Rural Intelligent Transportation Systems (ITS) Toolkit

Smartphone Application for First Responders

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Photo: Courtesy of First Net

Description: Smartphone applications for first responders can be used to improve communications at the scene of an incident. For example, Emergency Medical Technicians (EMTs) could send patient vital information, photos, videos, and audio files to the nearby hospital so that the emergency room can prepare for arrival or an EMT could access patient records to view any drug allergies. These applications can also allow for the hospital to communicate with EMTs in the field. Response times are 50% longer in rural areas, so these applications work to facilitate and increase communication between the first responders and the hospital during patient transport. Patient care is improved because the hospital is informed of a patient's condition and vital information in advance, which expedites treatment upon arrival.

Rural Transportation Critical Needs	Issues Addressed	Strategies Achieved
☐ Crash Countermeasures	☐ Emergency service notification time	☐ Road User
☑ Emergency Services	☐ Emergency service response time	☐ Road
☐ Operations & Maintenance	☑ Communications between multi-jurisdictional/multi-agency emergency service personnel	☐ Vehicle
☐ Rural Transit & Mobility		☑ Safety Culture
☐ Surface Transportation & Weather		☐ Engineering
☐ Tourism & Travel Information		☑ Emergency Response
☐ Traffic Management		☐ Enforcement
		☐ Education

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Applicability

- Emergency response applications are applicable to any location. In rural areas where response times are typically slower, emergency response applications can provide easier access to information, which can allow the hospital to better prepare for the patient. In some cases, this could be the difference between life and death.

Partnerships

- Applications benefit from collaboration among numerous agencies, which may include:
  - Departments of transportation (local, state, federal)
  - First responders
  - Local hospitals and trauma centers

Key Components

- Smartphone
- Smartphone application
- Database
- Secure server
- Website interface
- Computer

Examples of Implementation

- **FirstNet**

FirstNet uses a high-speed, broadband and data network dedicated to public safety. FirstNet is an application to provide emergency services personnel with quick access to patient information and allows for information exchange between EMS personnel in the field and an emergency room. This application allows for patient information to be securely accessed and for EMS to upload vital patient information including audio and video to a local hospital. This application also allows for the hospital to be in contact with the EMS personnel while they are in transport.

- **CrashHelp**

The CrashHelp application was pilot tested over six months near the Cuyuna Regional Medical Center (Minnesota). A total of 88 reports were sent over the application during the first phase of the project, and 239 reports were sent during the second phase of the project. EMS reported that the application was simple to use and appreciated the ability to provide audio files to the medical center. The emergency department found that the application helped with patient pre-registration and preparing for patient arrival.

- **Life Source Health**

Life Source Health is currently developing a mobile phone application, *At The Scene*, to provide first responders with information on a patient's current medications, allergies, recent hospital admissions, health history, recent vital signs, advanced directives, and next of kin. In rural areas where response times can be slower, easy access to critical patient information is extremely important.

Implementation Considerations (Pro)	Implementation Considerations (Con)
• Improves communications at the scene of a crash. • Provides first responders with vital patient information. • Streamlines information collection on the scene.	• Need to properly train EMTs/first responders on how to use the application. • Need to make sure the patient data is secure. • Gaps in wireless coverage could cause issues with data transfer.

Opportunities for Future Expansion

- As these types of applications become more readily available, first responders could provide feedback for new application development as to what types of information and services would be useful. In the future, connected vehicles could potentially store driver information (insurance, allergies, medications, etc.) that could automatically be uploaded to an emergency response application if the vehicle is involved in a crash.

Additional Resources

- University of Minnesota Center for Excellence in Rural Safety *CrashHelp Factsheet*, found here: http://conservancy.umn.edu/bitstream/handle/11299/175596/CERS_Fact%20Sheet_CrashHelp_2012.pdf?sequence=1&isAllowed=y
- *Emerging Digital Technologies in Emergency Medical Services: Considerations and Strategies to Strengthen the Continuum of Care*, found here: https://www.ems.gov/pdf/11792-EmergingDigitalTechInEMS.pdf
- *First Responder Mobile Application Development Best Practices Guide*, found here: https://www.cisa.gov/sites/default/files/publications/12-08-2014%20First%20Responder%20Mobile%20Application%20Development%20Best%20Practices%20%20%20FINAL%20508%20compliant_0.pdf
- *CrashHelp Project Page*, found here: http://www.cgu.edu/pages/9169.asp

Useful Tip

Data from smartphone applications for EMS, like crash location, dates/times, and whether someone was injured and transported to a hospital, could be used to provide identifying information to a state's crash database.

Cost Range

(Cost/financial information, where noted, is based on 2016 dollars (unless otherwise specified). Cost/financial information is estimated, and will vary based on size and scope of project, number of units, etc. In general, capital costs include initial purchase costs of hardware, software, and other required equipment. Maintenance and operations costs include staff time to operate, monitor and maintain systems; data collection; system upgrades; evaluation; etc.)

Capital Costs: The total capital cost for this tool is anticipated to be higher (more than $250,000). There is a need to consider the costs to develop the application as well as the costs to provide a secure database for patient information. Currently, the smartphone applications mentioned in this fact sheet are in development and are not yet available to the public for purchase.

Operations Costs: The operations and maintenance costs for this tool are anticipated to be medium ($50,000 to $100,000) to high ($100,000 to $250,000). There will be a need to maintain the software over time and potentially to make modifications to the application as technology advances, particularly modifications related to devices such as tablets and smartphones.

National Center for Rural Road Safety

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