

IOCOM WHITEPAPER:

EMERGENCY MEDICAL RESPONDER TECHNICAL CONCEPT



IOCOM[®]

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The timeliness and effectiveness of initial response are crucial in assuring the positive outcome of a trauma victim. This whitepaper presents a concept to improve the effectiveness of the initial response by an EMT team and allow a doctor to assist with a trauma victim from a remote location. By providing the doctor with the tools to see the scene, communicate with the EMT specialist and monitor needed critical data, the doctor can add timely advice that may be critical in a positive patient outcome. They will also have first-hand information on the status of the victim, prior to his or her arrival at the trauma center.

With recent advancements in wireless carrier-based networks from Sprint, AT&T and other companies, a stable and highly available network now exists in urban areas. IOCOM's visual communication solutions work very well over these networks and can leverage this ability to provide a visual link between an EMT working on a critical patient and a doctor in an ER. This provides the EMT with another set of eyes and ideas while providing the doctor with important first hand information.

SETUP

The ambulance is outfitted with an IOCOM solution, enabling a remote party in the hospital to receive visuals from the interior and exterior of the ambulance, as well as important data from the ambulance's instruments. Additionally, the IOCOM solution enables real-time communication with the EMT. The mobile IOCOM solution then connects to the hospital through an IOCOM UCS via a wireless data connection.

Many ambulances already have a computer that is built into the vehicle to support other functions. If no such computer exists, one may be installed. The IOCOM software is then loaded onto the PC and connected to fixed Pan/Tilt/Zoom (PTZ) camera(s), a wireless audio headset for the EMT, and connections to critical medical equipment such heart rate monitors, blood pressure cuffs and other data points.

A PTZ camera or cameras are placed in the ambulance to provide coverage of the interior and exterior of the ambulance where medical attention to a patient would most likely take place. This may be a single camera



positioned inside the ambulance with a view out a door. A doctor at the remote hospital controls the camera to pan or zoom in on important areas, allowing the EMT to work without having to worry about adjusting the cameras.

The audio link can be accomplished via a headset that the EMT wears that is connected through the PC, an existing audio system can be used. The key element is that the audio device should be hands free and provide a private connection to the doctor. The doctor's audio back to the EMT should be through an earpiece or headset so that the doctor can freely communicate with the EMT and not worry about the patient being disturbed by the information. This also helps to ensure the EMT can hear the doctor in a noisy and chaotic environment.

The IOCOM system can accept any VGA or video feeds and send these as separate video windows to the remote sites. This can be used to link in any medical telemetry information in the ambulance back to the doctor as well as allow the doctor to share information to the EMT. This provides the EMT with a second set of eyes on the critical patient data and ensures rapid response to any changing conditions. It also allows the doctor to share graphics or detailed visual information to make sure instructions are clear and concise.

As the IOCOM system allows for multiple sessions at one time, an ER unit can work with multiple ambulances at one time. A single ER can then support many ambulances on the same system without needing to learn new equipment.

RESULTS

This improves response to a critical trauma emergency by bringing the doctor to the patient and providing direct interaction with the EMT. This results in better treatment for the patient on the scene, allows the EMT to focus on the job at hand, and provides the emergency room with first hand data so they can prepare for the patient's arrival.

This concept provides an audio, video and data link between a trained trauma doctor in the hospital and the EMT in the ambulance, so that they can combine their expertise for the best outcome for the patient. Critical information is passed in real-time to the doctor so that he or she can evaluate the situation and provide input to the EMT. The EMT can ask questions or discuss the best course of action without needing to explain every detail verbally or stop the current procedure to get to a new location. The doctor and EMT see all the same information and can communicate with each other in real time.

As the inputs are automatically sent by the IOCOM system and the doctor controls the system remotely. The EMTs are free to operate as they have in the past without needing to worry about the system. The IOCOM unit in the ambulance is joined to a session by hitting a single button en route or upon arriving on scene. The video, audio, and data points connected to the system would then come on line and be fed to the doctor automatically. The doctor would then determine what pieces of information were important to see and control the cameras to get the best possible view of the scene. This frees the EMT to concentrate on the victim and continue to function as they have in the past but with the added benefit of a doctor collaborating on the patient in real time.