

ROUND THE CLOCK WELLNESS
LOOKING OUT FOR OUR OWN...

Edward M. Racht, M.D.
Medical Director
City of Austin / Travis County EMS System



Occupational fatality rate Transportation - related

- EMS 9.6 / 100,000
- Police 6.3/100,000
- Fire 4.5/100,000
- General public 2/100,000

Maguire, et.al. Ann Emerg Med. 2002 Dec;40(6):625-32

Characteristics of fatal ambulance crashes 1987-1997

- 339 ambulance crashes
- 405 fatalities
- 838 injuries

Kahn. Prehosp Emerg Care 2001;5:261-269

Characteristics of fatal ambulance crashes 1987-1997

- Crashes occurred:
 - Between noon – 1800 (39%)
 - ...Improved roadways (99%)
 - ...Straight road (86%)
 - ...Dry pavement (69%)
 - ...Clear weather (77%)
 - ...Intersection (53%)
 - ...Striking (81%)
 - ...Another vehicle (80%)
 - ...Angle (56%)

Kahn. Prehosp Emerg Care 2001;5:261-269

Characteristics of fatal ambulance crashes 1987-1997

- Crashes during emerg use 202/339
- Fatalities during emerg use 233/405
- Most crashes – 1 fatality – not in ambulance
- Serious & fatal injuries more likely in rear and unrestrained
- 16% EMS drivers cited
- 41% had poor driving records

Kahn. Prehosp Emerg Care 2001;5:261-269

We work in a dangerous environment...

Woman killed in car-ambulance collision

American-Statesman Staff

An Austin woman was killed early Sunday when her car collided with an ambulance near Lake Travis.

A 1982 Oldsmobile sedan driven by Nicole N. Patschke of the 11000 block of Stonehollow Drive was northbound on RM 620 when it crossed the center turn lane and struck the southbound ambulance

head-on at 1:40 a.m., according to the state Department of Public Safety.

Patschke, who was thrown partially out of the car, was pronounced dead at the scene, near the intersection of RM 620 and Marshall Ford Road.

Authorities said Patschke was not wearing a seat belt.

The driver of the Austin ambulance, Thomas Shook Jr. of

Austin, was not injured, DPS said. The ambulance was returning at normal speed from a call at the Steiner Ranch subdivision and was not transporting anyone, said Warren Hassinger, a spokesman for the city's Emergency Medical Services.

Investigators said they have ordered blood tests on Patschke and are trying to determine why her car crossed the turn lane.

Ambulance hits van; woman, child killed

Four other children are injured in wreck

By Mark Bowers

Three children were killed and one injured when a van struck an ambulance Sunday morning, killing the van driver and fatally injuring one of the five occupants.

A 1982 Oldsmobile sedan driven by Nicole N. Patschke of the 11000 block of Stonehollow Drive was northbound on RM 620 when it crossed the center turn lane and struck the southbound ambulance

head-on at 1:40 a.m., according to the state Department of Public Safety.

Patschke, who was thrown partially out of the car, was pronounced dead at the scene, near the intersection of RM 620 and Marshall Ford Road.

Authorities said Patschke was not wearing a seat belt.

The driver of the Austin ambulance, Thomas Shook Jr. of

Austin, was not injured, DPS said. The ambulance was returning at normal speed from a call at the Steiner Ranch subdivision and was not transporting anyone, said Warren Hassinger, a spokesman for the city's Emergency Medical Services.

Investigators said they have ordered blood tests on Patschke and are trying to determine why her car crossed the turn lane.

The driver of the Austin ambulance, Thomas Shook Jr. of

Austin, was not injured, DPS said. The ambulance was returning at normal speed from a call at the Steiner Ranch subdivision and was not transporting anyone, said Warren Hassinger, a spokesman for the city's Emergency Medical Services.

Investigators said they have ordered blood tests on Patschke and are trying to determine why her car crossed the turn lane.






"Eliminating Errors in Emergency Medical Services: Realities & Recommendations"

Key Search words:

- ❏ drug administration
- ❏ emergency medical services
- ❏ endotracheal intubation
- ❏ errors
- ❏ ETCO2 detection
- ❏ best practices
- ❏ standards



O'Connor, et.al. Prehosp Emerg Care 2002;6:107

The image is a presentation slide with a purple-tinted background. It features a title at the top, a list of key search words, a small image of a journal cover, and a citation at the bottom. The journal cover is for "PREHOSPITAL EMERGENCY CARE" and includes the text "OFFICIAL JOURNAL OF THE NATIONAL ASSOCIATION OF EMS PHYSICIANS", "THE NATIONAL ASSOCIATION OF STATE EMS DIRECTORS", and "THE NATIONAL ASSOCIATION OF EMS EDUCATORS".

"Eliminating Errors in Emergency Medical Services: Realities & Recommendations"

High risk areas in EMS

- ❑ Unsafe ambulance operation
- ❑ Failure to check O2 Saturation after intubation
- ❑ Failure to immobilize
- ❑ Failure to check glucose in AMS
- ❑ Failure to detect misplaced ETT
- ❑ Use of incorrect protocol
- ❑ Wrong drug or dose
- ❑ Failure to recognize deterioration
- ❑ Equipment malfunction

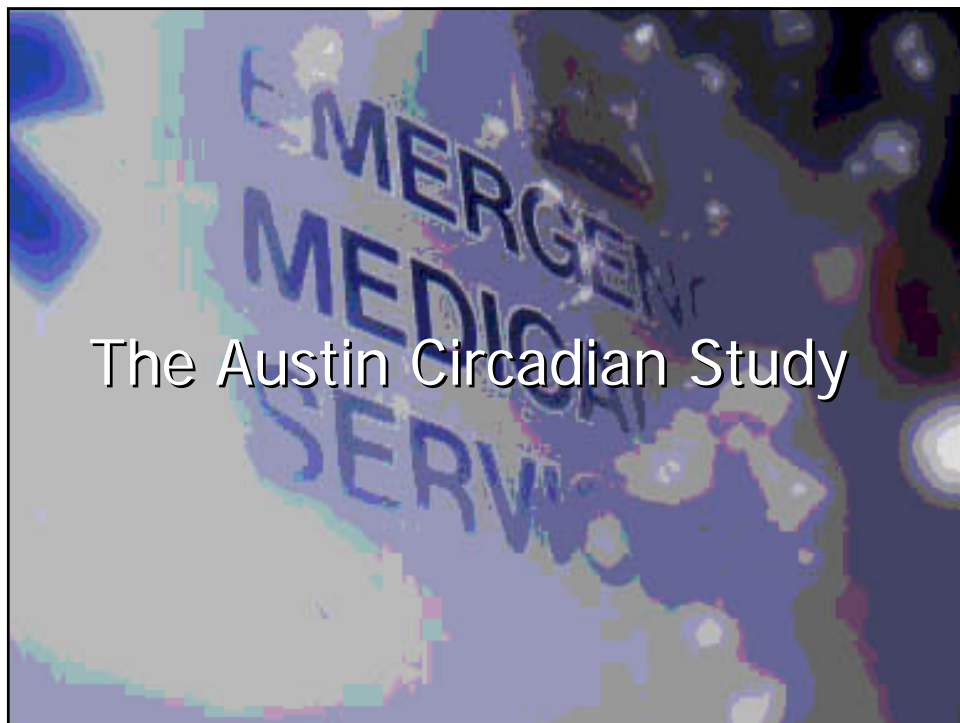
O'Connor, et.al. Prehosp Emerg Care 2002;6:107

Medication errors

- ❑ Drug dose calculation accuracy of 51.4% in paramedics tested
- ❑ IV flow rate correct in 68.8%
- ❑ Non-weight based dose correct in 33.9%
- ❑ Weight-based dose correct in 32.5%
- ❑ 80% of paramedics considered drug calculation procedures somewhat or very stressful

Hubble, et.al. Prehosp Emerg Care 2000;4:253-60

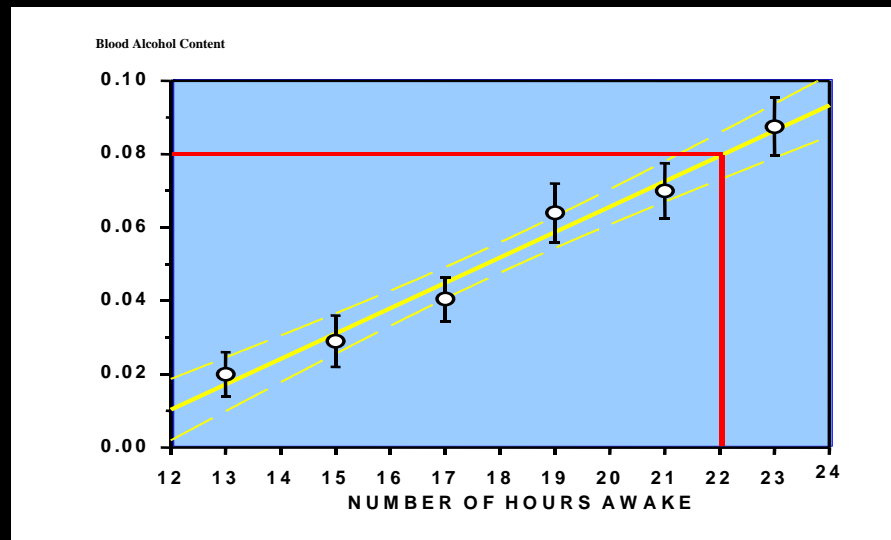




Shift Scheduling Issues

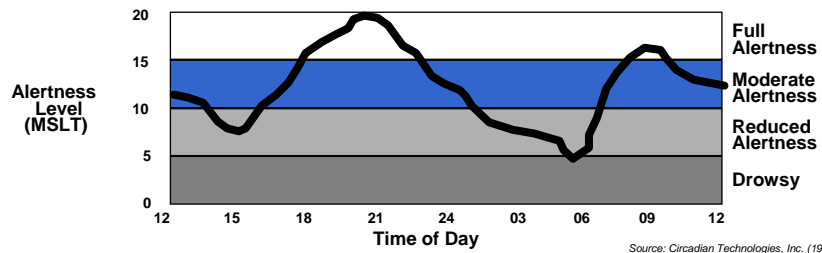
- Shift starting times not always in sync with alertness rhythms
- Early start times reduce quantity of sleep; increases cumulative sleep deprivation
- Weekly shift rotations too rapid
- Night shifts physiologically damaging
- Evening shifts can be socially difficult
- Daytime sleep often poorer in quality and quantity
- Backwards rotations run counter to human biology
- Promotes Chronic Shift Maladaptation Syndrome and chronic fatigue

Equivalence of Fatigue Impairment to Alcohol Impairment



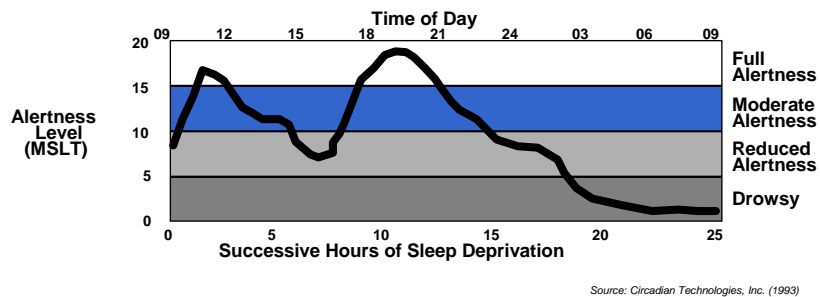
Adapted from Dawson and Reid, 1997

Circadian Rhythm of Human Alertness (With Normal Quantity / Quality of Nighttime Sleep)

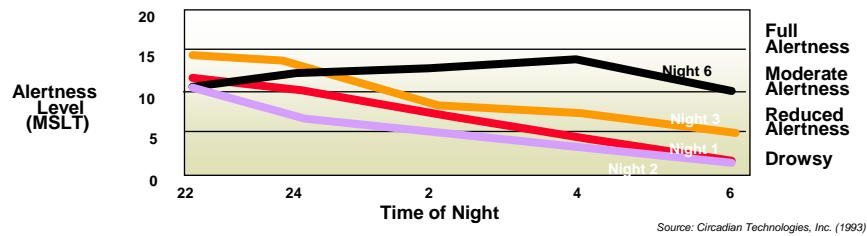


This is an average composite for all Circadian types. The curve can be shifted 1-2 hours in either direction depending on whether one is an early or late riser, etc.

Determinants of Human Alertness: Extended Hours Without Sleep



Determinants of Human Alertness - Consecutive Nights on Duty



Work hours

- **Work hours (including regular hours plus overtime):**
 - About 60% works 60 hours/week
 - 30% works 72 h/week
 - 1% works 84 hours/week or more
- **Overtime:**
 - About 25% work 24 hours of OT/week
 - The majority (67%) feel that they work too much overtime
- **Staffing levels:** 96% think that ATC-EMS is understaffed
- **Consecutive work hours:**
 - More than half (57%) worked more than 48 consecutive hours the past month
 - 20% worked more than 55 hours
- **Second job:** Almost half have a second job, and 13% work more than 20 hours per week at their second job



Work schedule - Adjustment

- Employee "Well/Very well adjusted": 62%
- Families "Well/Very well adjusted": 53%
- Overall health will improve with different schedule: 62%
- Training will help: 58%



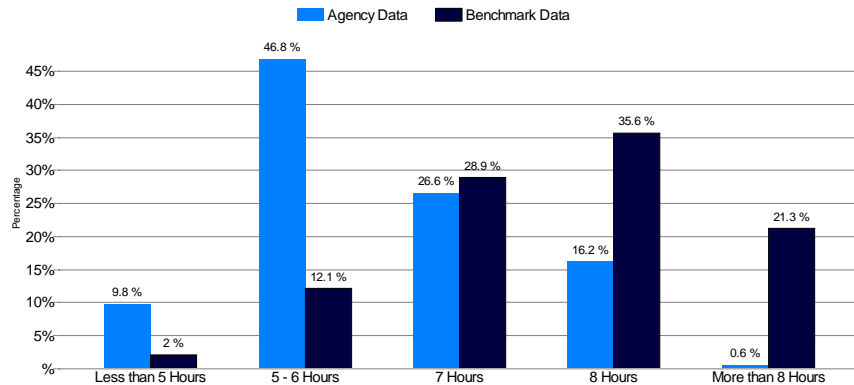
Health - Sleep

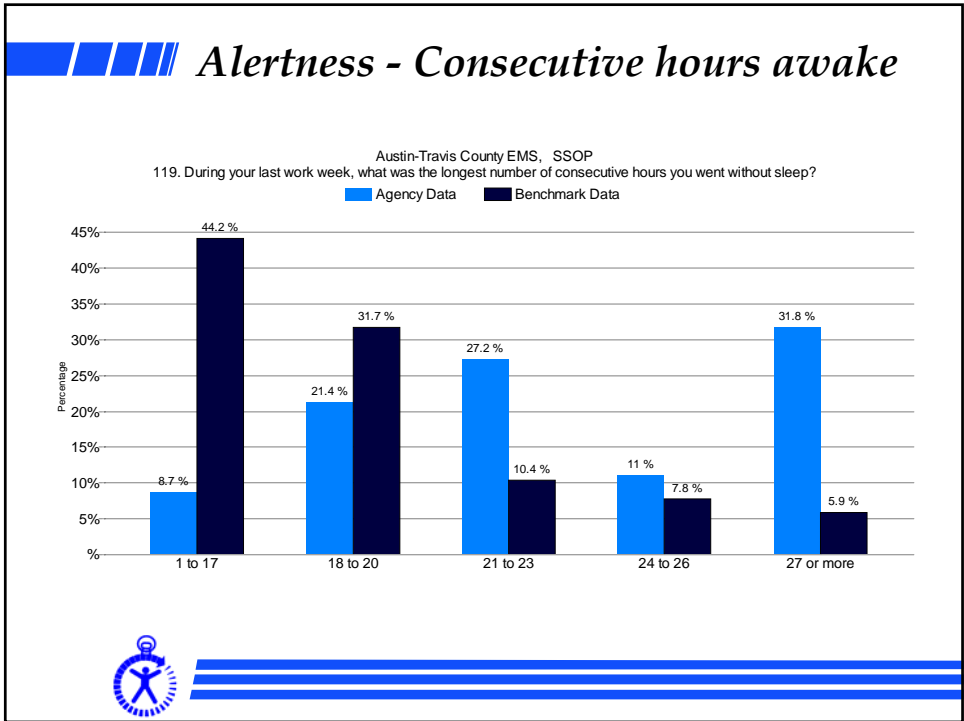
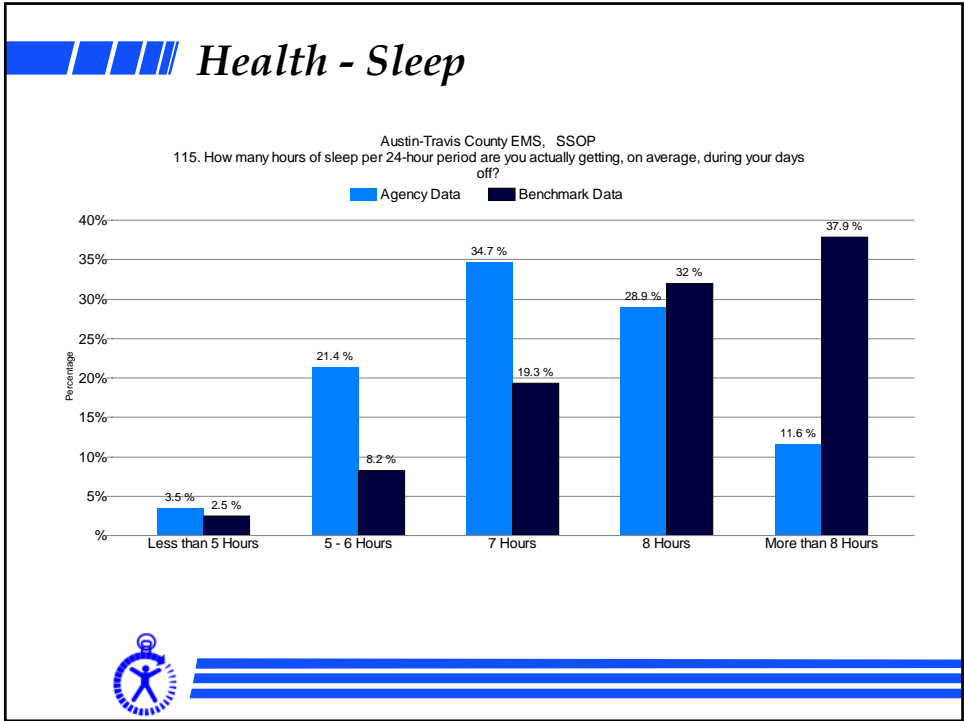
- **Sleep needed to feel rested: 49% need 7 hours or more**
- **Sleep prior to 24-h shift: 61% get 7 hours or more**
- **Sleep during 24-h shifts:**
 - Rural station: 4-6 hours: 32%, 7 h or more: 30%
 - Suburban station: 4-6 hours: 57%, 7 h or more: 11%
 - Urban station: 4-6 hours: 9%, 7 h or more: 2% , < 2h: 51%
- **Sleep during 12-h shifts:**
 - 27% get 7 hours or more, 50% get less than 5 hours
- **Sleep during days off:**
 - 75% get 7 hours or more



Health - Sleep

Austin-Travis County EMS, SSOP
 109. How many hours of sleep per 24-hour period (in general) do you feel you need to be alert and well rested?







Safety, Performance and Alertness Survey Data

- 63% reported that is “very difficult/difficult” to stay awake and functional for 24 hours
- Problems “at least several times/month”:
 - Drowsy on the way to calls (after being asleep): 70%
 - Nodding off while working: 52%
 - Making mistakes: 13%
 - Falling asleep while driving an ambulance: 5%




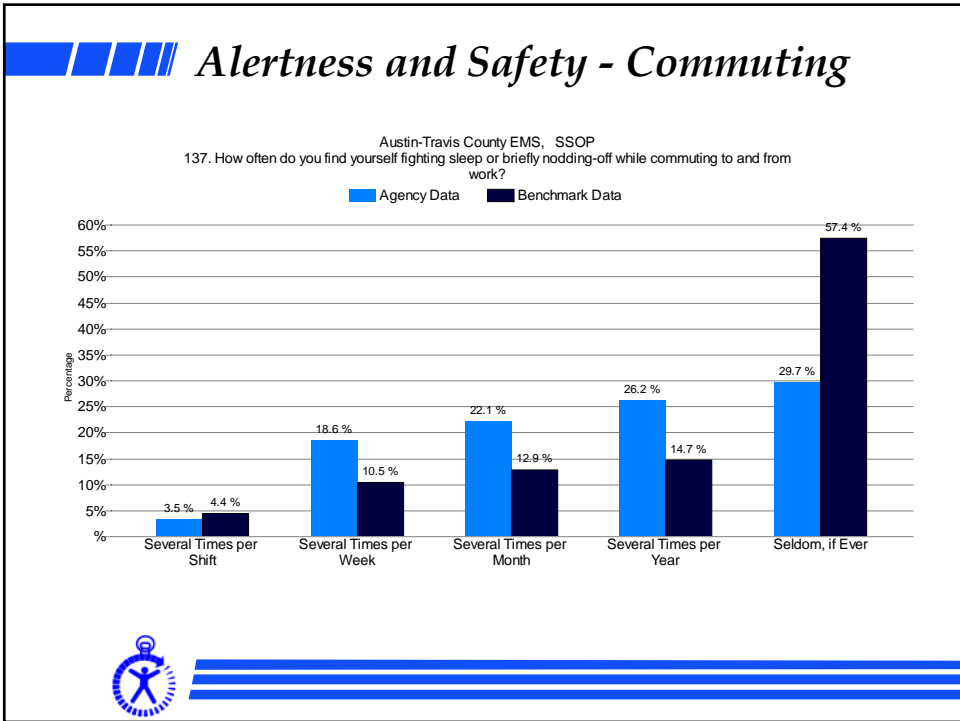
Safety, Performance and Alertness Survey Data

- **Fatigue** causing problems “at least several times/month”:
 - Provide less than optimal clinical care: 29%
 - Provide less than customer service: 42%
- **Stress** causing problems “at least several times/month”:
 - Provide less than optimal clinical care: 22%
 - Provide less than customer service: 38%



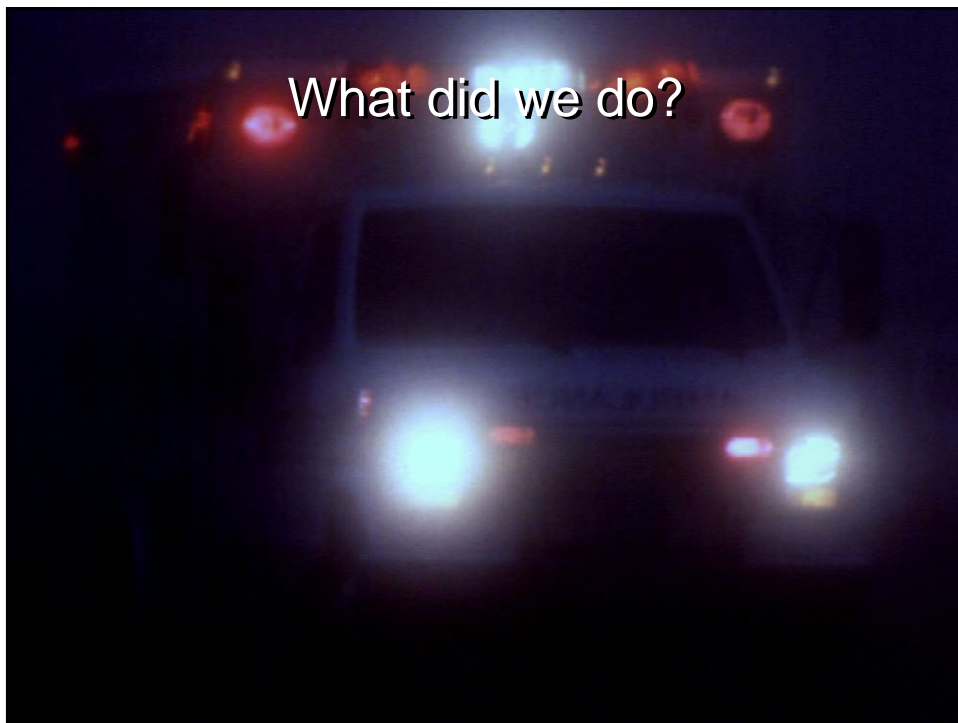
Alertness and Safety - Commuting

	ATC-EMS	Benchmark
Nodding off "at least several times/month"	44%	28%
Accidents in the past year (none)	90%	90%
Near accidents in the past year (none)	45%	53%
Accidents/near accidents due to fatigue	50%	34%

Conclusions

- Many paramedics work 60 h/week or more. The majority report that there is excessive OT.
- More than half worked more than 48 consecutive hours the past month.
- About one-third reported that they went 27 consecutive hours or more without sleep during the past week.
- About two-thirds reported that it is difficult to stay awake and functional for 24 hours
- Fatigue and stress affect job performance. They both have a similar impact, and in both cases customer service is more affected than clinical care.
- Fatigue also affects commuting, with paramedics having higher incident rates than the average in CIRCADIAN database.



In the spirit of dogs....
(When Dave Persse was a little boy...)



Have a safe trip home...



Thanks...

