



## Extended Research Article

# Consequences, costs and cost-effectiveness of workforce configurations in English acute hospitals

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## Plain language summary

Consequences, costs and cost-effectiveness of workforce configurations in English acute hospitals

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## Plain language summary

Staffing shortages are a major concern for the National Health Service. A lot of research shows that low nurse staffing in hospital is correlated with worse patient outcomes, including an increased risk of death. However, a lot of this research has only looked at hospital average staffing and has not considered other staff, such as doctors and allied health professionals, so it is hard to be sure if improving nurse staffing on wards leads to better outcomes. It is also hard to know the most cost-effective approach to addressing staff shortages. Our study used existing data from national reports and daily staffing data from hospital wards to answer some of the main uncertainties from past research. Using data from national reports, we found low staffing levels from doctors and allied health professionals were linked to increased risk of death. Nurse staffing levels were linked to important aspects of patient experience and staff well-being, but to properly understand the effects of nurse staffing we needed to know the staffing patients experience when on hospital wards. Our study included 626,313 patients in 4 hospitals. We found that when patients spent time on wards with fewer-than-expected registered nurses or nursing assistants, they were more likely to die and their stay in hospital was longer. Low registered nurse staffing was also associated with more re-admissions. We looked at the cost of avoiding low staffing and the cost of gaining the equivalent of 1 year of healthy life. We compared these 'cost-effectiveness' estimates for different ways of avoiding low staffing and for different patient groups. Overall, we concluded that a focus on avoiding low registered nurse staffing gave more benefits than using assistants to fill any gaps, and should be the priority, although it is still not clear what the best level of staff is.

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