Making our Hospitals Safe Havens instead of Danger Zones

Michael Ramsay MD, FRCA

Chairman Department of Anesthesia
Baylor University Medical Center
President Baylor Research Institute
Professor Texas A&M Health Science Center
Clinical Professor UT Southwestern Medical School
Board Member Patient Safety Movement Foundation

Learning Objectives

- Describe the preventable causes of patient harm in our hospitals
- Explain how to access the best practices that have demonstrated reduced patient harm and suggest improvements if you can show proven evidence.
- Recognize the reasons that it takes a ‘‘Team Approach’’ to reduce patient harm. Everyone involved in the process of care must be committed to the same goal.
- Propose that everyone involved in patient care must become a leader in making ‘‘zero preventable harm’’ a reality in our hospitals

Who Are We?

Who Are We?

- **Global Non-Profit (50 countries)**

Who Are We?

- Create **FREE** resources for hospitals and patients
- Our solutions, APSS, are in **4710 hospitals in 46 countries**

The Facts

- **Medical Errors:**
  - Are the cause of over **200,000** preventable patient deaths in U.S. hospitals each year and **4.8 Million** globally
  - Are the **third-leading cause of death in the U.S.**, behind heart disease and cancer
  - Are the **14th leading cause of death globally**, more than TB, Malaria and HIV combined.
  - The impact of medical errors on healthcare in the United States, alone, is between **$19.5 and $958 billion per year**.

What is a Medical Error?

- A preventable adverse effect of care
- An inaccurate diagnosis or treatment of disease, injury, syndrome, behavior, or infection.
- Infections acquired in the hospital
- Wrong dose, wrong medication, wrong patient.
- Poor hand-over communication

CMS threatens to terminate Vanderbilt's Medicare contract after fatal medication error

Written by Ayla Ellison (Twitter | Google+) | November 29, 2018 | Print | Email

CMS has placed Nashville, Tenn.-based Vanderbilt University Medical Center on "immediate jeopardy" status and will terminate the hospital's Medicare provider agreement Dec. 9 unless the deficiencies are corrected.

During an unannounced on-site survey of Vanderbilt University Medical Center in November, CMS learned a patient died at the hospital in December 2017 due to a medication error.

According to an inspection report given to *Becker's Hospital Review* by CMS, the patient was suffering from hematoma of the brain, headache and other related symptoms when admitted to VUMC on Dec. 24, 2017. The patient was transferred to the hospital's radiology department Dec. 26 for a Positron Emission Tomography scan. While in radiology, the patient requested a drug to help ease anxiety due to being claustrophobic. The physician ordered 2 milligrams of Versed, a drug that is used to treat anxiety. However, a nurse administered 10 milligrams of Vecuronium, a neuromuscular blocking agent.

After the wrong medication was administered, the patient went into cardiac arrest and later died. The hospital failed to report the incident to the Tennessee Department of Health as mandated, according to the inspection report.

"The failure of the hospital to ensure all nurses followed medication administration policies and procedures resulted in a fatal medication error … and placed all patients in a serious and immediate threat to their health and safety and placed them in immediate jeopardy for risk of serious injuries and/or death," states the inspection report.

CMS said VUMC failed to implement measures to mitigate risks of fatal medication errors after the patient's death.

Houston hospital replaces leadership after blood transfusion mistake

HOUSTON (AP) Jan 16, 2019

Spotlight

U.S.News & World Report

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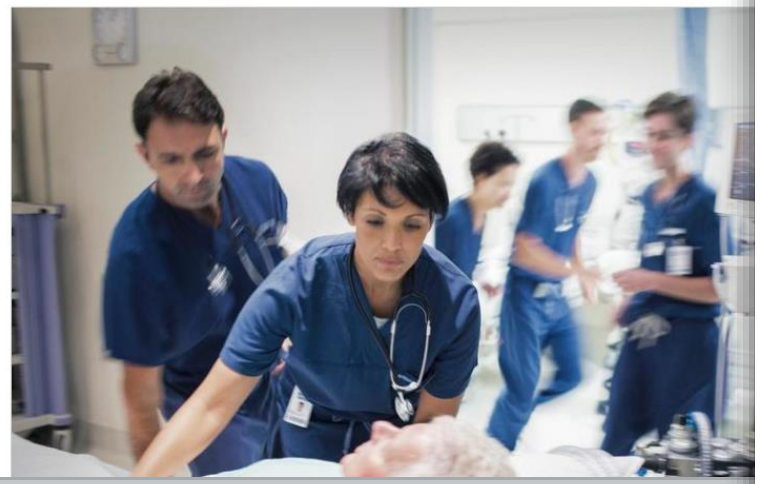
Medical Errors Are Third Leading Cause of Death in the U.S.

10 percent of U.S. deaths are due to preventable medical mistakes.

By **Steve Sternberg**, Senior Writer May 3, 2016, at 6:30 p.m.



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MODERN MEDICINE

The third-leading cause of death in US most doctors don't want you to know about

- A recent Johns Hopkins study claims more than 250,000 people in the U.S. die every year from medical errors. Other reports claim the numbers to be as high as 440,000.
- Medical errors are the third-leading cause of death after heart disease and cancer.
- Advocates are fighting back, pushing for greater legislation for patient safety.

Mirror

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11°C PARTLY CLOUDY

News ▸ UK News ▸ Inquests

Baby died in dad's arm made FIVE major mista

Jorgie Stanton-Watts died at 23-months-old afte inquest heard

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Parents of six-year-old l sepsis exasperated as do responsible cleared to p

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Dr Bawa-Garba's case has become a cause celebre for muc
ANSELL/PA

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By Henry Bodkin, HEALTH COR
9 APRIL 2019 • 6:34PM

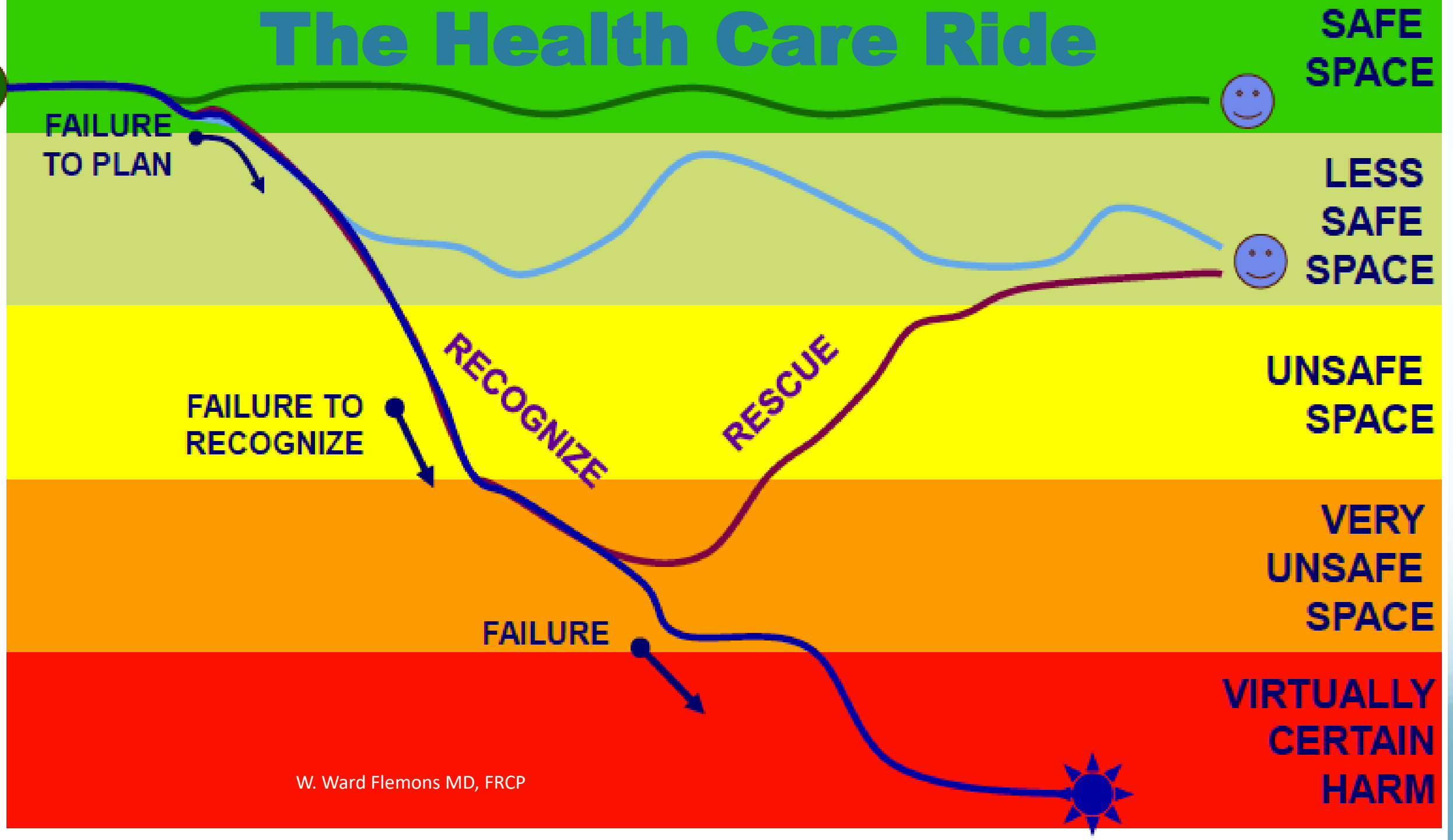
The New York Times

11 Premature Babies Die in Less Than a Day in Tunisian Hospital, Sparking Outrage

The maternity ward at the Rabta hospital in Tunis, days after 11 babies died there in 24 hours. Fethi Belaid/Agence France-Presse — Getty Images

By Lilia Blaise

March 16, 2019


The Health Care Ride
SAFE SPACE
FAILURE TO PLAN
LESS SAFE SPACE
RECOGNIZE
RESCUE
FAILURE TO RECOGNIZE
UNSAFE SPACE
VERY UNSAFE SPACE
FAILURE
VIRTUALLY CERTAIN HARM
W. Ward Flemons MD, FRCP

Patient Safety
MOVEMENT

A Commitment-based Approach

- A fresh approach to old problems, without reinventing the wheel
- We strive to foster new efforts and build on existing patient safety programs through Commitments to ZERO

Patient Safety
MOVEMENT
zero preventable deaths by 2020

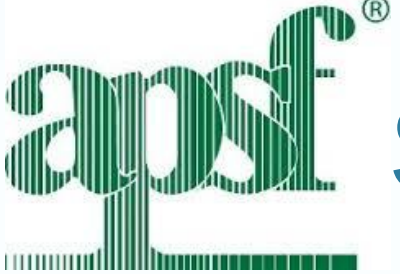
Our Network

1. **Hospitals & Healthcare Organizations**
   - Make a *Commitment*
2. **Partners**
   - Sign the *Commitment to Action* letter
3. **Healthcare Technology Companies**
   - Sign the *Open Data Pledge*
4. **Patient & Family Advocates**
   - Share their *Patient Story*
5. **Policy Makers**
   - Increase awareness and promote patient safety *Legislation*

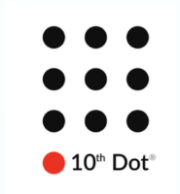
Patient Safety MOVEMENT

Select Committed Hospitals

Select Partners

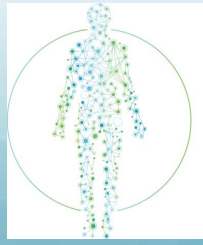


American Society of Anesthesiologists™



Mexican Academy of Surgery

Mexican Federation of Anesthesiologists



Patient Safety MOVEMENT

Committed Partners

Sign a Commitment to Action Letter:

- All of our Committed Partners take actions, both individualized and sustainable, and announce their support of the PSMF through signing the Commitment to Action Letter
- Signing a Commitment to Action Letter is a formal commitment to collaborate with the Patient Safety Movement to improve patient safety

May 6th 2018 Australian and New Zealand College of Anaesthetists

Healthcare Technology Companies

Sign the Open Data Pledge:

- "To this end, I pledge, to allow anyone who wants to improve patient safety, including medical technology companies and healthcare providers, to interface with our products to access the data that our products are purchased for, subject to all applicable privacy laws, without knowing interference or charge."
- Make product data more valuable through open Application Programming Interfaces (APIs)
  - Allows device or system data to be used more innovatively or effectively in combination with other products
  - Fosters a secondary marketplace for innovators to create patient safety data analytics and clinical decision support tools
  - Creates a foundation for future innovation

Who is involved?

The following companies have pledged to make the physiological parameters displayed on their medical devices, subject to all applicable privacy laws, available to anyone or any entity that wants to use them to improve patient care and help reverse the tide of preventable patient deaths.

Admetsys
Jeff Valk, CEO

AirStrip
Alan Portela, CEO

ATLtechnology
Bradford Brown, CEO

Hyginex
Shiva Swami, CEO

IBM Watson Health
Deborah DiSanzo, General Manager

ICUcare LLC
Robert Higgs, President & CEO

Philips Healthcare
Michael S. Mancuso, EVP & CEO

NeurOptics
Kamran Siminou, CEO

NGPod Global Limited
Stephen Thorpe, Executive Chairman & Founder

Oracle
Marc Perlman, Global Vice President, Healthcare, Life Sciences, Education and Research Industries

BD Intelliport
Michael Perry, Director, Business Development

Bernoulli Health
Janet Dillione, CEO

BrainStem Biometrics
Mike Baltay, CEO

Innara Health
Michael Peck, CEO

IRadimed
Roger Susi, President

KnectIQ Inc.
Kenneth Morris, Founder & CEO

PerceptiMed
Alan Jacobs, Co-Founder & CEO

Predixion Software
Simon Arkell, CEO

Rapid Healthcare
Anton Ansalmar, Founder & CEO

RGP Healthcare
Radgia Cook, President

Cercacor
Marcelo Lamego, Chief Technical Officer

Cerner
Paul N. Gorup, Co-Founder & Chief of Innovation

Certa Dose
Sarah Hanssen, President and CEO

Kolkin Corp
Auron Priestley, Founder & CEO

LiDCO Group Plc
Matt Sassone, CEO

LumiraDx
Sumit Nagpal, Co-Founder and CEO, LumiraDx USA, Inc.; Co-Founder and Chief Architect, LumiraDx Holdings Limited

RightPatient
John Trader, Director of Communications

S.E.A. Medical Systems, Inc.
Michael Weickert, President & CEO

Securisyn Medical
Arthur Kanowitz, CEO

Codonics
Peter O. Botten, CEO

CorCardia Group Inc.
Kenneth Morris, President & CEO

CRG Medical
Douglas Dotan, President and CEO

Patient Valet
Leila Entezam, Chief Strategy Officer

Smiths Medical
Srini Seshadri, President

SonoSite Inc.
Kevin Goodwin, President & CEO

Sotera Wireless
Gunnar Trommer, VP of Marketing & Business Development

CrossChx
Josh Chaney, PR Manager

DebMed
Paul Alper, VP Patient Safety Strategy

Deltex
Ewan Phillips, Chief Executive

Hamilton Medical AG
Jens Hallek, President

STANLEY Healthcare
Gaby Daniely, VP of Products, Solutions and Marketing

Stibo Systems
Kara Erlandsen, Sr. Product Manager

SurgiCount Medical, Inc.
Brian Stewart, President & CEO

Dräger
Stefan Dräger, CEO and Chairman

Dynalabs
Russell Odegard, Chief Operating Officer

EarlySense
Tim O'Malley, President

Masimo Corporation
Joe Kiani, Founder, Chairman & CEO

Medical Intelligence Holding Corp.
John Librett, Co-Founder & Chief Science Officer

Medical Simulation Corporation
Mary Beth Loesch, President and CEO

HeartIn
Oleksii Vynogradov,

Talis Clinical
Gary M. Colister, President & CEO

The SafeCare Group
Yisrael Safeek, Chairman & CEO

True Process
Anne Burroughs, Vice President, Marketing

eBroselow, LLC
James Broselow, Founder, Medical Director

ExCor Technologies, LLC
Norman Worcester, President & CEO

GE Healthcare
Tom Gentile, President & CEO, Healthcare Systems Senior Vice President

Medtronic
Omar Ishrak, Chairman & Chief Executive Officer

Modulated Imaging
Richard Oberreiter, COO

Monarch Medical Technologies
Stuart Long, President & CEO

Healthcentrix
Jose Maria Olmo Millan,

Welch Allyn
Steve Meyer, President & CEO

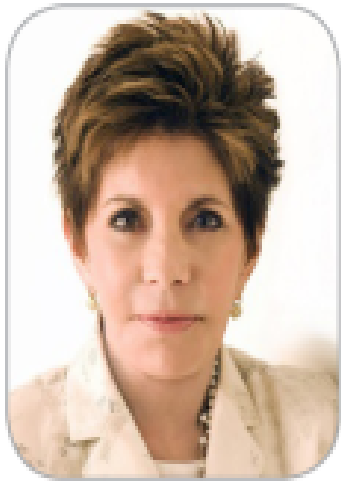
Zoex
Sheri and Mike Hillenga, Head of Marketing, Distribution and Sales

Zoll Medical
Richard A. Packer, CEO

Patient Family Advocates

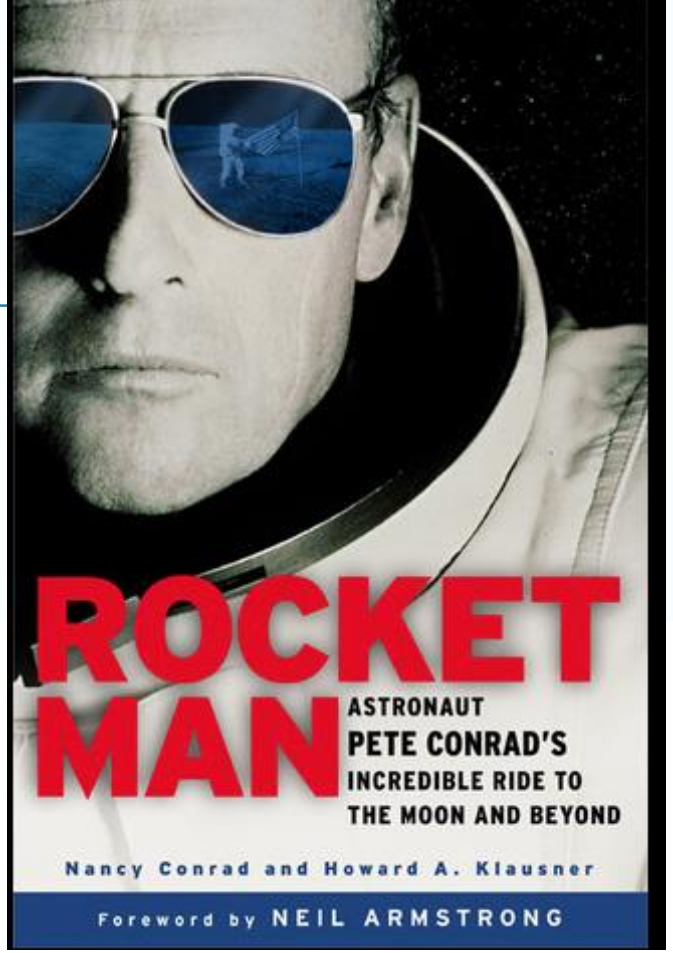
- Share stories to inspire change
- Participate in committees and workgroup
- Provide checklists and resources for patient safety education

Stories of Preventable Medical Errors



Nancy Conrad

(wife of astronaut Charles "Pete" Conrad)



While motorcycling with friends in Ojai, California, Pete ran off the road and crashed. At the emergency room, staff first thought the 69-year-old's injuries were minor, but he died from internal bleeding about five hours later. He was buried with full honors at Arlington National Cemetery. Following the death of her husband, Nancy co-founded the Community Emergency Healthcare Initiative, designed to measurably affect preventable injury and death now occurring in emergency departments.

Stories of Preventable Medical Errors

Lenore Alexander
(mother of Leah Coufal)

Watch Video

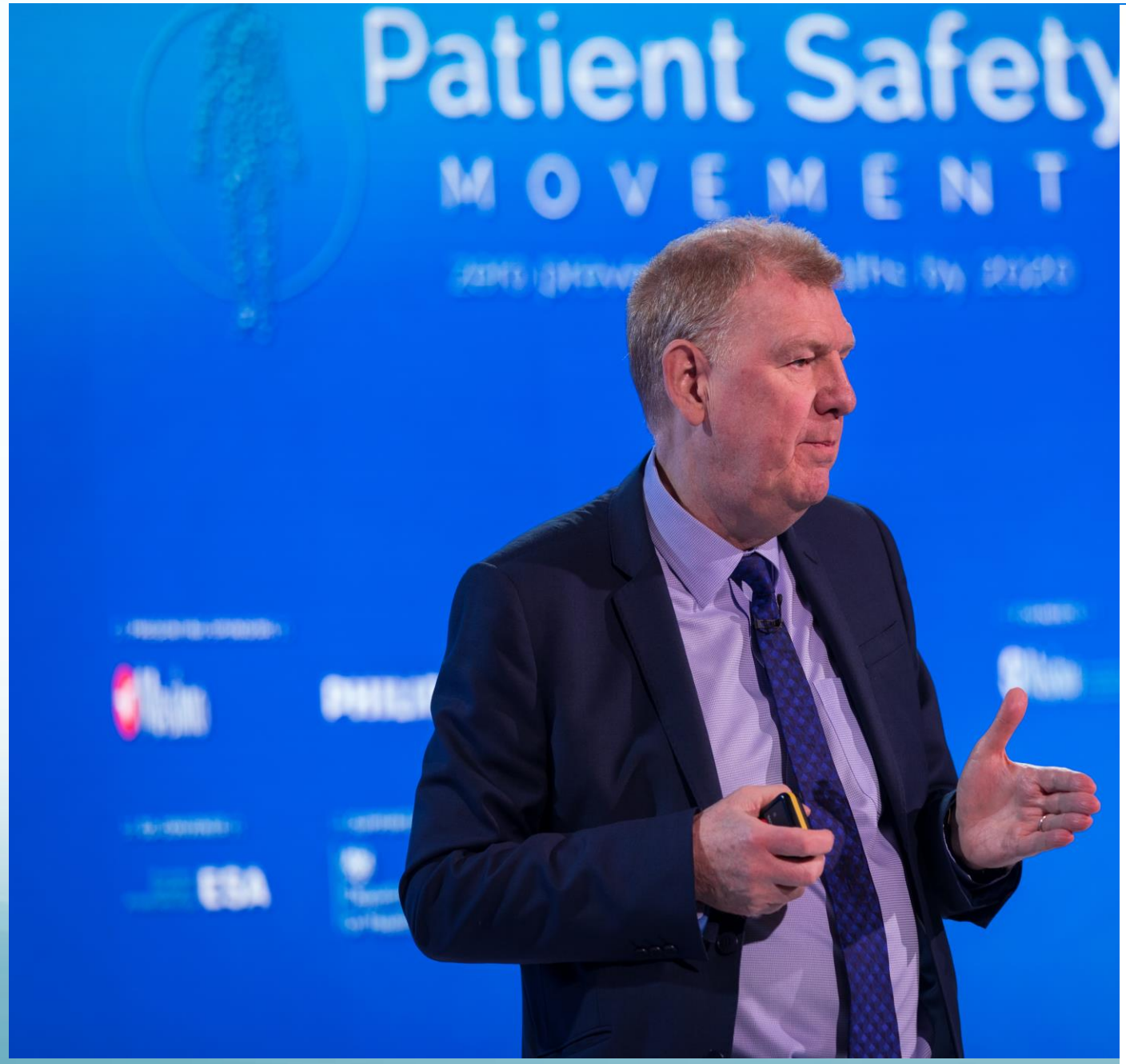
Ten years ago, Lenore Alexander's healthy, 11-year-old daughter, Leah Coufal, underwent elective surgery to correct pectus carinatum at a prestigious Southern California hospital. Though the surgery went well, Lenore awoke at 2 a.m. on the second post-operative night to find Leah "dead in bed," a victim of undetected respiratory arrest, caused by the narcotics that were intended to ease her pain. If Leah had been monitored continuously after the surgery, staff would have been alerted and Leah would probably have been rescued. But ten years later, knowing that the standard of care remains unchanged, Lenore works to make continuous postoperative monitoring the law (Leah's Law) to help prevent other children suffering the same fate as Leah.

Policymakers

- Demonstrate that the healthcare community will break away from the status quo to improve patient safety
- Help in assuring that metrics for counting lives saved can serve as a guide for regulators to benchmark national quality programs
- Develop commitments that are example quality programs which serve as a guide to regulators developing the next generation of more effective quality measures
- Demonstrate to other policymakers that hospitals can implement patient safety programs to help inform future health reform legislation

6th Annual World Patient Safety, Science & Technology Summit

WHO Director-General



Sir Liam Donaldson

FRCS(Ed) FRCP FRCP(Ed) FMedSci FRCA

Chief Medical Officer for England

In office

1 January 1998 – 31 May 2010

Preceded by Sir Kenneth Calman

Succeeded by Dame Sally Davies

Chair of the World Alliance for Patient Safety

Incumbent

Assumed office

2004

Doctors who make 'honest mistakes' will get MORE support, vows Jeremy Hunt

DOCTORS and nurses who make "honest mistakes" will get more support so lessons can be learned without fear of court action, Jeremy Hunt has promised.

The Right Honourable
Jeremy Hunt
MP

Secretary of State for Health and Social Care
Health (2012-2018)

Incumbent

Assumed office
4 September 2012

Prime Minister David Cameron
Theresa May

Preceded by Andrew Lansley

Secretary of State for Culture, Olympics, Media and Sport

In office
12 May 2010 – 4 September 2012


atient Safety
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Masimo


Patient Safety
MOVEMENT
zero preventable deaths by 2020
PRESENTING SPONSOR
MASIMO
cercacor
ZOLL
VICE PRESIDENT OF THE UNITED STATES

Leadership's Role

- Create a High Reliability Organization
  - Culture of Safety
  - Nonpunitive Environment
  - Accountability
  - Standardization
  - Hardwiring Safety

Baylor Scott & White Health Care System

Hospitals and Healthcare Organizations

Make a Commitment:

- Implement Actionable Patient Safety Solutions (APSS) developed collaboratively by the PSMF's workgroups or your own novel solution to an existing patient safety challenge unique to your organization
- Introduce metrics to existing patient safety programs to better quantify the total number of lives saved

Actionable Patient Safety Solutions (APSS)

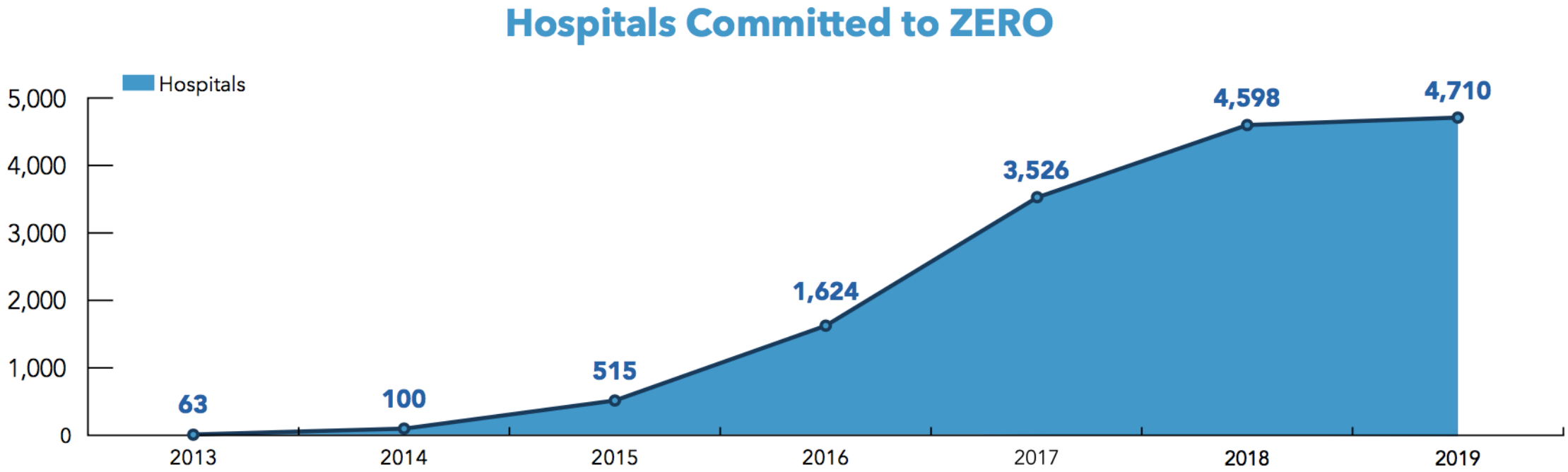
- In January 2016, we reported 1600 hospitals had joined the PSMF and saved over 24,643 lives annually.

- The Patient Safety Movement, through its interdisciplinary workgroups, has developed sixteen Actionable Patient Safety Solutions (APSS) which are rapidly-implementable best practices that will allow hospitals to meaningfully address the leading causes of preventable death.

Actionable Patient Solutions (APSS)

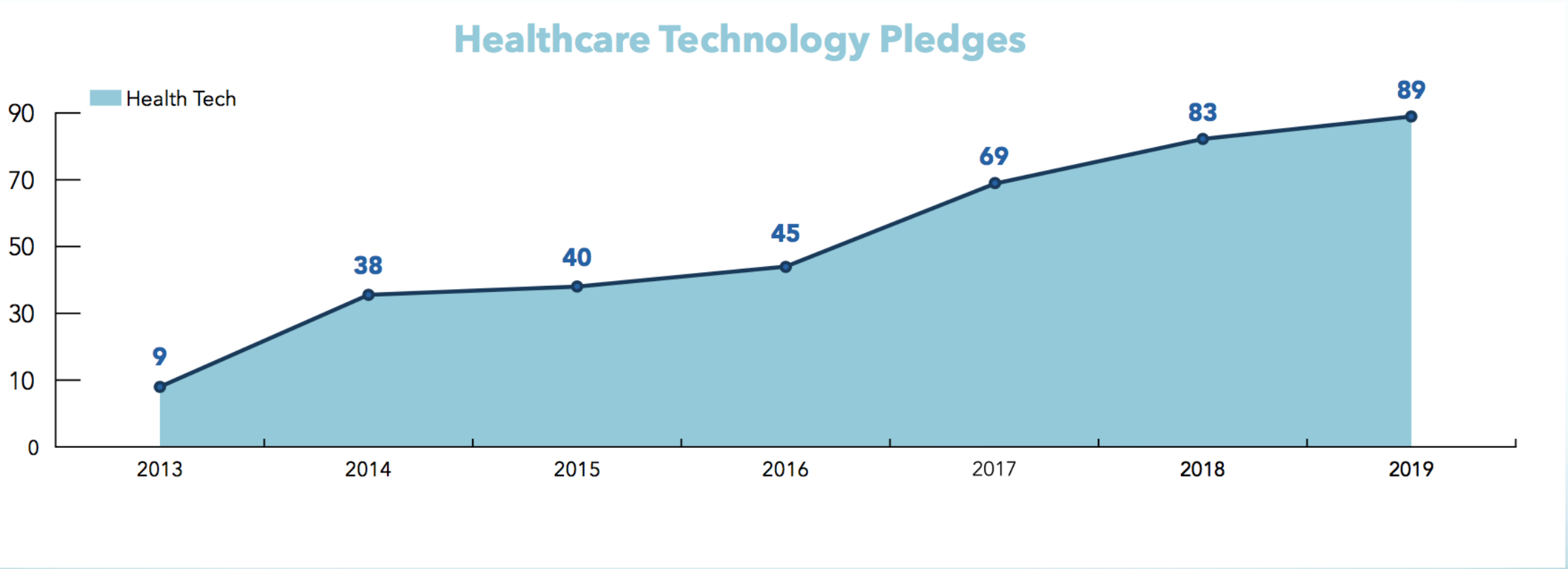
1. Culture of Safety
2. Healthcare-associated Infections (HAIs)
3. Medication Safety
4. Monitoring for Opioid Induced Respiratory Depression
5. Patient Blood Management
6. Hand-off Communications
7. Neonatal Safety
8. Airway Safety
9. Early Detection & Treatment of Sepsis
10. Systematic Prevention & Resuscitation of In-hospital Cardiac Arrest
11. Optimizing Obstetric Safety
12. Embolic Events
13. Collaborative Care Planning in Mental Health
14. Falls and Fall Prevention
15. Nasogastric Tube (NGT) Placement & Verification
16. Person and Family Engagement
17. Patient Safety Curriculum
18. Post-operative Delirium in Older Adults

Impact to Date



Patient Safety MOVEMENT

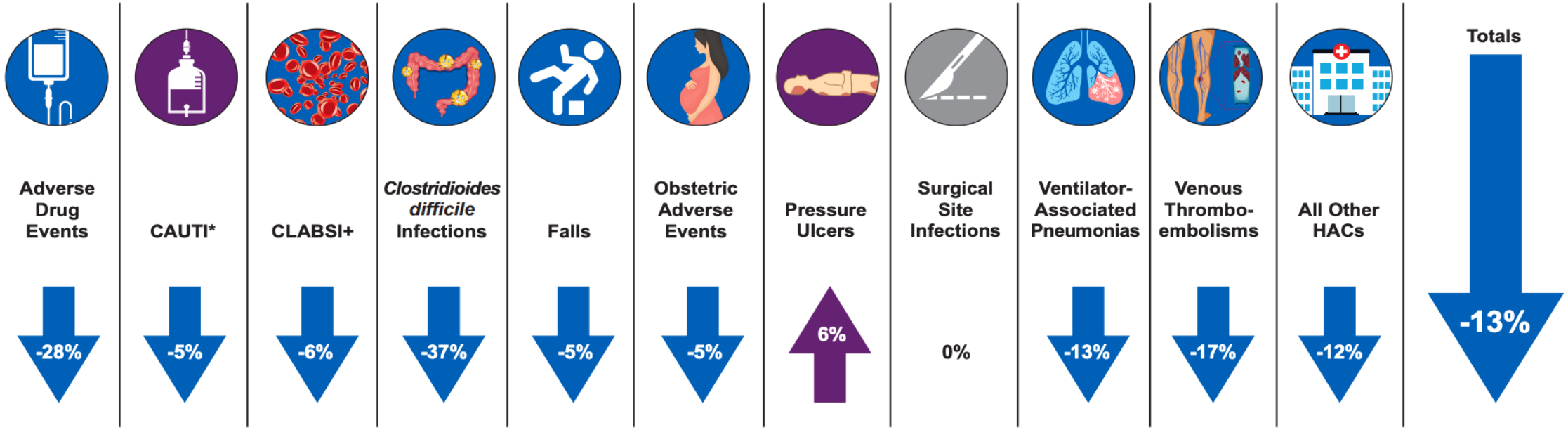
Impact to Date



Declines in Hospital-Acquired Conditions

Agency for Healthcare Research and Quality

National efforts to reduce hospital-acquired conditions such as adverse drug events and injuries from falls helped prevent 20,500 deaths and saved $7.7 billion between 2014 and 2017.



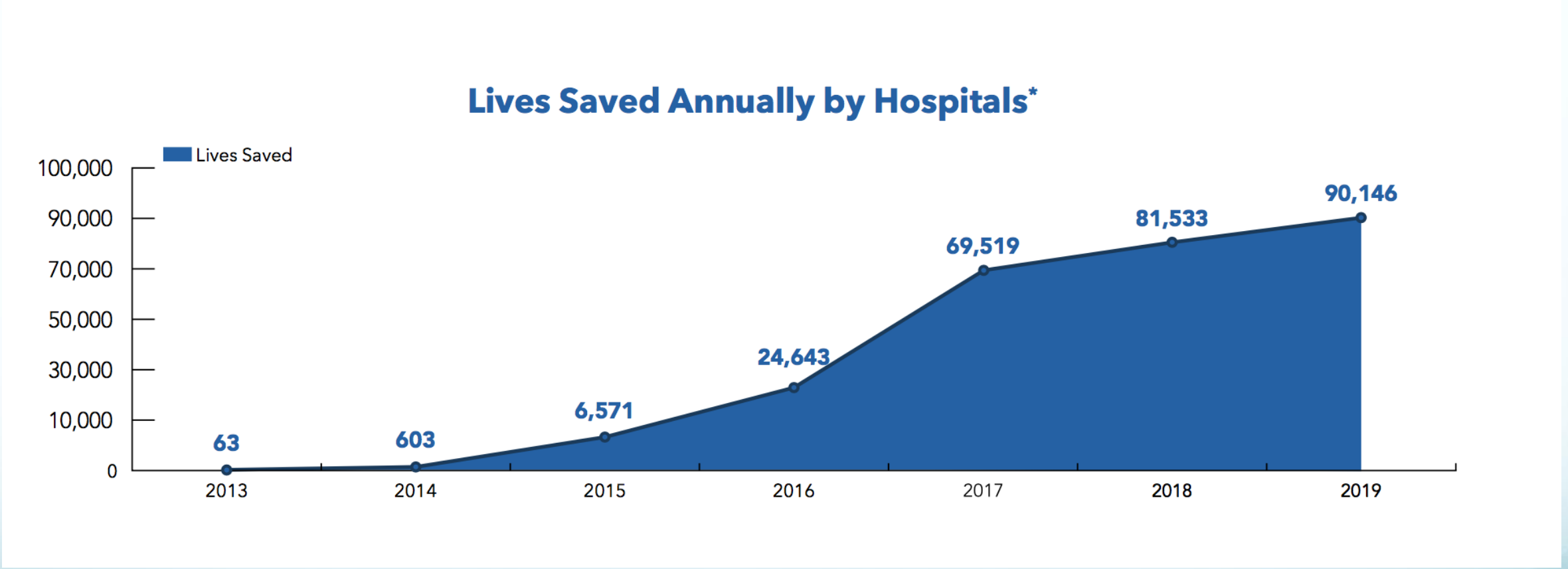
*CAUTI - Catheter-Associated Urinary Tract Infections

+CLABSI - Central Line-Associated Bloodstream Infections

**The percent change numbers are compared to the 2014 measured baseline for HACs.

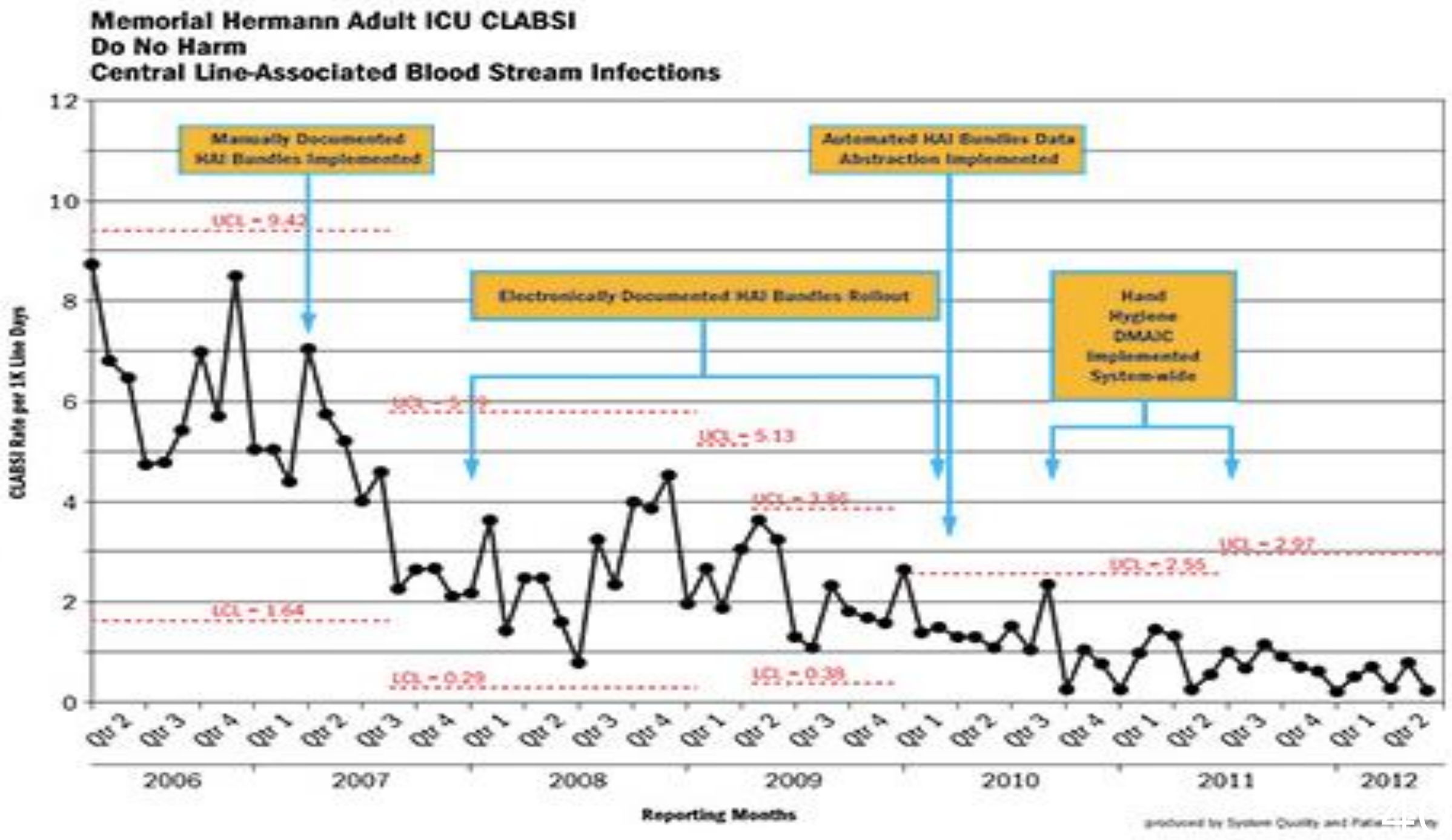
Source: AHRQ National Scorecard on Hospital-Acquired Conditions Updated Baseline Rates and Preliminary Results 2014-2017

Impact to Date



*Numbers are based on self-reported data provided by hospitals

Patient Safety MOVEMENT


Memorial Hermann Adult ICU CLABSI
Do No Harm
Central Line-Associated Blood Stream Infections
Manually Documented HAI Bundles Implemented
Automated HAI Bundles Data Abstraction Implemented
Electronically Documented HAI Bundles Rollout
Hand Hygiene DMAIC Implemented System-wide
UCL = 9.42
UCL = 5.13
UCL = 3.86
UCL = 2.97
UCL = 2.56
UCL = 1.64
UCL = 0.29
UCL = 0.39
CLABSI Rate per 1K Line Days
0
2
4
6
8
10
12
Qtr 2
Qtr 3
Qtr 4
Qtr 1
2006
2007
2008
2009
2010
2011
2012
Reporting Months

“Dead in Bed”

Dr. Ramsay,

Please forgive me for being so bold. I found your name in a news report on the local news. My husband died following a successful laminectomy. After one hour in a PACU he was placed on a low risk medical surgical floor. He was on IV PCA hydromorphone. He was not monitored. He was not checked on after his initial admission until pain management came to adjust his medication nearly 2 hours later. He was dead.
They coded him for 3 hours in attempt to resuscitate him. The cause of death was listed as respiratory depression less than 3 hours, bradycardia less than 3 hours and hypotension less than 3 hours.
I am telling you my story in hopes you can head me in the right direction. I have an attorney who tells me it is not the standard of care so there is no one who will stand with me and be Toms voice. He should not be dead. I learned from this report that you are a patient safety advocate. My hope is that the local hospitals take the risk of respiratory depression with the use of opioids drugs seriously
I know this is out of the ordinary but I would be appreciative for any advice.

Sincerely,

Background

- Patients receiving opioids in the hospital have almost twice the incidence of cardiac arrest compared to other patients
- Appropriate opioid use is safe for most patients, however, improper monitoring can lead to opioid-induced respiratory depression
- Goal: provide solutions to reduce postoperative opioid-induced respiratory depression
- Estimated 5,000 deaths a year in the USA from prescribed opioids in hospitals[1].

1. Frank Overdyk et al, PLoS One. 2018; 13(3): e0194553.

Action: Protocols for Opioid Treatment

- Assess pain management protocols and standardized order sets
- Create standard transfer protocols from surgery to ICU to postoperative general floor unit.
- Use a tapering protocol for opioid and/or combination of opioids with sedatives
- Avoid use of opioids where possible
- Store naloxone in every Code Blue crash cart

Action: Continuous Electronic Monitoring

- Continuous oxygenation and/or respiratory monitoring with pulse oximetry (i.e., SET technology)
- Use a remote notification system with an alarm to notify the care provider
- Use a system of alarm escalation if the nurse does not respond promptly
- Set RR, PR and SpO2 alarms to reduce alarm fatigue
- Use continuous ventilation monitoring

Action: Rapid Response Team Protocols

- Use a protocol to start a rapid response call for postoperative respiratory depression
- Allow families to ask the nurse to activate the rapid response system
- Use proactive rounding on high-risk patients by nurses with critical care training

Non-invasive Monitoring: The time is Now!

- Major Advances in Technology
- Fewer Complications
- Less Accuracy but Good Precision
- Less Cost – mostly
- Portability
- Ease of Use
- Data transmitted wirelessly to caregivers smart phone

Continuous Postoperative Electronic Monitoring and the Will to Require It.

RK Stoelting Anesth Analg 2015;121:579-81

“A monitor would have saved my child’s life. All that stands between us and universal postoperative monitoring, is the will to use it”

-Lenore Alexander

‘‘Failure To Rescue’’ Should Be A Never Event

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www.apsf.org

NEWSLETTER

The Official Journal of the Anesthesia Patient Safety Foundation

Volume 26, No. 2, 21-40 | Circulation 94,429 | Fall 2011

"No Patient Shall Be Harmed By Opioid-Induced Respiratory Depression"

[Proceedings of "Essential Monitoring Strategies to Detect Clinically Significant Drug-Induced Respiratory Depression in the Postoperative Period" Conference]

Matthew B. Weinger, MD, and Lorri A. Lee, MD, for the Anesthesia Patient Safety Foundation

The APSF believes that clinically significant, drug-induced respiratory depression in the postoperative period remains a serious patient safety risk that continues to be associated with significant morbidity and mortality since it was first addressed by

2) *If "Yes" to electronic monitoring, who should be monitored (inclusively or selectively) and what monitors/technology should be utilized?*

Dr. Stoelting opened the conference by asserting that continuous electronic monitoring of oxygenation and/or ventilation may allow for more rapid diagnosis and prevention of drug-induced, postoperative

They implored the group to enact changes immediately that would prevent such future tragedies.

Dr. Matthew B. Weinger, professor of Anesthesiology at Vanderbilt University, showed multiple studies that provide evidence for frequent use of naloxone for postoperative opioid-induced respiratory depression. He stated that the literature

APSF Recommends:

"Electronic monitoring of all hospitalized adult patients receiving postoperative opioids for pain management"

"Patients should be monitored with continuous pulse oximetry with data transmitted wirelessly to a qualified health care professional"

"Incorporation of a monitor of ventilation if supplemental oxygen is needed to maintain an acceptable SpO_2"

apsf NEWSLETTER

THE OFFICIAL JOURNAL OF THE ANESTHESIA PATIENT SAFETY FOUNDATION

irculation 122,210 • Volume 33, No. 2 • October 2018 PDF

Articles

Early Warning Systems: "Found Dead In Bed" Should Be A Never Event

Bradford D. Winters, MD, PhD, FCCM

International Journal of Psychophysiology

Volume 89, Issue 3, September 2013, Pages 297–304

Psychophysiology in Australasia - ASP conference - November 28-30 2012

Smartphone-enabled pulse rate variability: An alternative methodology for the collection of heart rate variability in psychophysiological research ☆

James A.J. Heathers

J Clin Monit Comput (2017) 31:253–259
DOI 10.1007/s10877-016-9925-6

REVIEW PAPER

A sneak peek into digital innovations and wearable sensors for cardiac monitoring

Frederic Michard[1]

Received: 10 May 2016 / Accepted: 16 August 2016 / Published online: 26 August 2016

Fig. 1 The digital and wireless cardiac patient. *Apps* digital applications, *SMS* text message, *HR* heart rate, *HRV* heart rate variability, *RR* respiratory rate, *PAP* pulmonary artery pressure, *PWTT* pulse wave transit time, *iBP* intermittent blood pressure, *cBP* continuous blood pressure, SpO_2 arterial oxygen saturation

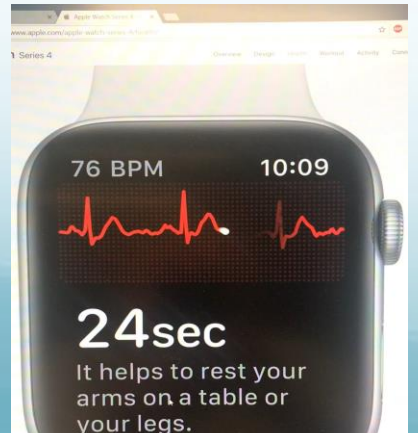
Conclusion

- Remote Surveillance Systems provide meaningful patient alerts
- In settings of pre-, intra, and postoperative continuum, patient care may benefit from such systems
- Artificial Intelligence can learn to predict which patient is getting in to trouble and alert the caregivers


The automotive industry
saved thousands of lives
annually by adding warning
buzzers to use seat belts
1:27 PM
63 °F
NW
N
NE
W
Healthcare settings need
automated alerts for clinicians
to prevent harm to patients

“No Patient Found dead in Bed”

- No patient in our hospital should be found dead in bed
- Our hospitals should be the safest place in the world to be when you are sick
- Every patient should have a noninvasive monitor wirelessly connected to the smart phone of the nurse



Our Ask

- **ADVOCATE** for yourself; “**SPEAK UP**!”
- **ADVOCATE** for your loved ones. **“SPEAK UP!”**
- **USE** resources that can help you including
  - PSMF Folders, **PatientAider** a download APP
- **SHARE** these resources with those who can benefit from them.
- **GIVE** us your ideas for changes or new resources.

1:52 PM

PatientAider

Where is the patient?

At home, preparing

In the hospital

At home, recovering

I don't know, I'm just browsing...

T-Mobile Wi-Fi 10:10 PM

PatientAider

- Airways and Ventilators — Breathing Help
- Anemia — Anemia & Blood Transfusions
- Bleeding After Birth — Postpartum Hemorrhage
- Blood Clots — Venous Thromboembolism (VTE)
- Discharge Plan — Before Leaving the Hospital
- Drug Errors — Medication Errors in Hospitals
- Falls — Most Common Hospital Event
- Healthcare Team — Who's Who in the Hospital
- Hospital Information — Patient Hospital Guide
- Infant Heart Disease

1:52 PM

PatientAider

Airways and Ventilators

When a patient can't breathe, or needs help breathing an artificial airway is put in. This process is called intubation. The airway is attached to a ventilator (breathing machine).[4]

There are 2 kinds of artificial airways:

- An endotracheal tube is placed in the windpipe (trachea) by going through the mouth or nose.
- A tracheostomy tube is connected to a surgical hole in the neck.[4]

Monitors measure the heart rate, breathing rate, blood pressure and oxygen level. It is recommended that the exhaled carbon dioxide

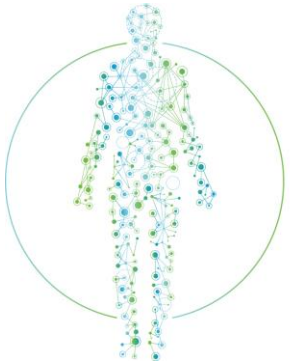
Our hospitals should be the “Safe Havens” when you are sick NOT Danger Zones!

How can you contact the PSMF?

Website: http://patientsafetymovement.org/

Ariana Longley: ariana.longley@patientsafetymovement.org
VP of the PSMF

Register: http://patientsafetymovement.org/login-register/



Patient Safety
MOVEMENT

Thank You

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