

Team composition and productivity: evidence from nursing teams in the English NHS

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Why is Team Production interesting

- ▶ Teams play a key role in many forms of production
- ▶ Teams have advantages: allow specialisation, knowledge sharing, complementarities
- ▶ Despite its pervasiveness, team production is relatively understudied
 - ▶ Most studies focus of impact of team organisation on individual output
 - ▶ Peer effects
 - ▶ Financial incentives
- ▶ In many cases output is collective and understanding how the team operates is important
- ▶ Healthcare is an important example

Our focus: Nursing team composition in inpatient hospital care

- ▶ Healthcare workers around 10 percent labour force in many economies: nurses largest profession within healthcare
 - ▶ In the UK c.600k nurses and nursing support staff
 - ▶ Worldwide shortage of nurses so important to make the best use of a (very) scarce resource
- ▶ Key feature of hospital nursing is organisation of work (patient care) into teams
 - ▶ Output is collective and individuals rotate between teams frequently due to need to provide 24 hour care
 - ▶ Teams subject to planned and unplanned changes
 - ▶ We can exploit these changes to determine which members contribute most to a team

What we do

- ▶ Our focus: how different levels of skill contribute to team output
 - ▶ Teams consist of nursing staff with more and less training
 - ▶ Teams consist of individuals with more or less experience and more or less familiarity with the hospital and other team members
- ▶ Use data at the 24 hour team level linking hospital patients to the nursing teams responsible for providing their 24/7 care in a large English hospital group
 - ▶ 44k patients, 3.5 million hours of patient care, 4,484 unique staff, 294k shifts, 59 wards in 3 hospitals
- ▶ Exploit exogenous and plausibly random variation in the size and composition of teams on an important outcome: patient mortality

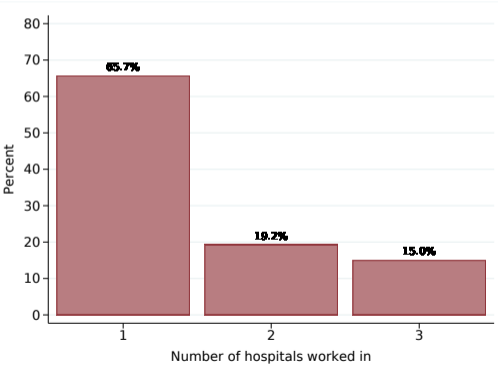
What we do cont.

- ▶ Examine effect of team size and composition
 - ▶ Does it matter if the team is not fully staffed?
 - ▶ Does it matter which staff member is missing?
 - ▶ Important because teams contain a mix of skills and one response to shortage is to replace more highly trained nurses with less skilled nursing assistants
- ▶ How much does familiarity with the hospital, the ward and other team members matter?
 - ▶ Important because hospitals are frequent users of nurses who are not employed by the hospital (agency staff)

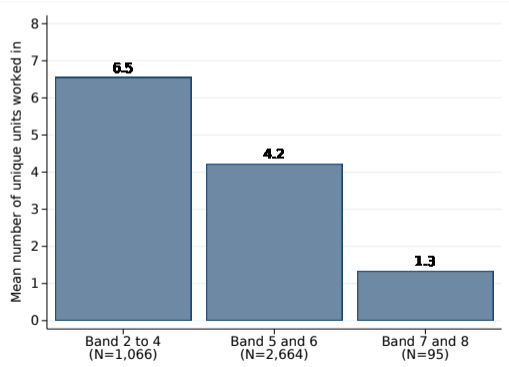
A quick look at our data

Figure: Staff movements

(a) Number of hospitals worked in during 2017



(b) Mean number of units worked in during 2017



A quick look at our data cont

- ▶ 53 wards in 3 hospitals
- ▶ Teams on average have 16 nurses, 75 percent of whom are degree qualified
- ▶ Average experience in hospital is 6 years
- ▶ Average number of patients on a ward is 20
- ▶ On average a nurse has worked for 30 days out of last 90 on ward

What we find

- ▶ Unplanned shortages of nurses are associated with increased patients deaths
 - ▶ Driven by shortfalls of nurses with degree level training
 - ▶ An unexpected absence of a nursing assistant in a team has no effect
- ▶ Effect is larger the more senior the missing nurse is
 - ▶ One degree trained nurse absent for 12 hours from an average team of 20 nurses results in a 10 percent higher chance of a patient dying on the ward
 - ▶ The absence of the most senior staff have greatest impact (around 2x that of a newly qualified nurse)
- ▶ Experience in the hospital matters
 - ▶ The longer the nurse has worked in the hospital the more her absence matters
 - ▶ But length of employment in the hospital does not matter for nursing assistants

Potential policy implications

- ▶ Increased use of less qualified staff is likely to continue given nursing shortages and tight budgets
- ▶ At the margin, our results indicate that less qualified nursing assistants are not effective substitutes for degree qualified nurses
- ▶ A change in skill mix could reduce quality of care.
- ▶ Investment in retention of degree trained nurses could improve patient outcomes

Merci pour votre attention /
Thank you