

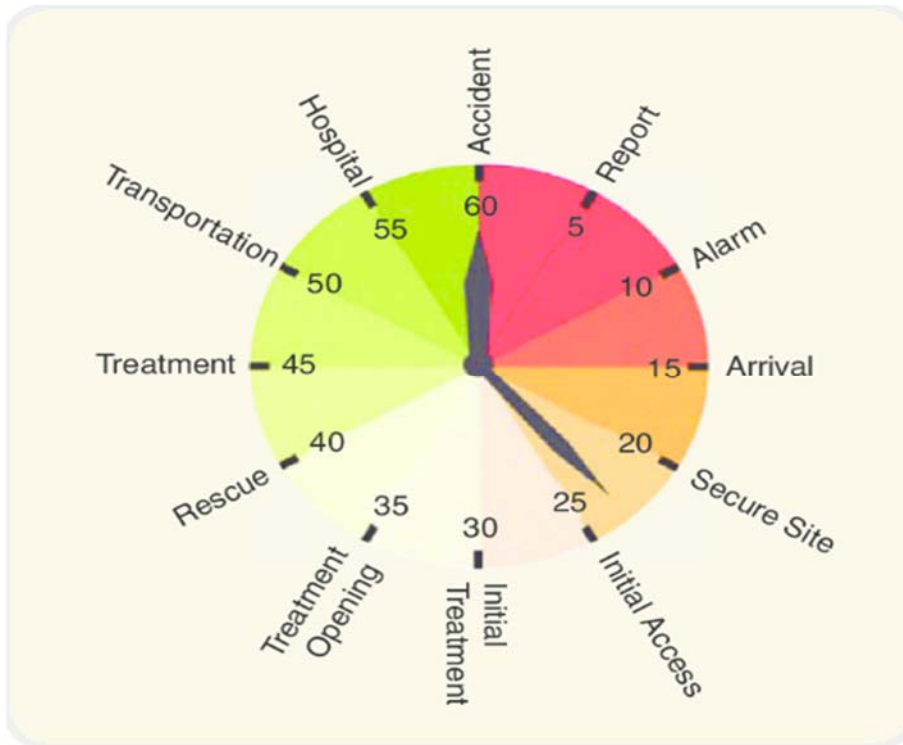
The Golden Hour Emergency Response on Rural Roads

There are generally four tenets of traffic safety. They are Engineering, Education, Enforcement and Emergency Services. While great strides in the first three have proven effective in heading toward Vision Zero, emergency services can also play an important role toward this vision.

The first death from a roadway crash was recorded in 1896. It was said at the time that “this must never happen again”. But more than 100 years later, the World Health Organization’s (WHO) data shows that approximately 1.25 million people are killed from road crashes every year and as many as 50 million are injured. Road crashes ranked the 11th leading cause of death, accounting for 2.1 percent of all deaths globally and the second leading cause among people aged 5-29.

In emergency medicine, the “Golden Hour” refers to the immediate one-hour time period following a traumatic car crash injury, during which, chances of preventing death by way of prompt medical treatment are the highest. The phrase was first introduced when soldiers were being provided with emergency medical aid at the close of World War II and the Korean conflict.

When it comes to providing roadway emergency medical services to crash victims, the single most prevalent cause of death for road crash victims is blood loss, mainly from failing to provide lifesaving treatment immediately to the victim. This illustrates the vital need for institutional preparedness supported by an emergency response mechanism. But like any system, one must first understand the process of a traffic crash emergency call and look for opportunities for improvement.



The above clock representation shows the 12 steps from a crash location to the hospital. Unfortunately, approximately 36% of fatal crashes in rural areas had response times greater than 60 minutes. Only 10% of fatal crashes in urban areas exceeded the 60-minute limit (NHTSA). According to the National Highway Traffic Safety Administration (NHTSA), the response time in rural areas is not improving. The time required for rural service providers reaching patients needs to improve

There are many factors that can be implemented. This paper will not address all in detail but will mention a few for consideration.

Continue to improve rural roads so emergency responders can navigate the road quickly and without incident:

According to (NHTSA), delay in delivering emergency medical services is one of the factors contributing to the disproportionately high fatality rate for rural crash victims (NHTSA 1998). In addition, the safety of EMS personnel is of serious concern, particularly when the crash fatality rate for EMS vehicles per mile traveled is estimated to be more than 10 times higher than that for heavy trucks (Levick 2008). Ambulance vehicle crashes not only cause new casualties but also delays the golden rescue time for the patient.

Create funding for fulltime EMS personnel to be on standby:

Most rural EMS responders are usually volunteers. There is not enough emergency demand to warrant full-time positions. As such, when an emergency call comes in, the volunteer EMS staff will probably have to drive to the station, change, and then proceed to the crash site. In most cases, these are sacred

minutes that can be shaved off if there were full time EMS personnel at the station. Again, this takes funding but might well be worth the investment.

Use ITS technology:

A pilot project in Italy with the car maker Fiat, is using a black box system to give real time information to the Emergency response team with respect to vehicle crashes. The Accident (Crash) Information and Driver Emergency Rescue (AIDER) project's main objective is the reduction of road crash consequences by optimizing the rescue management in terms of response time and effectiveness. AIDER vehicles will be equipped with a detection system to monitor the on-board pre- and post-crash environment. The project envisaged a kind of automotive 'black box', which would continually assess a car's environment, including speed, terrain and many other factors. Should there be a crash, the box would perform a quick calculation, comparing the state of the vehicle before and after impact. This would yield important information about where the car was hit, how quickly the car stopped, and therefore how severe the crash was. The box would then alert a call center with essential details about the nature of the crash, which could be reconstructed. Since the emergency services would be contacted immediately and provided with details about the crash, they would arrive more quickly and be better prepared for specific injuries.

In summary, for emergency medicine, the "Golden Hour" refers to the immediate one-hour time period following a traumatic car crash injury, during which, chances of preventing death by way of prompt medical treatment are the highest. Approximately 36% of fatal crashes in rural areas had response times greater than 60 minutes. There is a need to improve this time as we push toward vision zero. This is a complex logistical issue which no single solution will solve. However, as technology improves, we can improve on the Mayday system already in use in most vehicles. A "Black box" system like AIDER will not only improve response time but alert EMS workers with likely crash injuries and thus be better prepared to aid the crash victims.