

Use of specialist retrieval teams to transport sick children is associated with reduce mortality

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A study published Online First in The *Lancet* shows that use of specialist retrieval teams, rather than non-specialist teams, to transfer sick children to a hospital with a specialised paediatric intensive care unit (PICU) is associated with reduced mortality. The findings support the policy of combining centralisation of intensive care services for children with the use of specialist retrieval teams, which has occurred in the UK and some other high income countries in recent years. The Article is by Dr Padmanabhan Ramnarayan, Children's Acute Transport Service, Great Ormond Street Hospital NHS Trust, London, UK, and colleagues.

Specialist retrieval teams are staffed by doctors trained in paediatric intensive care who are able to undertake advanced interventions at referring hospitals, such as [mechanical ventilation](#), invasive haemodynamic monitoring, and use of vasoactive drugs.

The authors analysed data, collected as part of a national audit (Paediatric Intensive Care Audit Network, PICANet), from children aged 16 and under admitted consecutively to 29 PICUs in England and Wales during 4 years (Jan 1, 2005, to Dec 31, 2008). They compared unplanned admissions from wards within the same hospital as the PICU and from other hospitals; interhospital transfers by non-specialist and specialist retrieval teams; and patients transferred to their nearest PICU and those who were not. Primary outcome measures were mortality rate and length of stay in PICU.

The study covered 57 997 admissions to PICUs during the study. Nearly half of unplanned admissions (17 649 [53%] of 33 492) were transfers from other hospitals. Children admitted from other hospitals were younger (10 months vs 18 months), sicker at admission (median predicted risk of mortality based on their condition 6% vs 4%), stayed longer in PICUs (75 h vs 43 h), and had higher crude [mortality rates](#) (8% vs 6%). Despite this, when the data was adjusted for severity of illness, age, and gender, the mortality rate in PICUs was 35% lower in children transferred from other hospitals than among those admitted from within the same hospital. Use of a specialist retrieval team for transfer was associated with improved survival, reducing mortality by 42% compared with compared with non-specialist team transfers. Additional distance travelled by patients who were not transferred to their geographically nearest PICU was not associated with increased risk-adjusted mortality.

The authors propose a number of explanations for their findings. Children admitted to PICU from wards within the specialist children's hospital may have had complex, multi-system problems with a high risk of mortality. Alternatively, specialist retrieval teams may have identified serious illness earlier among children presenting to other hospitals, provided expert telephone advice and transferred them to a PICU, whereas outreach teams have not yet been widely implemented within children's hospitals, which may have led to a delay in recognition of critical illness on the wards and admission to PICU.

They conclude: "Within a centralised model of paediatric [intensive care](#) in England and Wales, children admitted from other hospitals have equivalent, if not better, outcomes in terms of PICU mortality, than do those admitted from within the hospital. Specialist retrieval teams, which are used commonly for interhospital transport of critically ill children, were associated with reduced risk-adjusted mortality. The distance travelled by patients to access emergency paediatric critical care did not seem to affect their outcome."

In a linked Comment, Dr Philippe Jouvét and Dr Jacques Lacroix, Division of Paediatric Critical Care Medicine, Sainte-Justine Hospital, University of Montreal, Canada, say: "The American College of Critical Care Medicine recommended that each hospital should develop its own plan for intrahospital and interhospital transport of critically ill patients;¹² Ramnarayan and colleagues' study suggests this plan should include a paediatric specialist retrieval team. The transport of critically ill children from a local hospital to a regional PICU was as safe, if not safer, than the transport for internal sources when done by a specialist retrieval team.

They conclude: "However, it is too soon to determine whether paediatric specialist retrieval teams should do all transports to PICUs. More studies that evaluate the severity of illness with similar criteria collected at a similar time to today's study (first hour after contact) are needed. In future studies, attention must be paid to the case-mix and to the decision process that leads to transport by a specialist or a non-specialist retrieval team. Finally, data must be collected on the expertise of the retrieval team, distance between hospitals, patients' stabilisation before PICU admission, and the presence of an early warning system and an interhospital outreach team in local and regional hospitals."

Provided by Lancet

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