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## Risk of death from surgery greater at the weekend, study finds

BMJ study finds mortality rate within 30 days of operation rises each day and is 82% higher at weekends than on Mondays



▲ Sir Bruce Keogh, national medical director of NHS England, says the health service is committed to safe care regardless of when patients receive treatment. Photograph: Dave Evitts /Newsteam

Patients who have planned surgery near the end of any week or at weekends are at greater risk of dying than those operated on at the start of the week and especially on Mondays, research reveals.

These risks have been rated "very alarming" by patient safety campaigners, and judged unacceptable by the Royal College of Surgeons (RCS).

The findings come as NHS chiefs try to devise ways of ensuring that the health service offers high-quality care across the entire week, in response to a growing body of evidence showing that a shortage of experienced doctors on duty at the weekends heightens the risks of a poor outcome for patients.

The study is significant since it is the first to suggest that patients in Britain are more likely to have an "inferior outcome" if they undergo elective surgery later in the week.

Until now concern has focused on high death rates among patients admitted as emergency cases at weekends - dubbed the "weekend effect" - which is often attributed to a lack of consultants on duty on Saturdays and Sundays.

The research, published on the [British Medical Journal's website](#), found that the risk of death within 30 days of a planned operation increased every day of the week after Monday.

Compared with Monday, the adjusted odds of death

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Compared with Monday, the adjusted odds of death [taking into account case mix] for all elective surgical procedures was 44% higher, and 82% higher, if the procedures were carried out on Friday or at the weekend respectively," according to the team, which was led by Paul Aylin, a clinical reader in epidemiology and public health at [Imperial College London](#).

Aylin and his colleagues reached their conclusions after studying the records of 4.1m elective surgeries carried out in hospitals in England over three years between 2008-09 and 2010-11, and the deaths of 27,582 of the patients involved within 30 days of their operation.

"There were significant differences in the observed mortality rates and the odds of death for each day of the week compared with Monday for all procedures," the authors said.

Of all 4.1m elective procedures, 5.5 of those people who had surgery on a Monday died per 1,000 hospital admissions - but that rose to 6.2 on Tuesdays, 6.7 on Wednesdays and 7.0 on Thursdays. The figure was 8.2 for Fridays - 44% higher than the rate for Monday patients when adjusted for case mix.

The same trend was recorded among patients having lower-risk procedures. The rate of death was 1.8 per 1,000 admissions for those having surgery on a Monday but rose to 2.4 - some 33% higher - on a Friday.

The higher risk of death was most pronounced among patients undergoing one of five high-risk surgical procedures.

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"In four of the five procedures there were significant trends towards higher mortality at the end of the working week and weekends compared with Monday," the authors said.

While the mortality rate was 20.1 per 1,000 admissions among patients who had a section of bowel removed on a Monday, it was 30.6 - over 50% higher - for those having the operation on a Friday.

The risk of death after surgery on a Friday was also noticeably higher, compared with Monday, for those having a lung removed, surgery to improve blood supply to the heart, or procedures for an abdominal aortic aneurysm.

Aylin said he could not be sure what lay behind the trend. But he said that as the first 48 hours after surgery were critical to patients' chances of recovery, the poorer care available at weekends - fewer staff, less experienced staff, perhaps less access to diagnostic tools or emergency surgery - was a likely explanation. Those who had surgery on a Friday would stay in hospital over the weekend.

Antony Narula, an RCS council member and ear, nose and throat consultant, said the study was "an important piece of research which contributes to the debate around how to improve survival rates". He said it was not acceptable to have such wide variation in mortality rates following elective surgery "according to the day of the week the operation takes place".

Peter Walsh, CEO of the patient safety group AvMA, said day-dependent differences in the risk of death of as much as 44% were very alarming" and underlined the need to make the NHS a truly seven-day service.

Operating a good service only on weekdays was a completely out of date notion, he said, adding that patients due to have elective surgery on a Friday could ask instead to undergo it earlier in the week.

Sir Bruce Keogh, national medical director of NHS England, said the service was "committed to providing safe care for all patients, regardless of when they receive their treatment".

Keogh added: "We have established a forum to develop viable financial and clinical options to help our NHS provide more comprehensive services seven



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days a week. This forum will report back in the autumn."

[His review into high death rates at 14 hospital trusts](#) was also examining staffing levels, he added.

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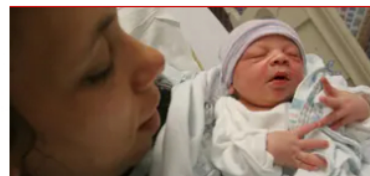
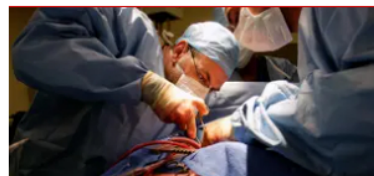
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