to 2013
  • Hospital Episodes Statistics (HES), inpatient and A&E
Research questions

1. Does hospital crowding cause worse health outcomes for patients?
   - Idea: Look at ‘random’ changes in emergency trauma admissions

2. How should policymakers respond to hospital crowding?
High variation in daily emergency admissions
Unexpected 'shocks' to emergency admissions
Effect of shocks on unplanned readmissions

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<th>Standardised emergency shock</th>
<th>Point estimate</th>
<th>95% C.I.</th>
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7-day unplanned readmission, %
Effect of shocks on length of stay

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Length of stay, days
Correlated effects on length of stay and readmission

![Graph showing correlated effects on length of stay and readmission]

- 7-day unplanned readmission effect (16 quantiles)
- Length of stay effect (within-quantile mean)
Results for other outcomes

- Shocks cause **delays** - in A&E and inpatient departments - but these effects are not associated with worse health outcomes

- Shocks cause **cancellations** of elective surgery - especially when shocks are large

- **No effect** of shocks on ambulance diversion, likelihood of admission from A&E, choice of operation, hospital transfers, discharge location
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- Yes - more unplanned readmissions, potentially caused by patients being discharged early, plus delays and cancellations

2. How should policymakers respond to hospital crowding?
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2. How should policymakers respond to hospital crowding?
   - One policy option: maintain capacity but admit fewer elective patients to reduce hospital occupancy and crowding
Crowding vs waiting: a trade-off for policymakers

- Policymakers can moderate the incentives to admit elective patients
  - Policy tools: waiting time targets (RTT), financial targets (PbR)
  - Effect of admitting fewer elective patients
    - Benefit: higher quality of care (less crowding, fewer readmissions)
    - Cost: lower access to care (fewer admits, longer waiting times)
  - Making an assessment: need to compare the impact of admits on quality of care (a crowding effect) with the impact on access to care (a waiting time effect)
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The effect of elective admissions on waiting times

- 2006-2013: a decrease in 1,000 elective admissions is estimated to increase average waiting times by 1.5 days
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Conclusion

1. Does hospital crowding cause worse health outcomes for patients?
   - **Yes** - more unplanned readmissions, potentially caused by patients being discharged early, plus delays and cancellations

2. How should policymakers respond to hospital crowding?
   - **Reducing elective admissions** is one option - benefits of reduced crowding may outweigh the costs of increased waiting times