The Boy
That Sparked A Movement

Drew Hughes
9.01.99 - 6.29.13

The True Impact of Unplanned Extubation

The Boy That Sparked A Movement

Drew Hughes was one of the 33,000 who unnecessarily lost his life in 2013

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Drew Hughes

On June 29, 2013, 13-year-old Drew suffered a head injury while skateboarding. In the ER he was awake, alert and appeared to be fine.

The doctor ordered a CT scan of his brain and found a possible basilar skull fracture. For Drew's safety, he was to be transferred to the Level I Trauma Center and a breathing tube was placed for the transfer by ambulance...

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Read more about Drew's Story at www.doitfordrew.org

Drew Hughes

Drew's breathing tube became dislodged during transport. When replaced, it was put in his esophagus rather than his trachea.

His oxygen levels fell, and his heart rate slowed.

By the time the ambulance diverted to a nearby hospital, it was too late.

Drew suffered anoxic brain injury and lost his life.

Read more about Drew's Story at www.doitfordrew.org

Drew Hughes

But Drew’s legacy lives on.

His story inspired a movement…

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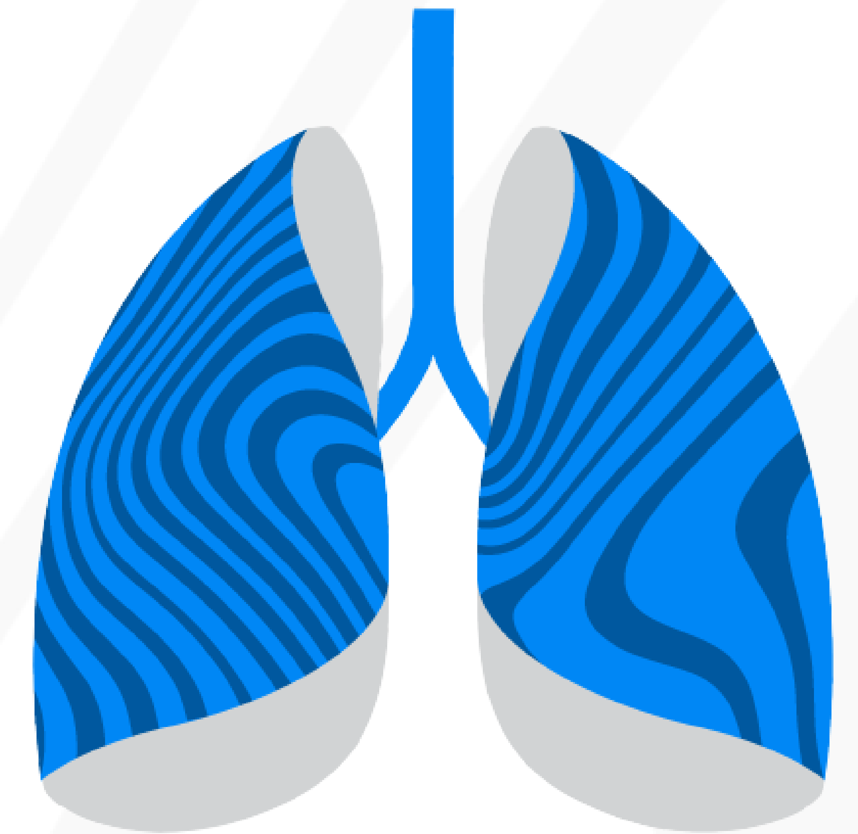
Read more about Drew’s Story at www.doitfordrew.org

The True Impact Of Unplanned Extubation



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What Is Unplanned Extubation?

What Is Unplanned Extubation?

Unplanned Extubation is the unplanned, unintentional and uncontrolled removal of a patient’s life sustaining breathing tube.

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The Impact Of Unplanned Extubation?

Unplanned Extubation Common and Costly

Unplanned extubation events annually in U.S. ICUs alone

Adult ICUs	121,000
Pediatric ICUs	2,000
Neonatal ICUs	15,000

Yearly, unplanned extubation is associated with…

33,000	preventable deaths every year
36,000	cases of ventilator-associated pneumonia
2x	increased length of stay in the ICU
$41,000	additional cost per unplanned extubation
$4.9 billion	in unnecessary healthcare costs

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Unplanned Extubation By The Numbers

Deaths from Firearms*	39,000 /yr
Deaths from Unplanned Extubation*	**33,000 /yr**
Deaths from Catheter Associated Urinary Tract Infections*	13,000 /yr
Deaths from Medication Errors*	7,000 - 9,000 /yr
Deaths from Surgical Site Infections*	8,200 /yr
Deaths from Central Line Associated Blood Stream Infections*	3,600 - 7,800 /yr
Deaths from Opioid Induced Respiratory Depression in Hospital*	3,000 - 5,000 /yr

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Medical professional societies, and patient safety and quality improvement organizations have joined forces to bring awareness to, and prevent, unplanned extubation.

20 partnering organizations now make up the

Coalition for the Unplanned Extubation Awareness & Prevention Initiative (CUEAPI)

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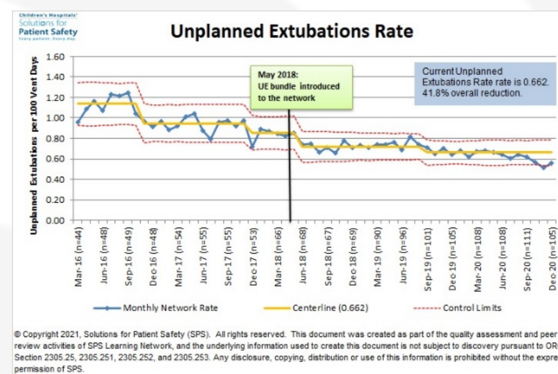
American College of Emergency Physicians®

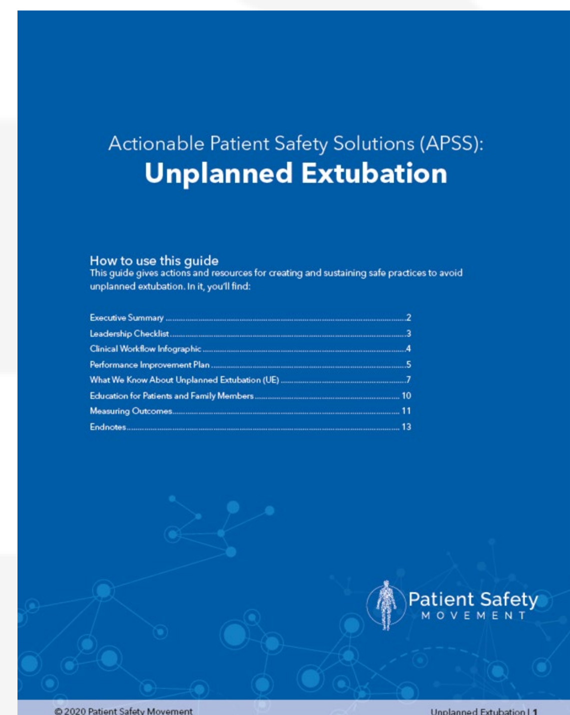
Children's Hospitals' Solutions for Patient Safety
Every patient. Every day.

The Airway Safety Movement, The Society for Airway Management, The Patient Safety Movement Foundation and the Children's Hospitals' Solutions for Patient Safety Network:

Together we've…

Developed the tools necessary to significantly reduce unplanned extubation





Actionable Patient Safety Solutions (APSS):

Unplanned Extubation

How to use this guide

This guide gives actions and resources for creating and sustaining safe practices to avoid unplanned extubation. In it, you'll find:

Executive Summary 2
Leadership Checklist 3
Clinical Workflow Infographic 4
Performance Improvement Plan 5
What We Know About Unplanned Extubation (UE) 7
Education for Patients and Family Members 10
Measuring Outcomes 11
Endnotes 13

Patient Safety MOVEMENT

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Unplanned Extubation | 1

- The **Children's Hospitals' Solutions for Patient Safety** Network has demonstrated that, by sharing successes and failures transparently, learning from one another, employing high-reliability concepts and quality improvement science methods, and standardizing best practice UE bundles, UE can be significantly reduced.

- The **Patient Safety Movement Foundation** created Actionable Patient Safety Solution Blueprints, educational resources and an APSS coaching program, based on proven best practices, for hospitals to use to improve their UE rates.

- The **Airway Safety Movement and the Society for Airway Management** organized the Coalition for UE Awareness and Prevention Initiative, which has disseminated information to increase UE awareness and prevention and has ignited countless conversations with UE-stakeholders to end UE related harms and deaths.

Resources for UE Awareness and Prevention

Research

JAMA Pediatrics | Original Investigation

Assessment of an Unplanned Extubation Bundle to Reduce Unplanned Extubations in Critically Ill Neonates, Infants, and Children

Darren Klugman, MD; Kristin Melton, MD; Patrick O'Neal Maynord, MD; Aaron Dawson, PE; Gowri Madhavan, MPH; Vicki Lee Montgomery, MD; Mary Nock, MD; Anthony Lee, MD; Anne Lyren, MD, MSc

Supplemental content

IMPORTANCE Unplanned extubations (UEs) in children contribute to significant morbidity and mortality, with an arbitrary benchmark target of less than 1 UE per 100 ventilator days. However, there have been no multicenter initiatives to reduce these events.

OBJECTIVE To determine if a multicenter quality improvement initiative targeting all intubated neonatal and pediatric patients is associated with a reduction in UEs and morbidity associated with UE events.

DESIGN, SETTING, AND PARTICIPANTS This multicenter quality improvement initiative enrolled patients from pediatric, neonatal, and cardiac intensive care units (ICUs) in 43 participating children's hospitals from March 2016 to December 2018. All patients with an endotracheal tube requiring mechanical ventilation were included in the study.

INTERVENTIONS Participating hospitals implemented a quality improvement bundle to reduce UEs, which included standardized anatomic reference points and securement methods, protocol for high-risk situations, and multidisciplinary apparent cause analyses.

MAIN OUTCOMES AND MEASURES The main outcome measures for this study included bundle compliance with each factor tested and UE rates on the center level and on the cohort level.

RESULTS Among the 43 children's hospitals, the quality improvement initiative was associated with an aggregate 24.1% reduction in UE events, from a baseline rate of 1.135 UEs per 100 ventilator days to 0.862 UEs per 100 ventilator days. Across ICU settings studied, the pediatric ICU and neonatal ICU demonstrated centerline shifts, with an absolute reduction in events of 20.6% (from a baseline rate of 0.729 UEs per 100 ventilator days to 0.579 UEs per 100 ventilator days) and 17.6% (from a baseline rate of 1.555 UEs per 100 ventilator days to 1.282 UEs per 100 ventilator days), respectively. Most UEs required reintubation within 1 hour (mean of 120 of 206 events per month [58.3%]), followed by UEs that did not require reintubation (mean of 78 of 206 events per month [37.9%]) and UEs that resulted in cardiovascular collapse (mean of 8 of 206 events per month [3.9%]). Cardiovascular collapse events represented the most significant consequence of UE studied, and the collaborative reduced these UE events by 36.6%, from a study baseline rate of 0.041 UEs per 100 ventilator days to 0.026 UEs per 100 ventilator days.

CONCLUSIONS AND RELEVANCE This multicenter quality improvement initiative was associated with a reduction in UEs across different pediatric populations in diverse settings. A significant reduction in event rate and rate of harm (cardiovascular collapse) was observed, which was sustained over the time course of the intervention. This quality improvement process and UE bundle may be considered standard of care for pediatric hospitals in the future.

Table. Unplanned Extubation (UE) Quality Improvement Bundle Factors and Definitions

Factor	Definition
Standard elements	
Standardized anatomic reference points and securement methods	• Two licensed clinicians are present for securing, repositioning, and/or manipulating endotracheal tubes • Hospitals will select one of the following as an anatomic landmark: gum, teeth, or nare; if unable, use lips • Each unit selects a standardized securement method (or a house-wide standardized securement method)
Protocol for high-risk situations	Repositioning occurs with 2 licensed clinicians (having 1 dedicated to hold the tube during movement and repositioning) during high-risk situations, including: • Bedside imaging procedures • Bedside invasive procedures • Kangaroo care/parent holding • Routine repositioning • Switching beds • Early mobility
Recommended elements	
Multidisciplinary ACA	• A multidisciplinary ACA event form should be completed for each event on the current shift by all clinical witnesses • ACA should be used to Pareto institutional-specific causes of UE to identify areas for improvement

Abbreviation: ACA, apparent cause analysis.

UE Quality Improvement Process and Bundle Studied by 43 children's hospitals may be considered standard of care for pediatric hospitals.

Published JAMA Pediatrics April 2020

Resources for UE Awareness and Prevention

Airway Safety Panel Discussion Webinar:
Speaking Up and Getting Started
Dr. Kanowitz; Dr. Berkow; Dr. Kandil; Dr. Lyren; Dr. Loftin; David Hughes

Eliminating Unplanned Extubation in Pediatrics
Dr. Sarah Kandil

The Unplanned Extubation Awareness and Prevention Initiative: A Multispecialty Collaborative
Dr. Lauren Berkow

Airway Safety: Application of the APSS for UE
Dr. Edwin Loftin

Adult Hospitals' Solutions for Airway Safety
Dr. Art Kanowitz

Patient Safety Movement Foundation Videos and Webinars on Unplanned Extubation Awareness and Prevention

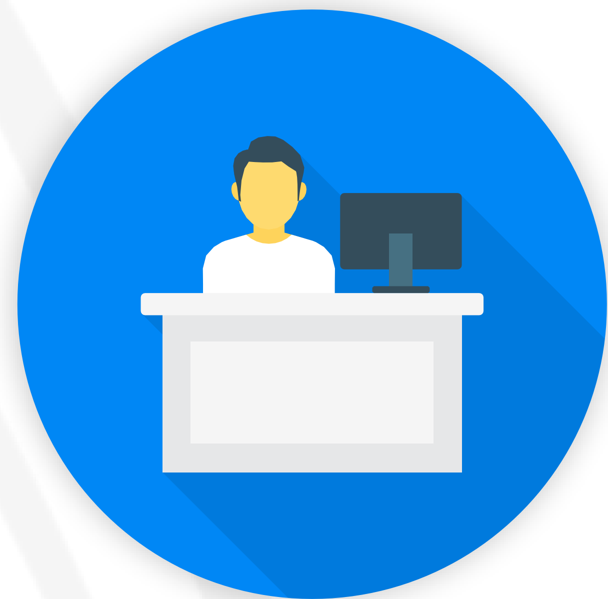
What's Next?

But more needs to be done...

Move The Movement

Who can commit to help.

Patient Safety & Quality Improvement Departments



Hospital Executives

Providers

Patients & Patient Advocates

Electronic Health Record (EHR) Companies

Patient safety and quality improvement departments:

- Talk to your leadership to get support
- Track intubated patient data
- Take assessment of your UE rate
- Implement the Patient Safety Movement Foundation's Actionable Patient Safety Solution Blueprint for Unplanned Extubation www.patientsafetymovement.org/clinical/airway-safety
- Implement the Children's Hospitals' Solutions for Patient Safety UE Bundle www.solutionsforpatientsafety.org/for-hospitals/hospital-resources

Healthcare Executives:

- Commit to empowering your quality and safety teams to elevate UE to the status of a key performance measure and provide the resources necessary for this process to occur
- Take assessment of your facility's UE rate
- Become an ambassador for UE data tracking, quality measures and best practices
- Develop a core team to reduce UE and engage staff
- Talk to EHR companies about integrating UE data tracking

Providers:

- Become a cheerleader of UE best practices and data tracking
- Advocate for the IHI model for improvement

Patients and Patient Advocates:

- Ask your hospital providers how important UE is to them
- Ask what quality measures they have in place and how they prevent UE from occurring

Electronic Health Record (EHR) Companies:

- Add the Unplanned Extubation Core Data Set to your software
- Educate system users about UE data tracking and its importance

June 29 is the anniversary of Drew's Death

Please honor Drew's Legacy.

Take action and prevent any further harm or death from UE.

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Let's Move The Movement

Let's Commit

to end all harm and death associated with unplanned extubation.

Learn more and **get involved at:**

www.patientsafetymovement.org
www.solutionsforpatientsafety.org
www.samhq.com
www.airwaysafetymovement.org

Sources

https://www.hospitalsafetygrade.org/media/file/measure_sheet_CAUTI.pdf
https://www.cdc.gov/nhsn/pdfs/training/2017/Russo_March23.pdf
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1592694/
https://www.cdc.gov/hai/eip/Annual-CDI-Report-2016.html
http://www.hret-hiin.org/Resources/clabsi/17/central-line-associated-bloodstream-infection-clabsi-change-package.pdf
https://www.ncbi.nlm.nih.gov/books/NBK519065/
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