

Unplanned extubations in preterm infants leads to poor outcomes, increased care costs

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Unplanned extubations in adult and pediatric populations have long been associated with poor clinical outcomes and increased costs to health care systems.

A very common adverse event in intensive care unit settings, the long-term outcomes of unplanned extubations in critically ill, preterm infants have never been studied until now.

UEs are defined as any removal of the endotracheal tube that the medical team did not plan in advance. These include breathing tubes dislodged by the patient, removed accidentally during routine nursing and medical care and those intentionally removed during an acute resuscitation event.

In a retrospective matched [cohort study](#), a team of investigators at Monroe Carell Jr. Children's Hospital at Vanderbilt led by Dupree Hatch, MD, MPH, assistant professor of Pediatrics, Neonatology Division, was the first to describe the impact that unplanned extubations (UEs) have on preterm infants.

"While our findings were congruent with the adult and pediatric intensive care unit populations, we discovered preterm infant outcomes after UE were worse and the magnitude was more severe," he said.

The study, published in *Pediatrics* this month, documented that neonates experienced worse in-patient outcomes, extended length of stay and

increased [hospital costs](#).

"Our study was the first to describe what these UEs mean for the baby as well as what impact it has on the Neonatal Intensive Care Unit (NICU)," said Hatch, "The findings are helpful for those working to lower rates of UEs and gives us the ammunition to continue to do this important quality improvement work.

"Spending money on prevention will help save lives and costs. If teams have more resources to deal with unplanned extubations, they can not only improve [patient care](#), but save money."

The research team looked at a cohort of very low birthweight infants, born less than 3.3 pounds, who required [mechanical ventilation](#). The short-term results of UEs includes reintubation, oxygen desaturation and the need for CPR.

The study was able to determine that UEs in [preterm infants](#) are associated with significantly poorer hospital outcomes and increased financial costs.

According to study results, exposure to one or more UEs was associated with a nearly one- week increase in the duration of mechanical ventilation, an additional 10 days in the hospital and nearly \$50,000 increase in total hospital costs.

UEs were also associated with worsened respiratory outcomes, which could also prolong the need for mechanical ventilation.

Conservative estimates show direct hospital costs of about \$60 million as a result of UEs in babies less than 28 weeks at birth, said Hatch.

With national efforts to decrease the rate of UEs drawing more attention

by quality improvement teams, Hatch hoped evidence-based interventions to prevent UEs, such as using multi-person teams for re-taping the breathing tube and transferring or moving patients, will become standard practice in the NICU.

More information: L. Dupree Hatch et al, Outcomes, Resource Use, and Financial Costs of Unplanned Extubations in Preterm Infants, *Pediatrics* (2020). [DOI: 10.1542/peds.2019-2819](https://doi.org/10.1542/peds.2019-2819)

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