

No greater death risk for children admitted to emergency out-of-hours intensive care

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Children admitted to UK intensive care units in out-of-hours emergencies are at no greater risk of dying than children arriving during normal working hours, according to new research.

However, [mortality rates](#) are significantly higher in the winter, even after taking into account added health risks for children in the colder months.

The study, published by researchers at the University of Leeds and the University of Leicester in the *Journal of Pediatrics*, is the first large-scale analysis of the influence of admission times on deaths in paediatric [intensive care](#) units. It was commissioned by the Healthcare Quality Improvement Partnership and carried out by the Paediatric Intensive Care Audit Network (PICANet).

Its findings are an important contribution to the debate on out-of-hours provision in the NHS, with Sir Bruce Keogh, Medical Director of NHS England, calling in February for 7-days-a-week consultant-led care.

Research in 2010 reported that patients admitted for emergency treatment at weekends were up to 10 per cent more likely to die¹ and the *Royal College of Pediatrics and Child Health* warned in April about the large number of children admitted out of hours with serious health problems who did not see a senior [paediatrician](#) promptly².

The new study, based on admissions to 29 paediatric intensive care units between 2006 and 2011, did not find any negative effect for either

weekend or night-time [emergency admissions](#).

Dr Roger Parslow, senior lecturer in the University of Leeds' School of Medicine, who co-led the study, said: "This is a very large study of over 86,000 admissions and we are confident that children admitted as an emergency outside normal [working hours](#) have the same chance of survival as those admitted in normal working hours."

Dr Parslow added: "Paediatric intensive care units have direct consultant input and dedicated staffing out-of-hours, so proponents of 24/7 consultant care may see this as supporting their case."

Professor Elizabeth Draper, co-principal investigator from the University of Leicester, said: "The consistency of the quality of care provision by all paediatric intensive care units at any time during the week will be very reassuring for the parents of children requiring intensive care."

The researchers did identify a near doubling of mortality risk for children admitted outside normal working hours following a planned admission. This increased risk is likely to be related to children who have undergone lengthy, complicated surgery that carries a higher risk of death.

However, the report also found a statistically significant 13 percent increase in deaths in November, December and January.

"The increase in winter mortality is not due to children being sicker in winter, as we have taken that into account in our analysis as far as possible," Professor Draper said.

That leaves open the possibility that strain on units' resources and staff may be having an effect. Paediatric intensive care units often experience

high admissions during winter. In particular, the greater incidence of human respiratory syncytial virus (RSV) in very young children during winter puts pressure on services.

Dr Parslow said: "It is not clear why we are seeing this effect in winter. It could be pressure on services, but it could also be that we are looking at a different mix of patients. When units are under great pressure less seriously ill children may be cared for in other specialist areas in the hospital. That would mean the proportion of children in intensive care with life-threatening problems is greater and it is possible that our risk-adjustment model may not fully take this into account. This is a topic for further research."

Out-of-hours admissions were defined as any admission at the weekend, night time or on a bank holiday. Weekends were defined as any time from Friday, 5 pm to 7 am on Monday morning. Night-time admissions were defined as after 8.00pm and before 8.00am.

The researchers also looked at whether the size of paediatric intensive care units had an effect on mortality rates, but found no statistically significant differences.

More information: Phil McShane, Elizabeth S. Draper, Patrician A. McKinney, Jillian McFadzean, Roger C. Parslow on behalf of the Paediatric Intensive Care Audit Network (PICANet), 'Effects of Out-of-Hours and Winter Admissions and Number of Patients per Unit on Mortality in Pediatric Intensive Care,' is published in *The Journal of Pediatrics*. ([DOI: 10.1016/j.jpeds.2013.03.061](https://doi.org/10.1016/j.jpeds.2013.03.061))

References:

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Care 2010;19:213e217. [doi:10.1136/qshc.2008.028639](https://doi.org/10.1136/qshc.2008.028639)

2. 'Back to Facing the Future: An audit of acute paediatric service standards in the UK.' Royal College of Paediatrics and Child Health, April 2013. Available for download at:
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