

**TRB EMS Subcommittee ANB10(5)**

# **EMS Safety Summit 2012**

## **Safety Systems, Strategies and Solutions**

### **What Air Medical Can Teach Us?**

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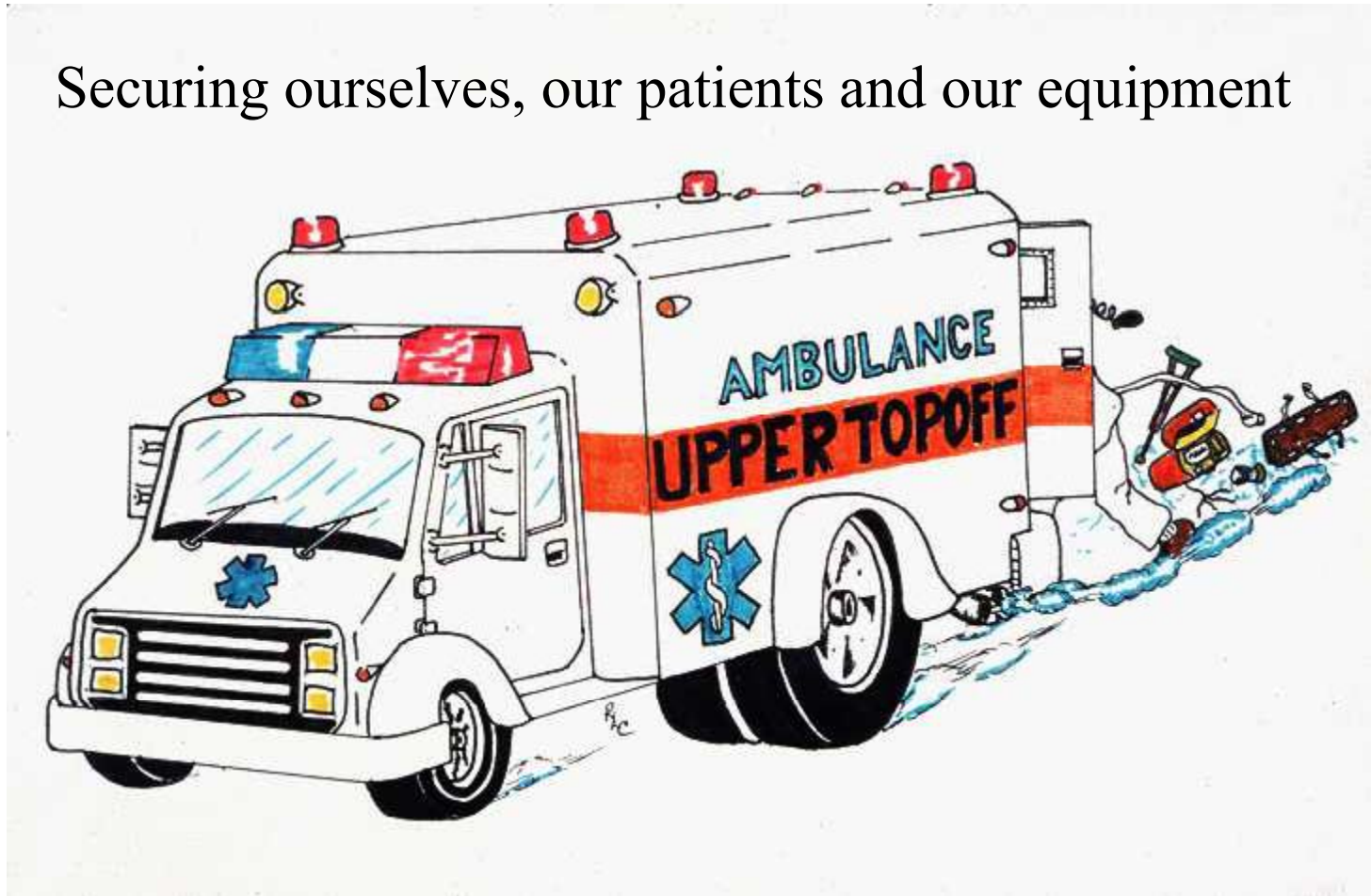
# What Air Medical Can Teach Us

- I. Policies and Practices
- II. Learning for Our Mistakes
- III. Fatigue Mitigation
- IV. Safety Management Systems
- V. AMRM



# I. Policies and Practices

Securing ourselves, our patients and our equipment



# Securing the Patient with 3 cross straps



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## II. Learning From our Mistakes Air Medical Accidents

*Oh look we know how many  
And the probable cause for each accident !*

**70 - 80% caused by Human Error**

**Most common factors:**

**Weather and dark night conditions**

**VMC into IMC - 74% resulted in fatalities**

**According to IHST**

**54% of the EMS accidents occur at NIGHT even though night  
time flights account for only 35% of the total flights**

**“Nighttime accidents are more likely to be fatal. Air  
ambulance accidents that occurred at night were  
almost four times more likely to result in fatalities  
than those occurring during the day.”**

**Dr Patrick Veillette**

# **2009 NTSB Recommendations**

**Adopt A System Safety Culture - SMS**

**Use of IFR, HTAWS and night vision goggles**

**A Procedure Weighted Risk Avoidance Program**

**Review Weather Minimums**

**Improve Education on Weather Com / Dispatchers**

# Overlooked factors that apply to air and ground

We have addressed level of experience, training, and technology but not sleep deprivation in assessing risks specific to EMS.

NTSB gets a 72 hour history prior to an accident but often does not detail how much sleep and in what time frame prior to reporting for duty.

In one of the most recent fatal accidents, the pilot came on night duty after working all day on a home project.

# 24/7 OPERATIONS

- In 1995, the NTSB found that across all transportation modes, approximately 30% of the accidents are fatigue related.
- Night shift workers are already at a higher risk for injury and errors. In a 2005 study (by Folkland, Lombardi and Tucker) found that workers in a series of night shifts generally sleep poorly with each successive night shift worked – by the 4<sup>th</sup> night, risk is 36% above the 1<sup>st</sup> night.
- EMS Pilots work schedule is usually 7 nights on in succession and many of the EMT drivers and paramedic ground crews are working more than 1 job.



# In Addition, EMS also have Emergency Response Expectations

**1<sup>st</sup> Known study of fatigue associated accidents was in 1896 of wagon drivers: (Patrick and Gilbert)**

**They found contributing causes were:**

- **Economic pressures**
- **Societal demands for faster deliveries**

**SOUND FAMILIAR???**



# **In all studies, fatigue results in:**

**Slowed reactions**

**Poor judgment**

**Reduced information processing**

**Inability to perform a task at a high sustained level of accuracy or safety**



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# So what do we do?

## III. Fatigue Mitigation

**Scheduling Practices - Demonstrate strategies to minimize duty-time fatigue, length of shift, number of shifts per week and day-to-night rotation.**

The physical base of operations includes an appropriate place for uninterrupted rest.

Medical personnel must have the right to call "time out" if the team member (or fellow team member) determines that he or she is unfit or unsafe to continue duty, no matter what the shift length.

Management must monitor transport volumes and personnel's use of a "time out" policy.

**Fatigue Education**

**Fatigue Risk Assessment Tools.**

## Template Ground Risk Assessment

<b>Driver</b>	Experience at Company	> 5 years	> 2 years	<1 year	
		1	2	3	
	Number of Consecutive Shifts	Second	Third	Fourth	24
		1	3	4	2
Rest prior 24 hrs	>8 hrs	>6 hrs	<6 hrs		
	1	3	4		

<b>Nurse</b>	Experience at Company	> 5 years	> 2 years	<1 year	
		1	2	3	
	Number of Consecutive Shifts	Second	Third	Fourth	24
		1	2	3	2
Rest prior 24 hrs	>8 hrs	>6 hrs	<6 hrs		
	1	2	3		

<b>Medic or RRT or RN</b>	Experience at Company	> 5 years	> 2 years	<1 year	
		1	2	3	
	Number of Consecutive Shifts	Second	Third	Fourth	24
		1	2	3	2
Rest prior 24 hrs	>8 hrs	>6 hrs	<6 hrs		
	1	2	3		

Trips or Time	
3 trips or 6 hrs of Transport = +1	
4 trips or 8 hrs of Transport = +2	
5 trips or 10 hrs of Transport = +3	
6 trips or >12 hrs of Transport = timeout	
Trip extending past 24 hour shift +2	

Crew with Tragic or Unexpected event earlier this shift	
Yes	No
1	0

<b>WX</b>	<b>Visibility</b>						
	Day	<1 mile	1	Night		<1 mile	2
	<b>Weather</b>						
		Heavy Rain / Storms	Snow Showers	Tornado Watch	High Winds	Freezing Rain	
	Day	1	1	1	2	2	
	Night	2	2	2	3	3	

<b>Roads</b>		Dry	Wet	Snow	Ice
	Day	1	2	3	4
	Night	2	3	4	5

<b>Automatic High Risk</b>
Tornado warning
Visibility less than 1/8 mile
Severe Ice on roadway
Level 3 snow emergency

<b>Trip declined by another service due to weather</b>	Yes	No
	1	0

<b>Other:</b>	Crewmember not at primary base	Day		Night	
		1		2	
	Crew in backup truck	Day		Night	
		1		2	
	Anticipate Need for Lights and Sirens	Day		Night	
		3		6	
Navigation to unfamiliar location	Day		Night		
	1		2		

Risk Reduction	
Use main roads	
Fresh crew member	

**Total Risk Assessment Value** \_\_\_\_\_ **Risk Level** \_\_\_\_\_

Risk Level Scale					
0	Low	20   21	Med	33   34 or greater	High

Initials	
Driver:	
Nurse:	
Medic / RT / RN:	

If **High Risk** attempt to reduce risk, if unable, the Program Director or crew supervisor must be notified

Recommend adding fatigue risk assessment (Stanford sleepiness scale)

# IV. Safety Management Systems

**The Safety Management System is proactive in identifying risks and eliminating injuries to personnel and patients and damage to equipment and includes:**

1. A statement of policy commitment from the accountable executive
2. A non-punitive system for employees to report hazards and safety concerns
3. A system to track, trend and mitigate errors or hazards
4. A system to track and document incident root cause analysis
5. A Safety Manual
6. A system to audit and review organizational policy and procedures, ongoing safety training for all personnel (including personnel (including managers), a system of proactive and reactive procedures to insure compliance, etc.

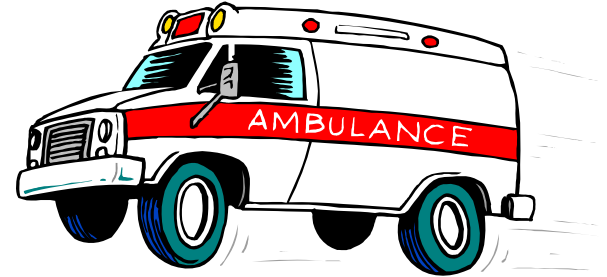
# Air Medical Resource Management - AMRM

CRM specific to air crews and includes:

- Communication processes and Decision Behavior
  - Briefings
  - Inquiry/advocacy/assertion
  - Crew self critique
  - Conflict resolution
- Team Building and Maintenance
- Workload management and Situation Awareness



# Summary



We can learn from each other: Ground and Air  
- we are all moving while caring for patients.

Safety vigilance for ground is just as important  
as for air.

We need the data for ground incidents and  
accidents in one strategic location so we can  
track, trend and analyze as we do for air  
accidents to mitigate the risks and hazards.