

Turning Tragedy into Positive Action

Dave Repsher – Survivor/Flight RN/ Paramedic/ Safety activist

Karen Mahany – HEMS widow/ CRNA/ Former flight RN/ Safety activist



Patrick E. Mahany Jr

Helicopter Pilot
45 years



Vietnam '71-72



Flight For Life
pilot 27 years



Purple Heart/Bronze Star

July 3, 2015
(That Day)



Dave & Amanda Repsher



July 3, 2015
(That Day)



VIDEO

CAUTION: CONTENT IS GRAPHIC

Dave's Helmet



Dave's Helmet (Back)



Dave's Helmet (Underside)



Dave's Flight Suit



397 = days in the hospital

-140% = calculated chance of survival

53 = number of surgeries

47 = number of specialty and ancillary services providing care

214 = number of blood products received

51% = weight lost, 89 lbs at lowest

2 inches = height lost

105.6 = tmax

10 months = time in septic shock on vasopressors

??? = # of antibiotics used, a very large number

6 months = time to learn to swallow and walk again

10 = number of ER visits since initial discharge

5 = hospitalizations since initial discharge

PHYSICIAN SPECIALTIES (37)

- ▶ Burn
 - ▶ Trauma Surgery
 - ▶ ICU Intensivists
 - ▶ Renal
 - ▶ Infectious Disease
 - ▶ Opthamology
 - ▶ Plastic Surgery
 - ▶ Audiology
 - ▶ Orthopedics
 - ▶ Cardiology
 - ▶ Hematology
 - ▶ Pulmonary Critical Care
 - ▶ GI
 - ▶ Neurology
 - ▶ Neuro Epileptology
 - ▶ ENT
 - ▶ Endocrine
 - ▶ Orthopedic Infectious Disease
 - ▶ Cardiothoracic Surgery
 - ▶ Rehabilitative Medicine
 - ▶ Palliative Care
 - ▶ Psychology
 - ▶ Diabetes
 - ▶ Dermatology
 - ▶ Anesthesia
 - ▶ Radiology
 - ▶ Home Hemodialysis
 - ▶ Plastics Laser
 - ▶ Transplant
 - ▶ Transplant Infectious Disease
 - ▶ Allergy
 - ▶ Internal Medicine
 - ▶ Dental
 - ▶ Urology
 - ▶ Emergency Medicine
 - ▶ EMG
 - ▶ General Surgery
- 



- ▶ **Nursing**
- ▶ **Pharmacy**
- ▶ **Nutrition**
- ▶ **Wound Care**
- ▶ **Respiratory Therapy**
- ▶ **Physical Therapy**
- ▶ **Occupational Therapy**
- ▶ **Hand Therapy OT**
- ▶ **Speech Therapy**
- ▶ **Massage Therapy**

ANCILLARY AND THERAPY SERVICES (10)

NTSB Spouse Interview

Mrs. Mahany, you know this was a survivable crashright? Your husband would be sitting right here if he'd been provided the safety measures that he should have had..."

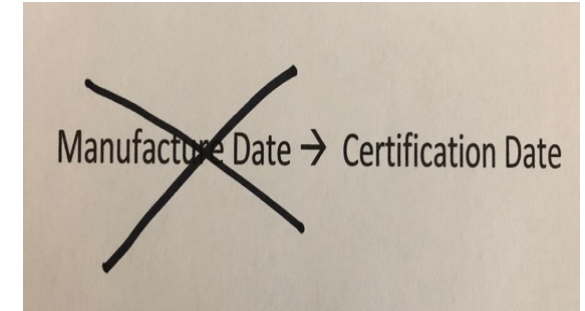
NTSB Interviewer

"72 hour widow interview"

1989 & 1994 FAA Helicopter Occupant Safety Regulations

Big Three

- 1) Structure
- 2) Seating/Restraints
- 3) Crash Resistant Fuel Tank



- Aircraft structural requirements FAA Regulations 14 CFR 27.561 and 29.561 – Dynamically tested structural integrity that promotes survivability
- Seat/Restraint systems FAA Regulations 14 CFR 27.562, 27.785, 29.785- Dynamically tested seating/restraint system that promotes survivability
- Fuel systems FAA Regulations 14 CFR 27.952 and 29.952- Reduce likelihood of post-crash fire and gives >15 minutes to escape

Big Three Regulation Loophole

FAA Helicopter Fatality Statistics

Since 1989/1994 FAA regulation loophole enacted

**1,300 (+) Helicopter Pilots killed in
Big Three noncompliant helicopters**

Cause of death: 92% Blunt Force Trauma
8 % Post-Crash Fires

Federal Register Nov. 5, 2015

“It’s tombstone technology. You have to have enough deaths to
justify a rule change”

James E. Hall former NTSB board member, regarding FAA bureaucracy

Washington Post 2009

Outdated Design

“New” helicopter w/ decades old designed Seats/Aircraft Structure

- 1965 standards-requires only a 4g load
- No dynamic testing of any kind
- Every component of aft crew seat failed
- Dave ejected with seat still attached to him
- Pilot in 20 G force seat BUT it was attached to 4G helicopter frame

Outdated Design

Lack of Crash Resistant Fuel System (CRFS)

- Helicopter that crashed manufactured in 2013 but built to 1965 standards
- Post-crash fires are a known cause of mortality in otherwise survivable crashes
- CRFS developed back in WWII and Vietnam era

Outdated Design

“New” helicopter w/ decades old designed fuel system

- CRFS Certification 27.952. requires 50 ft vertical drop test filled with H₂O at 80% capacity without any leak for **15 minutes**
- Corresponds to impact velocity of 57 ft/sec
- Our crash, impact was 42 ft/sec and carried only 57⁰% capacity
- Both values well within “tolerance requirements” but...
- **FAILED!!!** only allowed **3 seconds** to escape

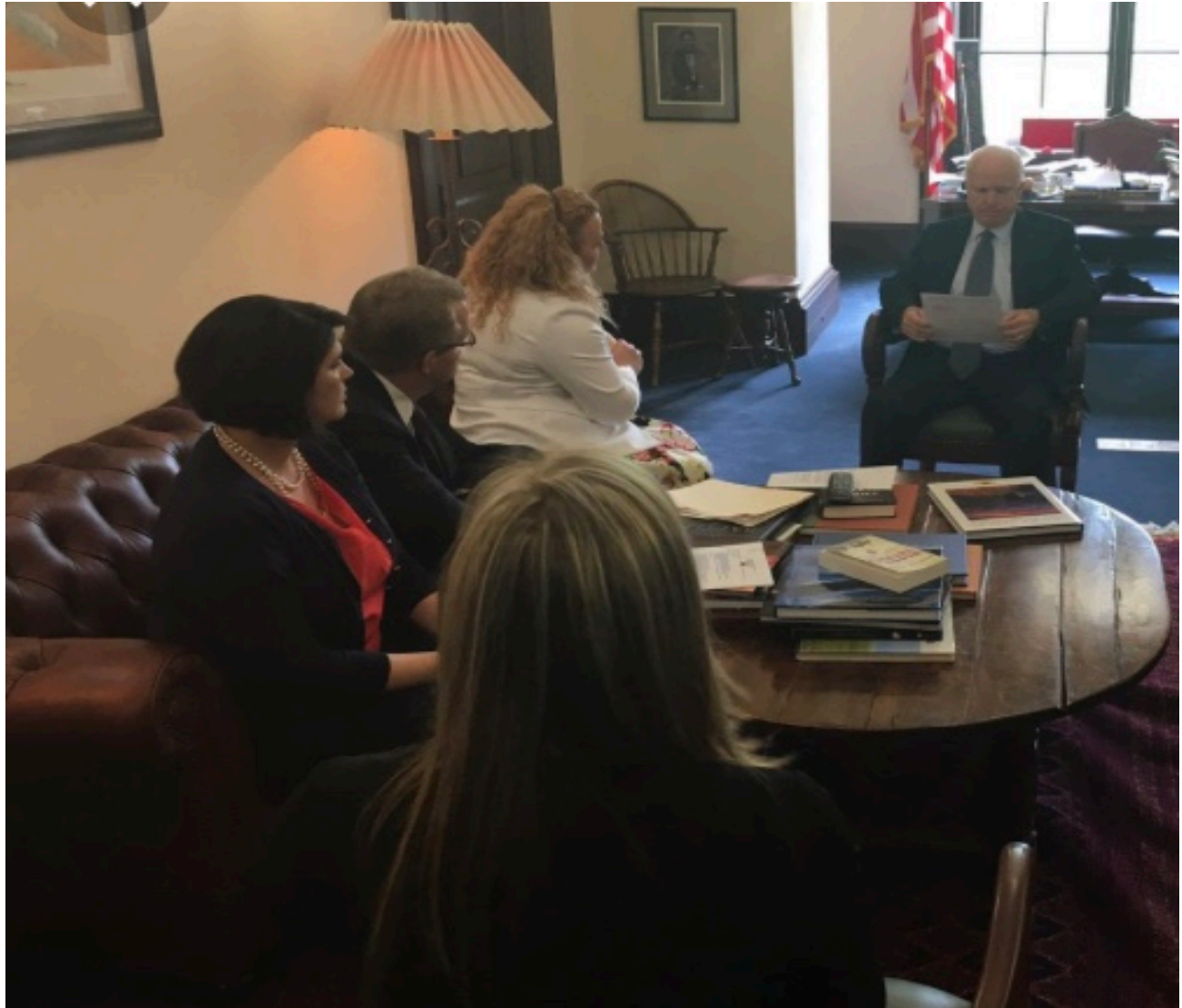
Regulatory Failures

Lack of Oversight

- Allows giant loopholes i.e. type certification
- National Transportation Safety Board (NTSB) investigates & can only can make recommendations
- NTSB recommendations often not instituted by FAA
- Heli manufactures resistant to adopt new safety technology (\$\$)

May
2016

Legislative
Push Begins...



Meeting with Senator John McCain May 2016

Challenges Ahead

- 85% of all helicopters in US are part of the “Big Three” loophole
- Lack of awareness among operators, owners, crews & passengers
- Helicopters expensive w/ long service lives (~30 years)
- Replacement or retrofit of aircraft expensive & could cripple helicopter owners
- FAA has demonstrated decades of indifference
- Governmental/Congressional challenges

Our 5 Suggested Solutions

1. Education and awareness of pilots, flight crews and public
 - Most don't know what they don't know

Knowledge is
Power



NTSB
Recommendation
To
Helicopter
Transport
Associations

The Association of Air Medical Services (AAMS), the Air Medical Operators Association (AMOA), and the Association of Critical care Transport (ACCT) should work collaboratively to establish a working group to **develop and distribute guidelines**, for those who purchase, lease, or contract for helicopters, regarding the equipment and systems that enhance the helicopter's crashworthiness, including, at a minimum, **a crash resistant fuel system and energy absorbing seats.** (A-17-12)

Our 5 Suggested Solutions

2. Medical transport accreditation agencies could recommend helicopter occupancy safety measures as part of certification
- Presented to CAMTS Executive Board October 2018



Our
5
Suggested
Solutions

3. Air medical insurance companies could demand safer aircraft
 - i.e. Higher rates = non-compliant helicopter
Lower rates = compliant helicopter

Our
5
Suggested
Solutions

4. Governmental regulatory reform
(FAA cultural change)

FAA Failures

FAA Regulation Dated 1964

CFR Part 27.601(a):

“The aircraft may have no design features or defects that experience has shown to be unreliable or hazardous.”

NHTSA
(Auto)

VS

FAA
(Aviation)
Mission

National Highway Transportation Safety Administration (NHTSA)

Save lives, prevent injuries and reduce economic costs due to road traffic crashes, through education, research, safety standards and enforcement activity

Source NHTSA.gov

Federal Aviation Administration (FAA)

Responsible for ensuring **protection of the public**, property, and the national security and foreign policy interests of the United States during commercial launch or reentry activities, and to encourage, facilitate, and **promote** U.S. commercial space **transportation**

Feb 7, 2019

Source FFA.gov

1. Promote Aviation Industry
2. Protect Public

Our
5
Suggested
Solutions

5. Financial incentive legislation
(Tax Credit)

Our Original Tax Credit Proposal

New Aircraft-30% tax credit for new, properly equipped helicopters

To qualify for the tax credit, new aircraft would qualify by including all of the following:

- Seat systems compliant with FAA Regulations 14 CFR 27.562, 27.785, 29.785
- Aircraft structural requirements compliant with FAA Regulations 14 CFR 27.561 and 29.561
- Fuel systems that reduce likelihood of post-crash fires compliant with FAA Regulations 14 CFR 27.952 and 29.952
- Crash/Fire resistant flight recorder onboard aircraft
- Terrain Avoidance Warning System (TAWS) onboard aircraft

Existing Aircraft- 30% tax credit for retrofit costs of existing aircraft

To qualify for the tax credit, existing aircraft would qualify for retrofitting cost of the following:

- Seat Systems compliant with FAA Regulations 14 CFR 27.562, 27.785 and 29.785
- Fuel Systems that reduce the likelihood of Post-crash Fires compliant with FAA Regulations 14 CFR 27.952 and 29.952
- Crash/Fire resistant flight recorder onboard aircraft
- Terrain Avoidance Warning System (TAWS) onboard aircraft

Helicopter Fuel System Safety Act

H.R.3150

Signed into Law October 5, 2018

This bill prohibits a person from operating a newly manufactured helicopter in U.S. airspace unless the Federal Aviation Administration (FAA) certifies that the helicopter's design complies with certain crash resistant fuel system requirements

1st
Helicopter
Design Safety
Law
EVER
passed

Helicopter
Safety Now
US House Bill
675
&
Senate Bill
#1560

- Jan. 17, 2019 Rep. Neguse CO-D and Rep. Perlmutter CO-D
- May 21, 2019 Senator Gardner CO-R and Senator Bennet CO-D

**10% Tax Credit for retrofitting existing US
helicopter fuel systems into crash resistant fuel
systems (CRFS)**

In Summary

- We both love the air medical industry and want it to thrive
- Air medical transports saves lives!
- Air medical crews and their patients deserve cutting edge safety technology
- Air medical crews just want:

“To be the best of our patient’s worst day”

Moving Forward



PIC•COLLAGE

Thank You!

Together We Are Changing Aviation Safety

Questions???



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Save Our Crews Facebook Page

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