Study shows major omission in evidence of 'weekend effect' on mortality rates in hospitals

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According to new research in the *BMJ Quality & Safety* journal, previous studies showing an increased risk of mortality following admission to hospital at weekends have failed to take account of the higher severity of patients' conditions.

The research, carried out by a team from the Manchester Centre for Health Economics at The University of Manchester, directly contradicts established wisdom that mortality rates increase at the weekend—a core argument for the Government's push for a seven day NHS.

The key factor identified by the research team was that a higher proportion of patients admitted to hospital at the weekend have arrived by ambulance. This is an important marker of increased illness severity. Once severity is taken into account, there is no increased risk of mortality following admission during the weekend except a very small increase on Sunday daytime.

The authors re-analysed the same data on emergency admission used by the previous studies that have been repeatedly quoted by Government as showing a 'weekend effect'. They examined over 3 million records for patients admitted to hospitals across England via A&E in the 2013/14 financial year.

The proportions of patients brought in by ambulance were substantially higher on Saturdays (61%) and Sundays (60%) compared with 57% on weekdays. Patients arriving by ambulance had much more severe problems, with a mortality rate of 5.5% compared to just 0.8% for patients who did not arrive by ambulance. This important marker of severity, which differs between weekdays and weekends, has not been taken into account in previous studies.

The authors also examined whether patients were at higher risk of dying if they were admitted at night. Patients admitted to hospital at night were more likely to be more severe, having arrived by ambulance, and this factor accounted for their higher death rates. The fact that there is no increased risk of mortality at night raises further doubt about whether the presence of senior doctors and rapid access to diagnostic services is a key determinant of mortality rates.

Professor Matthew Sutton, lead of the research and Professor of Health Economics at The University of Manchester, said the findings questioned the 'weekend effect' and therefore the planned expansion of emergency hospital services at the weekend.

"We have shown that much of the weekend effect identified in previous studies is likely to be explained by a smaller and on average sicker population of patients being admitted at weekends. Arrival by ambulance is a marker of illness severity that has been omitted from the previous studies on which the seven-day services policy is based. Other measures of severity would likely explain the weekend effect away altogether."

"The seven-day services policy is based on very little evidence. This major omission from the previous studies shows that much more robust evidence is needed to justify the major changes in hospital services that are underway."

The research—'Arrival by ambulance explains variation in mortality by time of admission: retrospective study of admissions to hospital following emergency department attendance in England'—appears in the *BMJ Quality & Safety Journal*.

Provided by University of Manchester