Total time in English accident and emergency departments is related to bed occupancy

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**DISCUSSION**

This study shows that waits over four hours are correlated with the average bed occupancy in acute trusts. This has not been shown previously in the UK. It does not show a causal relation between the two.

Bed occupancy rates were not available for 15% of the population and these hospitals had to be excluded from the analysis. If either bed occupancy rates or the proportion of patients waiting more than four hours, in these hospitals, were not similar to that of those with complete data this may have affected the analysis. Data for bed occupancy and waiting times were obtained from routine reporting mechanisms (SitRep data) and have not been separately validated.

Bed occupancy levels above a safe threshold are associated with delays in admission via A&E, which may divert resources away from other processes in the A&E department. Non-availability of cubicles because they are occupied by patients waiting for admission may contribute to this problem. It has been proposed that streaming of minor injuries can decrease waiting times. In this system some cubicles are devoted to the care of minor injury cases. It would be expected that this system of “streaming” should mean there is little relation between bed occupancy and wait of non-admitted patients in the emergency department. If streaming is effective it would therefore be expected that the relation shown in this study should disappear as A&E departments adopt this new method of working.

Equally if bed occupancy rates can be reduced below a threshold, it should be possible to decrease the proportion of non-admitted patients in the emergency department.
patients spending excessively long times, over four hours, within an A&E department.

Further study of outliers in the distribution (for example, those with high bed occupancy but low total waits) may help to understand the reasons for and potential solutions of long waits in A&E departments.

CONTRIBUTORS
MC had the original idea for the study, coordinated the analysis, and wrote the first draft of the paper. AR undertook the analysis of the data. JH collated the data. All four authors were involved in the writing of the paper. MC is the guarantor of the paper.

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