

SAVING LIVES BY TYING HANDS: Effects of waiting time targets in emergency departments in UK hospitals

The imposition of a 'four-hour wait' policy in hospital emergency departments (EDs) in England in 2004 led to a fall in patient mortality rates, according to research by **Thomas Hoe** and colleagues, to be presented at the annual congress of the European Economic Association in Manchester in August 2019.

Their analysis uses administrative records of 15 million visits to EDs at public hospitals from 2011 to 2013. These data include detailed information about ED visits and any subsequent care received during an inpatient stay, and are also linked to national mortality records.

The researchers find that the policy leads to more intensive testing of patients in the ED and a modest increase in ED costs. The policy also leads to a 12% increase in the probability of inpatient admission and a corresponding decrease in discharges to home. While these marginal inpatients use relatively few resources during their stays, the extra visits are nonetheless associated with a 5% increase in payments from the government for inpatient services.

Strikingly, there are significant gains in patient outcomes from the policy – the 30-day mortality rate is estimated to fall by about 14% for patients affected by the policy, while the one-year mortality rate falls by about 3%. The researchers note that these effects are large relative to the effect on spending, suggesting a cost of extending life by one year of \$43,000.

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EDs face the complex challenge of serving patients who arrive with a wide array of problems, some life threatening. ED nurses and physicians must quickly decide which patients must be seen immediately and which can wait. They must also decide which diagnostic tests and procedures to perform in the ED, as well as when to admit a patient to the hospital and when to send them back home.

Long ED waiting times are an increasing focus of public attention. In some US cities, there are digital billboards advertising current waiting times at local EDs. Several nations have introduced financial rewards or penalties for providers based on ED waiting times.

The effects of policies that encourage shorter ED waiting times are not well understood. One concern is that such policies could lead providers to make decisions that compromise the quality of patient care. On the other hand, it is not clear whether providers fully take into account the effect of waiting times on patient outcomes in the absence of these policies.

This study explores the effect of the imposition of a 'four-hour wait' policy in England.

Implemented in 2004, the policy required 98% (later 95%) of patients to be discharged, admitted as an inpatient, or transferred to another hospital within four hours of arrival. Meeting the target is a key factor in the evaluation of overall hospital performance, with managers at risk of being fired for poor compliance.

Further, the financial penalty for missing the target is more than twice the average revenue of an ED patient, with total fines equalling one-third of hospital deficits. To help them meet the target, EDs have adopted IT systems that track patient waiting times and hired staff to monitor waiting times and alert physicians when the four-hour threshold is approaching.

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There is a large spike in waiting times at the four-hour mark, with a patient's visit to the ED 2.5 times more likely to be completed in the 10 minutes before the cut-off than in any other 10-minute window. The researchers use a 'bunching estimator,' first developed to study the effect of tax rate thresholds, to estimate the counterfactual distribution of waiting times that would exist in the absence of the four-hour policy. They find that the policy reduced wait times for affected patients by nearly 20 minutes, or 8%.

Turning to how the policy affects treatment decision and outcomes, the researchers develop a method that allows them to distinguish the portion of the spike at the four-hour mark that results from providers treating sicker patients more quickly (the 'composition' effect) from that which results from changes in provider behaviour (the 'distortion' effect). The latter is the finding of interest.

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Interestingly, there are significant gains in patient outcomes from the policy – the 30-day mortality rate is estimated to fall by about 14% for patients affected by the policy, while the one-year mortality rate falls by about 3%. The researchers note that these effects are large relative to the effect on spending, suggesting a cost of extending life by one year of \$43,000.

Overall, the findings indicate that the policy induced EDs in England to reduce waiting times and increase inpatient admissions, resulting in cost-effective mortality improvements. This suggests that provider decisions in the absence of the four-hour policy would not be optimal.

Cautioning that their results might not apply in other contexts with different waiting time limits or incentives for compliance, they conclude 'more work is clearly needed to understand the proper set of rules and incentives for delivering cost-effective ED care.'

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In 'Saving Lives by Tying Hands: The Unexpected Effects of Constraining Health Care Providers' (NBER Working Paper No. [24445](#)), researchers [Jonathan Gruber](#), [Thomas Hoe](#), and [George Stoye](#) explore the effect of the imposition of a 'four-hour wait' policy in England.

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