

Red Lights and Sirens



Promoting a culture of safety

What piece of equipment is used on every EMS call?



Was it an Accident; or a predictable and preventable event ?



Provider/Agency Awareness

As a result of the regional CQI project that studied red lights and sirens use in our region, two components were clearly identified:

- We respond to the scene 8/10 times with lights and sirens. This number can be reduced without affecting patient outcome.
- As stated in our final report, NCEMS will create an educational piece that is accessible to all providers that increases awareness of the hazards of red lights and siren use, and provides some nationally accepted methods to reduce this dangerous practice and improve vehicle safety. We hope you find this educational.

Risk vs. Benefit

- Response and transport time (Is a lights and sirens response going to change the outcome of this patient?)
- Urgency of Medical Care (Will 5 minutes change the outcome of this patient?)
- Occupant safety/protection (Are unsafe driving practices that endanger the vehicle occupants an acceptable risk for the benefit of the patient?)
- Public safety (Are unsafe driving practices that endanger the public an acceptable risk for the benefit of the patient?)

Occupational fatality rates, per year, in transportation-related incidents:

General population - 2:100,000

Firefighters - 4.5:100,000

Law Enforcement Officers - 6.3:100,000

EMS - 12.7:100,000

(According to NHTSA fatality analysis reporting system)

EMS has a higher rate of death in crashes than law enforcement officers and firefighters COMBINED!



Scary Ambulance Statistics

- 6,500 crashes/year nationwide (18/day)
- Kills more EMS providers than all other causes combined (74% MVC deaths)
- Ambulance crashes seriously injure an average of 10 people every day

70% of all ambulance crashes occur while operating in an emergency mode



More Ambulance Statistics

- Crashes account for 10 lawsuits for every one malpractice lawsuit
- Average settlement when an injury occurs is \$1,000,000
- Nationwide ambulance crashes cost us all over \$500 million/year

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Motor vehicle fatalities involving an ambulance operating in an emergency mode

(Michigan Study 1980-2000)

- Person(s) in the other vehicle died in more than 75% of the fatal crashes
- Occupants in the patient compartment died in more than 15% of the crashes
- The ambulance operator died in about 4% of the crashes
- The **AMBULANCE OPERATOR** is sued nearly 100% of the time

Ambulance crashes account for nearly one fatality every week



2/3 are pedestrians or the occupants of the other vehicle

What does an ambulance crash really cost?

- Loss of life or debilitating injury
- Negative impact on the agency/system
- Loss of equipment (damaged in the crash)
- Loss of ambulance (Will you have to wait for an insurance check before you can order a new vehicle? How will your agency function without this vehicle?)
- Increased insurance rates

Collisions are the largest liability cost for any agency; far exceeding malpractice and negligence.

The hidden costs

- Investigating the ambulance collision
- Litigation/settlement/lawsuit
- Medical/disability costs of employees
- Hiring/training replacement employees
- Psychological counseling for employees
- Negative impact on recruitment/retention

What is the cause?

- One of the route problems is that EMS systems were designed 30 years ago with a primary benchmark of “response time.” How fast can we get to the patient? But, there was never any safety factor integrated into our performance.

So, we got to the patient with back pain fast, but caused 2 accidents on the way, and our response time made no difference in the patients outcome.

In the air medical industry, you must notify the pilot when the care provider is vulnerable, so he takes more care in managing the aircraft.

In EMS, we do the opposite. When there’s a critical patient, we all get unbelted and tell the driver to go faster.

- This antiquated practice came into existence when all we could do is load people in the ambulance and drive as fast as possible to the hospital.
- Today, ALS can do almost as much as an ER to stabilize patients from their immediate life threat.
- BLS assessment skills have greatly improved and today’s EMT’s are more than capable of determining “how sick is this patient?”

Common problems that occur because agencies lack:

- Specific safe driving policies
- Enforcement of seat belt use (front and back)
- Emergency driving policies (when, for what)
- Intersection approach policy
- Driver selection process
- Mandatory, standardized driver training
- An overall culture of safety

What safety practices do you use?

- Seat belts
- Driver selection
- Driver training
- Equipment locked down
- Helmets
- “Black box” technology
- Tiered dispatch
- Policies

Intersections are the most dangerous part of the response



Seat belts

- What is your agency policy? Does it need to be revised? Does it cover rear occupants? Is it enforced or just on paper?
- Over the shoulder harnesses for patients should be used, with the head of the gurney in the upright position when medically feasible. (In a frontal crash patients are often killed because they slide out of traditional lap straps)
- 82% of the rear occupant fatalities were unrestrained

Driver Training

- Should include a consistently improving, nationally recognized, mandatory course for new drivers/members. Include periodic mandatory recertification or some form of continuing reinforcement
- EVOG
- CEVOG
- Preceptor program

Driver Selection

- Younger drivers and those with previous driving offences have been identified as the groups at highest risk for adverse vehicle operations events.
- Who drives in your agency? (For many agencies it is the newest, least experienced members or those with no medical training)
- Develop a policy with clear cut requirements to avoid discrimination

Over 40% of drivers who are involved in a crash had record of a prior incident



Equipment Locked Down ?

- Monitor/Defibrillator (frequently tear away from their fastening device during a crash)
 - Oxygen tanks (not just heavy, but also a missile)
 - First in bag (many weigh more than 25 lbs.)
 - Straps/tie downs installed after delivery?
(If your agency has installed after market straps, take a good look at them and ask yourself "will that hold at crash force?")
- Anything that is loose in your ambulance that would hurt you if someone threw it at you, could kill you during a crash.

Helmets ?

- 65% of rear occupant fatalities are from head injuries
- Helicopters, bikes, race cars all require head protection
- Build in communications
(studies have shown the most common reason for medics to get up is to get to the radio)
- EMS helmets would add immediate, inexpensive protection

“Black box” technology ?

- Electronic driver monitoring/feedback systems have proven to be very effective
- They have optional audible alarms and can store/send events to a computer
- They can identify a drivers risk patterns before a crash occurs
- Enhance safety, improve driver performance
- Been proven to reduce maintenance costs by enough to cover the cost of the unit

“Black box” technology (Example)



One 18 month trial saw drivers go from a baseline low of 0.018 miles between driving infractions to 15.8. At the same time, seatbelt violations dropped from 13,500 to 4. The department realized a 20% savings in vehicle maintenance costs within the first six months.

Culture of Safety



- Forward sliding seat
- 5 point restraint system
- Communication headset
- Radio within reach
- Control panel within reach
- Frequently used equipment/supplies within reach
- No loose equipment
- Automated blood pressure and patient monitoring equipment minimize the need to be unrestrained

Tiered dispatch ?

- First Responders, Closest unit
- Minimizes unnecessary use of potentially dangerous lights and siren use, and is being used routinely in many sites across our nation and world wide.

If 3 units are responding to a single emergency and the first crew on scene is able to stabilize; does it make sense for additional units to continue in an emergency mode ?

Are current policies killing people ?

- FIRST – DO NO HARM
- Intersection approach
- What is an emergency
- Establish when RL&S can be used
- Driver requirements
- Back ground checks (driving history)
- Vehicle restraint use

The USA ambulance crash fatality rate is 35X higher than in Australia



Effectiveness of sirens

The average new car with radio and fan at average noise levels and driver not looking towards the ambulance will not hear your siren:

- At 30 MPH until you are 240' from them; it will require a minimum 140' to stop your ambulance
- At 55 MPH until you are 140' from them; it will require over 400' to stop your ambulance

Your next ambulance purchase

- Back up camera
- Radios located within reach of the seated EMT
- Seats that allow the EMT to remain restrained
- Compact vehicles (Van style) great choice for agencies with 1-2 people in back. Everything can be reached without unbuckling. Their design offers better protection in the event of a collision.
- Black box technology

Benefit of Safety

- Some agencies say we can't afford all these changes or we aren't going to spend money on that.
- Any costs associated with addressing these issues is dwarfed by the huge burden that will be experienced if nothing is done; in financial, personal, societal, ethical and litigation costs.

Creating a culture of safety

Safety in the ambulance environment entails far more than lip service, and even more than putting vehicle operators through a few token hours of driving instruction.

Safety is something bigger; a philosophy that must be embedded across entire organizations and includes:

- Recognition
- Training
- Incentive

Failure to stop at intersections has been identified as an extremely high risk practice



EMS providers are a unique workforce and a fundamentally highly responsible group of individuals who are committed to protecting, supporting and assisting society and its well being. They are accustomed to being routinely closely monitored for clinical performance. In addition, they are also accustomed to following highly structured policy and procedure, particularly in reference to the delivery of medical care. They expect close supervision and scrutiny. **It would appear that this should also extend seamlessly into the realm of vehicle operations and safety.**

Objective Safety

NYS DOH Bureau of EMS Policy # 00-13
The Operation of Emergency Medical Services Vehicles

Emergency Operations (use of lights and sirens) shall be limited to any response which is perceived to be a true emergency.

NYS defines a “True Emergency” as any situation in which there is a **high probability of death or life threatening illness or injury**.

The use of emergency operations must be demonstrably able to make a difference in patient outcome.

Safety management

- A safety culture
- Protective policies
- Protective devices
 - ✓ In the event of a crash
 - ✓ To prevent a crash
- Continuous education and evaluation

Urgent or true emergency?

- Emergency response should be driven by provider knowledge and dispatch information.
- If dispatch has determined the patient is conscious, able to carry on sensible conversation, and not experiencing difficulty breathing. The difference in time between an emergency response and routine driving should not jeopardize the patients' outcome.

Common Examples

- Back pain
- Falls (less than persons height)
- General illness
- Extremity injuries (without serious bleeding)
- Any call in which you can say to yourself “will 5 minutes make a difference in the outcome of this patient” ?

What we can do today

- Assure all occupants are restrained
- Secure patient with over the shoulder harness
- Secure equipment to withstand crash forces
- Use tiered dispatch/response
- Update antiquated policies
- Minimize use of red lights and sirens

Answer this checklist (Yes or No)

- Does your organization have a policy that employees will wear a seatbelt when riding in the ambulance?
- Is the policy specific to both emergency calls and when not responding to calls?
- Has every employee been educated and trained on the policy? Do they understand the importance of wearing a seatbelt?
- Is there a record of the training and documentation showing when each employee received the training?
- Does the policy outline the guidelines for disciplinary action in the event the policy is not followed?

EMSCloseCalls.com

Quote from Jeff Clawson, MD
Founder; National Academy of Emergency Dispatch

The indiscriminate use of lights and siren mode is an out dated practice not supported by science, the medical community, or even the public we serve.

To continue the unsafe and outdated practice is to violate Hippocrates' first law of medicine: “First, do no harm.”

Operation Safe Arrival

VFIS has launched "Operation Safe Arrival" in Arizona, California, Colorado, Connecticut, Florida, Illinois, Maryland, Missouri, New Jersey, New York, North Carolina, Pennsylvania, Tennessee, Texas, Virginia, Washington and Wisconsin; an initiative aimed at increasing awareness and reducing the frequency and severity of accidents. One major initiative is aimed at heightening awareness of intersection safety among the emergency services. Individual fire, rescue and EMS departments enter into a "contract" with VFIS, indicating their intent to participate in and follow the rules of the program.

Volunteer Firemen's Insurance Services Inc

The majority of crashes are related to risky driving practices by EMS personnel or risky policies



Emergency Services Insurance Programs (ESIP)

Ambulance Services Insurance Programs (ASIP)

- EMERGENCY VEHICLE ACCIDENT CASE STUDIES
- INTERSECTION ACCIDENT PREVENTION COURSE
- EMERGENCY VEHICLE DRIVER TRAINING
- EMS RISK MANAGEMENT WORKSHOP
- REDUCING EMERGENCY VEHICLE ACCIDENTS: A MANAGERIAL APPROACH

McNeil and Company

Establishing EMS Response Time Goals

2003 Position Paper by National Association of EMS Physicians

- Shorter response times are not without cost; inappropriate use of lights and sirens, carry established, significant safety risks for EMS providers and the public alike
- Most important is the proper triage of calls to determine which ones require rapid "lights and siren" responses and which ones can be handled in a timely, but safer fashion
- This includes optimizing the dispatch process and 1st responder resources

Key Strategies to Reduce Crashes

● Education

- ✓ Regional (this educational piece)
- ✓ Agency (driver training, policy review with providers)

● Policy development and enforcement

- ✓ Red lights and siren use
- ✓ Intersection, Seat belt, speed limit policy

● Embrace technological applications

- ✓ Black box
- ✓ Onboard camera's (rear, frontal activated by g-force)
- ✓ Improved dispatch information (patient status/priority)

What we can do tomorrow

- Require standardized driver training
- Reevaluate who is driving these vehicles
- Require medical priority dispatch centers
- Implement driver and vehicle monitoring technology as vehicles are replaced
- Consider van style ambulances
- Support legislation to improve ambulance construction safety standards

Small changes can make
a big difference

CULTURE OF SAFETY

- PREPARE – review your own safety record
- TEACH – safety and hazard awareness
- REACH – out with safety information to all your EMS providers
- RESPOND – with the best safety practices

Nova Scotia's Model Plan

This program is designed to bring a culture of safety to all staff operating system vehicles. All staff operating system vehicles are trained in "Low Force" driving and operation of vehicles that provide maximum safety to patients, providers and the general public. This program has two major focuses:

- firstly, advanced levels of emergency health care is provided at the scene of the emergency and during the transportation to the receiving facility. This emergency health services system is a patient focused system, rather than just rapid transportation
- secondly, all ambulances are equipped with on-board driving computers (black box) that record all driving activities in the vehicles, as well as provide audible feedback to the vehicle driver.

Nationally Accepted Position Statements

To provide guidance to EMS Medical Directors and System Managers at all levels, the National Association of EMS Physicians and the National Association of State EMS Directors endorse the following positions regarding the use of warning (Red) lights and sirens during emergency medical vehicle response:

- Remember the definition of a true **emergency** is a situation in which there is a **high probability of death or life threatening illness or injury.**

- EMS dispatch agencies should utilize an emergency medical dispatch priority reference system that has been developed in conjunction with and approved by the EMS Medical Director to determine which requests for prehospital medical care require the use of lights and sirens.
- Except for suspected life-threatening, time critical cases or cases involving multiple patients, lights and siren response by more than one vehicle usually is unnecessary.

- EMS Medical Directors (regional, agency) should participate directly in the development of policies governing emergency response, patient transport and the use of lights and sirens.
- The use of lights and sirens during an emergency response should be based on standardized protocols that take into account situational and patient problem assessments.

- The utilization of emergency warning lights and siren should be limited to emergency response and transport situations only.
- All agencies that provide emergency medical care should institute and maintain emergency vehicle operation education programs for all vehicle operators.
- All vehicle related collisions occurring during an emergency response should be evaluated by EMS system managers and medical directors.

8. A national reporting system for emergency medical vehicle collisions should be established.
9. Further scientific studies evaluating the effectiveness of lights and sirens under specific situations should be conducted and validated.
10. Laws and statutes should take into account prudent safety practices by both EMS providers and the general public.
11. National standards for safe vehicle operation should be developed.

PREDICTABLE
PREVENTABLE
and
NO ACCIDENT

BE SAFE OUT THERE

Work Cited

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