Fire departments have been in existence for years. They not only respond to various types of fire incidents, inspect buildings, and protect the public through education and training, but they also provide emergency medical care to patients. How they perform such care varies across the nation. For example, some fire departments only provide extrication services while others function solely as first responders. Still others act as the EMS agency by assessing, treating, and transporting the patient.

Just as the documentation of fire incidents is important to a fire department, so is the accurate documentation of EMS activations. Every detail related to the EMS response — from times, location, patient assessment, and treatment — is critical. Not only is this information valuable concerning the individual electronic patient care record (ePCR), but also by providing vital information for generating agency/department statistics.

What is NEMSIS?
The National EMS Information System (NEMSIS) is the national repository of all 911-initiated EMS activations in the United States. In addition, medical transport, interfacility, mutual-aid
and intercept calls are submitted via statewide data-collection systems to NEMSIS. Currently, 28 states and territories submit clinical data related to EMS activations and demographic information characterizing the responding agencies. The creation of NEMSIS allowed for the standardization of pre-hospital data collection, similar to what the National Fire Incident Reporting System (NFIRS) has done for fire incidents.

A subset of the national EMS standard dataset is submitted to NEMSIS, aggregated, and made available to the public via static reports or an OLAP data cube, the latter of which enables faster processing of the information. Using these data, the NEMSIS Technical Assistance Center (TAC) provides to the scientific community an EMS research dataset that, for 2009, included more than 6 million EMS activations. A dataset that goes back two years is readily available to the public on the NEMSIS website (www.nemsis.org); this dataset, which is continually updated, currently includes more than 14 million records. The NEMSIS TAC currently is working with another 24 states that are making efforts to submit EMS data.

For several decades, federal and scientific reports have publicized the fact that little empirical evidence exists to support much of the clinical care that is performed in an out-of-hospital setting. The vision associated with the NEMSIS national database is that, once populated by the majority of states and territories, it would serve as the dataset used by researchers to evaluate the effectiveness and efficiency of patient care provided by EMS agencies, whether they are hospital-based, fire-based, or operating at a community or private level.

Currently, public officials and policymakers are attempting to ensure that pre-hospital-based medical practice is "evidence-based," i.e., healthcare practice based upon the best-available scientific evidence. The NEMSIS project is building a national infrastructure, based upon
the clinical information we provide, to
document and evaluate the patient care
we offer. Our ability to offer beneficial
patient care will improve if the data is
evidence-based and continually evalu-
ated. Only through the use of a stan-
dardized EMS dataset can pre-hospital
care be analyzed and improved upon on
a national level.

**Is NEMSIS Part of NFIRS?**
Essentially, the answer is “no.” NEM-
SIS recognizes that fire departments
nationwide collect fire-related infor-
mation. The data related to a true fire
incident are significantly different than
the data necessary to document a pre-
hospital patient-care response and
encounter. Collecting data for NFIRS
and NEMSIS may appear to be a duplica-
tion of efforts by fire personnel, but
with systems integration some of the
data can be shared. On a fire incident, if
patient care is provided, such data can
be populated from one system to the
other. Those data elements may include
details related to the incident address,
the patient’s age and gender, the EMS
provider’s assessment and impres-
sion of the patient’s condition, and the
treatment provided — all are pieces of
information that can be shared between
the two systems.

Generally speaking the NFIRS data-
set rarely is expanded between what is
collected at the local department level
to what is collected at the state and
national levels. If approved by the state
fire marshal’s office, NFIRS data can be
submitted directly by a fire department
to the national database. The state fire
marshal’s office can in turn get such
data back from the NFIRS for each fire
department within its state.

This same functionality does not exist
within NEMSIS. The NEMSIS Version
2.2.1 EMS dataset includes more than
400 elements. Of those elements, a small
subset is submitted to NEMSIS and the
national repository. (See “NEMSIS Ver-
sion 2.2.1 Dataset Core” on page 56.) For
its own purposes, an EMS agency needs

<table>
<thead>
<tr>
<th>Organizational Status</th>
<th>Count of Events</th>
<th>Avg EMS System Response Time in Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>4,859,602</td>
<td>10.7</td>
</tr>
<tr>
<td>Mixed</td>
<td>809,698</td>
<td>11.6</td>
</tr>
<tr>
<td>Non-Volunteer</td>
<td>3,884,745</td>
<td>10.4</td>
</tr>
<tr>
<td>Volunteer</td>
<td>165,359</td>
<td>11.4</td>
</tr>
</tbody>
</table>

NEMSIS 2010 response
times by organizational
status. System response
time in minutes is the
difference between EO5.06
Unit Arrived
on Scene Date/Time and
EO5.04 Unit Notified by
Dispatch Date/Time.

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more information, such as the following:
- Patient’s name and address.
- Patient’s date of birth.
- Detailed information about the incident site.
- Details related to the responding crew members (including names, certification levels, and roles in relation to a particular response, such as driver or primary caregiver).
- The treatments administered by crew members to the patient.
- The success rate for specific treatments.

Although this information may be required or is of interest at the state level, these data currently are not required at the national level. Therefore, the data cannot first be submitted to NEMSIS and later be provided back to the state. Although the NEMSIS TAC is a public health authority as an agent of the National Highway Traffic Safety Administration, NEMSIS does not collect protected health information.

NEMSIS and Fire-Based EMS Agencies

Fire departments were responsible for about 39% of the 1.6 million records submitted to NEMSIS in 2009. As the NEMSIS national database grows, those numbers are expected to increase, largely because of the states that will begin to submit data. To view the states that already have submitted data to NEMSIS, please visit [http://nemsis.org/support/stateProgressReports/index.html](http://nemsis.org/support/stateProgressReports/index.html).

But it also will grow as departments strive for greater transparency, which is especially critical for fire departments, which traditionally have not been self-sustaining. Consequently, the need exists for fire administration to report to city councils the work that is being performed by stations and personnel, in order to justify the department’s budget.

More and more fire departments, if they are not providing EMS care and transport currently, are moving in that direction. Through the use of the NEMSIS standard, an electronic EMS data collection system, good EMS documentation by fire personnel — aided by proper education and quality-assurance processes — and good reporting tools, fire departments can provide the requisite transparency to their city councils.

There are ways the ePCR data can be utilized by fire department personnel to make decisions. The initial step is to ensure that all of the data is being documented accurately by personnel. A quality-assurance process should start immediately. Identify what data is lacking and who needs to improve their documentation skills. Fire department and EMS agencies can use the NEMSIS ver-
Diabetic patients by incident disposition. It should be noted that more patients with a PPI of diabetic are transported than are released. This may not be the case for a specific agency or department.

Once the data is in the system, users can mine many different types of information that will increase and improve the functionality of the department. Frequent NEMSIS dataset queries used by EMS agencies nationally for quality-assurance purposes include the following:

- Response times (by vehicle, crew member, day of week, time of day, and adherence to an agency or local standard).
- Incident disposition by crew member (no loads).
- Patient treatments (medications administered and procedures performed).
- Transport of patients to appropriate destinations.
- Hospital team activations based on agency protocol.
- Incident dispositions based on provider primary impression (PPI), for example, diabetic. This data can be queried at an agency/department level based on the individual crew member, shift or station, or on the agency/department as a whole.

The use of a qualified EMS software product that adheres to the NEMSIS dataset, coupled with good, accurate, valid ePCR documentation only can increase the amount of useful information available to department personnel. Whether that person is a firefighter, EMT-basic, EMT-paramedic, captain, or fire chief does not matter: ePCR data enhances knowledge — and, as the 16th-century philosopher Sir Francis Bacon once opined, knowledge is power. It's all in how you use the data. 

Karen Jacobson, BA, NREMT-P is the director of NEMSIS. She also is with the University of Utah School of Medicine's Department of Pediatrics, Critical Care. For more information, contact the NEMSIS Technical Assistance Center at www.NEMSIS.org.