Current Issues with Air Medical Transportation:
EMS Helicopter Safety

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NTSB Board Member
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What is the NTSB?

• Independent Federal Agency, charged by Congress to:
  – Investigate transportation accidents
  – Determine their probable cause
  – Issue safety recommendations to prevent similar accidents
  – Conduct safety studies
NTSB has long-standing interest in Helicopter EMS (HEMS) Safety

- Investigated 230 HEMS crashes since 1983
  - Special in-depth safety research project in 1988
  - Special investigative project in 2006
  - Added HEMS Safety to NTSB’s Most Wanted List in October 2008
  - Four day hearing in February 2009

- Issued over 50 HEMS-related recommendations to government and industry between 1988 – 2009
Would you be willing to administer a medication when the side effects or contraindications of that medication were unknown?
Would you be willing to use an air ambulance when information about that operator’s pilot training, aircraft equipment, or operations were unknown?
• Helicopter EMS (HEMS) safely transports nearly 400,000 patients each year in U.S.

• HEMS performs a vital function of providing critical care
• Many of the HEMS operators have implemented safety best practices for pilot training, aircraft equipment, and operations.

• However, some have not.
Three main points

• The current HEMS accident record is unacceptable.

• Not all air ambulance operators are created equally from a safety perspective.

• As consumers of air ambulance transport, you can “up the ante” on how they operate.
Three main points

• The current Helicopter EMS (HEMS) accident record is unacceptable.

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6 years - 85 accidents; 77 fatalities

- 2003 - 19 accidents; 7 fatalities
- 2004 - 13 accidents; 18 fatalities
- 2005 - 15 accidents; 11 fatalities
- 2006 - 13 accidents; 5 fatalities
- 2007 - 12 accidents; 7 fatalities
- 2008 - 13 accidents; 29 fatalities

49 weeks without a fatal HEMS accident

UNTIL ...
September 25, 2009
3 Fatalities
### US HEMS accidents, Sep 1, 2009–Aug 31, 2010

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep 22, 2009</td>
<td>Page AZ</td>
<td>none</td>
</tr>
<tr>
<td>Sep 24, 2009</td>
<td>Tucson AZ</td>
<td>none</td>
</tr>
<tr>
<td>Sep 25, 2009</td>
<td>Georgetown SC</td>
<td>3</td>
</tr>
<tr>
<td>Oct 22, 2009</td>
<td>Blythe CA</td>
<td>none</td>
</tr>
<tr>
<td>Nov 14, 2009</td>
<td>Doyle CA</td>
<td>3</td>
</tr>
<tr>
<td>Dec 25, 2009</td>
<td>Decatur TX</td>
<td>none</td>
</tr>
<tr>
<td>Jan 17, 2010</td>
<td>Reno NV</td>
<td>none</td>
</tr>
<tr>
<td>Feb 5, 2010</td>
<td>El Paso, TX</td>
<td>3</td>
</tr>
<tr>
<td>Feb 11, 2010</td>
<td>Cheverly MD</td>
<td>none</td>
</tr>
<tr>
<td>Mar 25, 2010</td>
<td>Brownsville TN</td>
<td>3</td>
</tr>
<tr>
<td>Jun 2, 2010</td>
<td>Midlothian TX</td>
<td>2</td>
</tr>
<tr>
<td>Jul 22, 2010</td>
<td>Kingfisher OK</td>
<td>2</td>
</tr>
<tr>
<td>Jul 28, 2010</td>
<td>Tucson AZ</td>
<td>3</td>
</tr>
<tr>
<td>Aug 31, 2010</td>
<td>Scotland AR</td>
<td>3</td>
</tr>
</tbody>
</table>

22 fatalities
Recent HEMS accidents

- Have gotten the attention of U.S. Congress, GAO, FAA, industry, media, public and NTSB
NTSB Public Hearing on HEMS

- 21 NTSB safety recommendations emerged
  - Pilot training
  - Aircraft equipment
  - Airspace infrastructure
  - CMS reimbursement
  - HEMS utilization criteria

Feb 3-6, 2009
Pilot training

- FAA should develop criteria for, and require, scenario-based training.
  - Training should include simulator and flight training devices.
  - Training should ensure instrument flying proficiency
    - training for inadvertent flight into clouds and/or low visibility.
How are pilots that you utilize trained?
Aircraft equipment

FAA should:

• Require Helicopter Terrain Alerting and Warning Systems (H-TAWS).

• Require use of night vision imaging systems by pilots.

• Require an autopilot if a second pilot is not available.
Are helicopters that you use equipped with:

- H-TAWS
- NVIS
- Autopilots or two pilots
Three main points

• The current Helicopter EMS (HEMS) accident record is unacceptable.

• Not all air ambulance operators are created equally from a safety perspective.

• As consumers of air ambulance transport, you can “up the ante” on how they operate.
Levels of Performance

• **World class**
  – Top 3 - 5 percent of the industry
  – Organization thrives in seeking to be the very best

• **Best practices**
  – Adopts and implements quality, standards, procedures, equipment, and training above and beyond regulatory requirements

• **Basic regulatory compliance**
  – Meets spirit of regulations, but no higher

• **Sub-standard performance**
  – non-adherence to regulations, cutting corners are the norm

Adopted from Pete Agur
Cost: $800k - $3 million
- Single engine
- Single pilot only
- Limited weather capability
- Limited weight carriage for medical equipment, fuel

Cost: $4-6 million
- Twin engine
- 2 pilot capability
- Instrument weather capability
- Autopilot
- Longer range
- Higher critical care capability (e.g. balloon pumps, ventilation)

Cost: $7-12 million
- Twin engine, IFR
- 2 pilot capability
- Instrument weather capability
- Autopilot
- Greatest distance capability
- Specialty transport capability (specialized pediatric - ECMO)

...but Medicare reimbursement is the same.
“Public” HEMS Operations

- 40 HEMS operators are government entities
  - i.e., National Park Service, Maryland State Police, LA County Fire Department
- FAA does not oversee “public” operations
- Few FAA requirements
- Not consistent with commercial (Part 135) HEMS operations
Maryland State Police Accident

4 fatalities, 1 serious injury
To what level are helicopters that you utilize operating?

World class
Best practices
Basic regulatory compliance
Sub-standard performance
Three main points

- The current Helicopter EMS (HEMS) accident record is unacceptable.
- Not all air ambulance operators are created equally from a safety perspective.
- As consumers of air ambulance transport, you can “up the ante” on how they operate.
What can you do?

• Take an active role in knowing who is flying your patients
  – Know how their pilots are trained
    • Know if they have scenario-based simulator training
    • Know if they require instrument proficiency
  – Know if their helicopters are equipped with H-TAWS, NVIS, autopilot and/or second pilot
What can you do?

- If your facility has a contractual arrangement with HEMS operators, is it written into their contracts that pilots must be trained and helicopters equipped per NTSB recommendations?

What are the legal and moral obligations of simply deferring to the operator to do these things, instead of your ensuring it contractually?
Something to think about:

High-Risk Occupations, 2007

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Fatality Rate (per 100,000 employees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEMS Crew (Dedicated)</td>
<td>113</td>
</tr>
<tr>
<td>Fishers and related fishing workers</td>
<td>111.8</td>
</tr>
<tr>
<td>Logging workers</td>
<td>86.4</td>
</tr>
<tr>
<td>Aircraft pilots and flight engineers</td>
<td>66.7</td>
</tr>
<tr>
<td>Structural iron and steel workers</td>
<td>45.5</td>
</tr>
<tr>
<td>Farmers and ranchers</td>
<td>38.4</td>
</tr>
<tr>
<td>Roofers</td>
<td>29.4</td>
</tr>
<tr>
<td>Electrical power-line installers/repairers</td>
<td>29.1</td>
</tr>
<tr>
<td>Coal mining</td>
<td>28.4</td>
</tr>
<tr>
<td>Driver/sales workers and truck drivers</td>
<td>26.2</td>
</tr>
<tr>
<td>Refuse and recyclable material collectors</td>
<td>22.8</td>
</tr>
<tr>
<td>Police and sheriff’s patrol officers</td>
<td>21.4</td>
</tr>
</tbody>
</table>

Source: Ira Blumen, MD
What are you doing to ensure that HEMS operators that you are using are operating to the highest levels?