



## NEMSMA Position Statement and White Paper: Process and Outcomes Data Sharing between EMS and Receiving Hospitals

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# NEMSMA POSITION STATEMENT AND WHITE PAPER: PROCESS AND OUTCOMES DATA SHARING BETWEEN EMS AND RECEIVING HOSPITALS

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## ABSTRACT

Emergency Medical Services provider agencies and programs for systems of care for time-sensitive conditions in many communities and regions struggle with hospitals to obtain feedback data regarding patient outcomes and hospital processes relevant to EMS quality programs. EMS provider agencies also have issues in providing information to hospitals at the time of patient transfer to support continuity of care. The paper presents a position statement and supporting rationale from the National EMS Management Association on the bi-lateral exchange of data between EMS and hospitals. It examines the underlying issues and offers recommendations for how the various barriers to bi-lateral information exchange can be resolved. **Key words:** emergency medical services; quality management; data exchange; position statement

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## INTRODUCTION

Quality assurance and improvement (QA/QI) are fundamental responsibilities of healthcare providers. Emergency Medical Services (EMS) agencies have struggled to get feedback and establish data sharing processes with hospitals on patients treated in the field. Far too often, hospitals have been reluctant to share patient outcomes or process details with EMS.

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EMS (inclusive of ambulance services, non-transport agencies, 9-1-1 communications centers, and their associated local regulatory/medical oversight entities) need feedback and data for several purposes, but most importantly, for quality improvement. Without clinical outcomes feedback, EMS does not find out if field or dispatch level clinical impressions were correct. Without feedback on downstream processes of care, EMS cannot determine if their notifications of hospitals on cases like significant trauma, STEMI, and stroke were effective in improving treatment times. Without feedback on diagnoses, EMS cannot determine if hospital destination decisions were appropriate. These are just a few examples of why feedback and data sharing between EMS and the rest of the healthcare system is crucial to reducing errors, gaps, delays, and inefficiencies.

EMS agencies now deliver a broader scope of care with the provision of community paramedicine. This new model of care intensifies the need for timely feedback and data sharing supporting QA/QI activities. Therefore, the full integration of EMS information with the rest of the healthcare community is more important than ever.

This need for data sharing is bi-directional. Hospitals need EMS information for the clinical continuity of care, for their own QA/QI processes, participation in clinical quality/research registries, and to support efforts in obtaining service line accreditation for a variety of time-sensitive conditions (1–3).

As the healthcare payment system transitions between traditional fee for service to alternative payment models, integration of patient records between EMS agencies and hospitals is necessary. This information integration is required to qualify for reimbursement under bundled payment (4) and accountable care organization (5) programs. As key elements in systems of care for time-sensitive emergencies, EMS agencies and hospitals could become accountable for clinical and operational performance, individually and collectively. The ‘at-risk’ payers will be paying for the overall episode of care in a manner that distributes funds between EMS and other providers with the factoring in of any pay for performance incentives (6).

Public accountability for clinical performance is also becoming more ubiquitous (7–9). Healthcare systems use EMS data in the calculation of performance measures used in public reporting programs for hospitals and systems of care. EMS uses the hospital and healthcare system and data to guide efforts to improve the downstream impact of actions taken in the field.

Despite the many reasons for data exchange between EMS and hospitals, it remains quite limited in most communities. Commonly, ambulance crews provide a verbal report to the receiving hospital at the time of patient transfer. The provision of a digital or physical copy of the EMS patient care report to the receiving hospital is usually delayed, sometimes for as much as 24 hours. This is a significant problem for the continuity of care. EMS bears the brunt of responsibility for improving this information transfer cycle time.

The information regarding outcomes and relevant processes of care data communicated from hospitals back to EMS is a significant bottleneck. Some hospitals send anecdotal feedback reports on individual cases to the EMS crews on selected high-risk case types (i.e., major trauma, STEMI, and stroke). While helpful, this anecdotal feedback has limited utility in organizational and systems-level quality improvement efforts. Feedback loops on more routine case types and feedback in any sort of aggregate format to facilitate agency and system-level quality efforts and research is still quite rare. Notable examples of aggregate feedback relevant to EMS includes clinical registry reports on acute myocardial infarction (1, 2) and out-of-hospital cardiac arrest (10).

## POSITION STATEMENT

It is the position of the National EMS Management Association that that following "best practices" should be implemented by EMS agencies and receiving hospitals:

- Ambulance services should provide a patient care report at the time of transfer to the receiving hospital. Initially, this can be a verbal report. An abbreviated written report [physical or electronic] should be provided to the receiving hospital before the ambulance crew leaves the hospital. The full EMS report [physical or electronic] should be provided as soon as possible, never to exceed 24 hours from the time of patient transfer. The abbreviated written report should contain, at minimum, the following information:
  - Ambulance service name and unit identifier
  - Patient name, date of birth, and sex
  - Mechanism of injury or medical complaint including onset, duration, and history

- Injuries or illnesses identified including neurological, metabolic, and cardiovascular observations.
- Symptoms including vital signs.
- Treatments administered including time, medication doses and responses, and other pertinent parameters
- Field impression(s) and exclusions
- Pertinent negatives such as allergies
- Hospitals and other receiving facilities should routinely provide EMS providers agencies with discharge summaries for patients transported to the emergency department or directly admitted to an acute specialty care or diagnostic area (e.g., direct to the cardiac catheterization lab for presumed STEMI; direct to CT for presumed stroke). These should be sent to EMS provider agencies at the same time as discharge summaries are sent to the physicians who consulted on the case.
- Hospitals should also provide results of pertinent diagnostic tests, including lab results, images, and critical time intervals for time-sensitive emergencies (e.g., major trauma, cardiac arrest, stroke, STEMI, sepsis, pulmonary embolism), whether field alerts were declared or not. The reports should be in an electronic format with discrete data elements that can be readily utilized electronically for quality improvement in aggregate reports and analyses. These data elements and their formats, including images, should be standardized for each time-sensitive condition. The standardization allows EMS provider agencies to aggregate feedback from multiple facilities to generate, evaluate, and improve overall EMS performance metrics.

## BARRIERS TO DATA EXCHANGE

There are a variety of legal, technical, and organizational barriers to implementation of the sorts of bilateral data exchanges described in this position statement.

### Legal Barriers

Healthcare law can be confusing and complicated. Since its inception in 1996, the Health Insurance Portability and Accountability Act (HIPAA) has caused healthcare organizations to reconsider how they share information. Like many health care systems, EMS organizations now employ Privacy Officers to review complicated scenarios and regulations regarding information exchange. With or without Privacy Officers, Covered Entities (CE) may be hesitant to share information due to consequences of unintentional violations. Understandably, they

wish to respect the privacy of patients and protect their sensitive information. However, common misconceptions about HIPAA continue to stifle the flow of information, including data that is essential for improving prehospital and system-level clinical performance and outcomes.

The Office of Civil Rights (OCR) is the body that oversees HIPAA compliance regarding Protected Health Information (PHI). In response to considerable confusion, OCR produced pamphlets clarifying acceptable disclosure of PHI (11, 12). It shows that PHI can be shared without authorization under certain conditions and suggests strategies to overcome barriers.

The law allows a CE to share certain information without the patient's expressed authorization. Reasons include quality improvement activities, creating clinical guidelines, and developing protocols. Three specific factors must be met to share PHI on a given patient – 1) both the hospital and the ambulance service must have a patient relationship, 2) information must be pertinent to the parties, and 3) the disclosing party must release the “minimum information necessary.”

Daily, well-intentioned paramedics ask hospital staff about the outcome of patients they cared for. The OCR explains that providers may speak with another provider or patient in a public area or during “training rounds or in an academic or training institution” (13). However, healthcare providers must take reasonable measures to reduce opportunities to eavesdrop.

While HIPAA explicitly recognizes “oral” (12) information sharing, this may not help in the broader interests of system-wide quality improvement. Face-to-face follow-up by individuals should be addressed on an agency level. Moreover, individual queries may either be bothersome to busy staff, and be incomplete, anecdotal, or conjectural.

It would be preferable to have a mechanism by which data is sent to EMS agencies regularly for all types of morbidities. Such a system is becoming more feasible and practical with advances in electronic medical records and data systems in general.

EMS agencies may be concerned about possessing transmitted data as detailed above, but this is unnecessary. Some EMS entities may have access to or share records with hospitals. For agencies that do not, received outcomes and data would be attached to patients already on file. Full integration of data is desirable; however, a short-term and compliant solution is also available through the “Limited Data Set” (LDS) exemption. LDS allows for data with minimal identifying information to be used in health care operations (13). EMS agencies, as

recipients of PHI, would enter into a data use agreement and accept responsibility for the protection of data received consistent with HIPAA.

Despite numerous misconceptions borne out of fears of liability, HIPAA allows for the sharing of data for specific purposes. The safeguarding of data should be a priority for EMS agencies and hospitals that exchange patient data and other information.

Federal regulations allow data sharing, but the common belief is they do not. It behooves the EMS administrator to forge relationships with local hospitals. Doing so allows both leaders to become comfortable with one another. The EMS leader can learn what is preventing the desired participation, and the hospital leader can understand what is to be gained from sharing data with EMS entities. This sort of closer collaboration has resulted in improved patient satisfaction according to a large hospital system (14). Landman et al. (15) found a factor for their improved acute myocardial infarction outcomes was bi-directional communication.

The point here is that many of the commonly held legal concerns preventing data exchange are misunderstandings and unfounded fears. While all regulations and laws need to be adequately addressed, legal issues should not preclude properly conducted sharing of electronic health records for quality improvement.

## Technology Barriers

Healthcare information systems now have a broad reach, from data analytics to population health management. The primary concern for these systems is security integrity, as they are often prime targets for cybercriminal attacks. Due to their sensitive nature, they are highly secured and often are “silo” repositories within the health system's facility.

An EMS agency's electronic patient care reports (ePCR) and hospitals' electronic healthcare reports (EHR) are comprised of different datasets and fields, making interoperability of health data exchange very challenging. While EHRs are often great at consuming data from a health information exchange, the EHRs ability to produce and export usable data to an exchange is still challenging. The Health Level 7 (HL7) dataset makes this process easier. At present, the HL7 dataset in the EMS-hospital scenario is unidirectional, moving data from paramedicine providers to receiving hospitals. It should become bi-directional.

Efforts have been made to provide EMS crews with real-time information on specific patients (16). For high-quality prehospital care, EMS crews must have access to EHRs during each individual encounter. Regional health information exchanges

(HIE) provide interoperability by allowing access to patient records across disparate electronic health record products (17, 18). A point-to-point tool is available to emergency department staff (18). HIPAA-compliant access is feasible through EMS-ready HL7 sharing to provide real-time medical history crucial for effective patient care. A great deal of the HL7 information is solely designed to be consumed in the EHR. The ability to produce data that an ePCR system can consume is completely different, as NEMESIS V3.4 data is still relatively new. NEMESIS V3.4 is considered the most advanced EMS dataset established so far, which leads the vision of a true exchange of clinical data with HIEs (19).

Another significant obstacle is universal patient identification values. In EMS, we most often utilize an 'Incident Number', which applies to the response. Considerable effort will need to be put into "same patient, same information, same verification processes, and same patient data outcomes processes" to establish meaningful data exchanges. The response may have more than one associated patient, so, therefore, is not always specific to a particular patient.

Conversely, hospital systems apply a Medical Record Number (MRN), which most often is specific to that hospital or hospital-network. More than one MRN might be associated with the same EMS incident number if there were multiple patients from the same EMS incident. Additional systems utilize a myriad of identification numbers, with none of them correlating back to a single, identifiable aspect of that unique patient. This presents a significant challenge in monitoring an individual and accessing their specific health information. Most often, an EMS agency obtains the facility's MRN number and apply it to the patient's ePCR. This gives the hospital system its unique identifier, allowing them to reconcile the ePCR record with the EHR. HIEs often deploy a verification system that allows searching through a database utilizing demographic information to assist in identifying the individual and accessing their health information. The process is helpful for individual patient information, particularly for field providers who desire follow-up information on a patient. These systems do not address the need for aggregate data, particularly in areas that EMS agencies are developing quality improvement initiatives and projects.

NEMESMA advocates for a post-encounter data sharing process that contributes to an individual provider, EMS agency, and industry-wide quality improvement and learning initiatives. Generally, in most cases, hospitals limit follow-ups to high acuity cases. Reasons for this vary, from lack of personnel;

to volume of "critical cases"; to poor relationships between agencies. There may also be a significant time lag time between requests and delivery of information. Timely feedback is best.

When hospital feedback information is obtained, ambulance services often use the Morbidity and Mortality (M&M) conference format, similar to those used in teaching hospitals (20). In hospitals, each specialty involved participates and provides knowledge gained and lessons learned. M&Ms follow an individual case from beginning to end. Patient disposition may range from simple discharge to death. Prehospital M&Ms allow providers to recount for their peers what they saw and how they reacted. When feedback information is obtained from the hospital, all paramedicine providers learn through M&M conferences. Unfortunately, when hospitals do not share patient outcomes and process details, paramedicine providers suffer.

NEMESMA advocates for the establishment of systems capable of bi-lateral data exchange, to include outcomes, on ambulance-transported patients. Such a system enables EMS providers to reach the high-quality levels of patient care expected by the public. There should also be a process for data exchange between EMS and hospitals when patients are transferred between facilities. There is at least one tool now commercially available that provides a secure system that permits data submission and retrieval at the convenience of the provider (21). Ambulance services would benefit from a data transfer system that works at the time of encounter, as well as post-encounter. Ideally, software tools would have the ability to gather outcome information and generate process and clinical performance measures.

The American College of Emergency Physicians (ACEP) identified several datasets that exist to guide quality improvement and measure value-based initiatives (22). There is no reason EMS cannot share in hospital-generated data pertinent to individual agency performance and patient outcomes.

In today's technological environment, rapidly evolving technology creates additional barriers to implementing exchange systems effectively. For EMS systems, there is a significant cost of cellular services to utilize real-time data exchange programs. Incorporating strategic oversight methods to anticipate, develop, implement, and maintain data exchange interfaces and connectivity will be required.

Who should be responsible for the integration costs, and who should provide the funding? This question is often obfuscated, as opinions vary on who is answering the question. In Texas, EMS providers are expected to provide their ePCR information to the hospital within 24 hours. The requirement is usually

provided with either a faxed copy or electronic access to a hospital information hub to find and download the information. An EMS agency will most likely say that the hospital system should burden the cost, as they are already receiving information from the EMS agency. The hospital system often suggests that the EMS system should burden the cost, as the clarity of outcome information is not required by any governing agency for them to obtain. Currently, information from the EMS agency is required to maintain the hospital systems accreditation in areas such as STEMI, stroke, and trauma. To maintain these accreditations, the hospital must obtain prehospital information for registry purposes. A solution to this might be providing incentives for EMS agencies to purchase exchange systems. If a hospital is seeking specific accreditation tied to reimbursement, such as chest pain accreditation, then agencies would be incentivized to burden the cost in the short term. If we do not establish a compromise approach to the costs of integration, it may lead to legislative mandates which will force integration between prehospital agencies and traditional healthcare facilities.

There are systems and programs useful to these goals already funded and developed that may be untapped by EMS. The Health Information Technology for Economic and Clinical Health of 2009 (HITECH) provided initial HIE (Health Information Exchange) grant funding to all states in the US through the State Health Information Exchange Cooperative Agreement Program (23). This system often already has the hospital systems connected for CMS requirements, meaning that the information is available. Most often, there are limitations to the system. Either they are accessed through a 3<sup>rd</sup> party portal or do not integrate well with an ePCR system. Collaboration with ePCR vendors is required to move this technology forward, as only a few systems have integrated successfully with functional outcome data. While this option usually comes with an integration fee, it often is less costly than a completely new system developed by one of the vendors.

### Political and Economic Barriers

As the economics of healthcare continue to put added pressures on delivery systems, the political landscape grows even more polarized. The exchange of information amongst providers is not immune to the pressures of politics. Numerous areas of concern that make the sharing of data restrictive have been discussed within this position statement. Several political hindrances must be overcome for our profession to become truly patient-centered.

Information blocking has gained traction amongst health care systems and elected officials. Information blocking occurs “when persons or entities knowingly and unreasonably interfere with the exchange or use of electronic health information” (24). The Office of the National Coordinator for Health Information Technology (ONC) provides examples of information blocking:

- fees that make data exchange cost-prohibitive,
- organizational policies, or contract terms that prevent sharing information with patients or health care providers,
- technology is designed in nonstandard ways that inhibit the exchange of information.

A study by Adler-Milstein et al. found that 50 percent of respondents reported engaging with health IT companies participating in information blocking, and a quarter of respondents reported hospitals and health systems were guilty of the practice.

In 2015, Congress requested that the ONC develop a report which examines the prevalence of information blocking and strategies to overcome it. Their findings highlighted that “the secure, efficient, and effective sharing and use of electronic health information when and where it is needed is a key component of health care delivery system reform.” With the realization that healthcare spending in the United States has reached \$3.5 trillion (25) as of 2017, it is no surprise that CMS is looking for ways to incentivize the sharing of information while penalizing those that do not. A proposed rule may institute payment reductions for suppliers who fail to implement open data sharing technologies (26). For providers, we must demand that EHR vendors allow for data sharing.

Market competition is another common political barrier to the exchange of health information. Many hospital systems are reluctant to share their data for fear of retribution. As an example, Hospital A and B both publicly report door-to-balloon times for STEMI patients. Hospital A has multiple patients who report door-to-balloon times outside of practice guidelines. A local EMS Director might decide it is reasonable to avoid transporting STEMI patients to that facility and remain patient-centered in its approach to quality. With revenue from a single STEMI patient with PCI placement being in the tens of thousands of dollars, the diversion of just a few STEMI patients to another hospital may lead to significant financial impacts in a competitive market. Knowing this information, the EMS provider agency must be proactive to remain patient-centered. While it is easy to suggest avoiding those facilities, EMS must work with them on their quality improvement

initiatives to aid the process and not abandon them at first sight of areas below the curve. Similarly, the quality improvement professional must accept that there are processes that may be outside of their scope but still acceptable.

Ultimately, the bulk of the mandate has been watered down by allowing providers to use old standards. EMS has already proved it can lead the way through change, and this is no different. Most, if not all, states require a quality assurance program for licensed EMS provider organizations. It is not practical to perform meaningful quality improvement with paper reports. CMS has already made it clear they can and will incentivize reimbursements for using EHRs. We can use this as an incentive to push states without mandatory EHR rules to make the switch.

## CONCLUSION

In summary, a broad implementation of robust bilateral data exchange policies and processes between EMS and hospitals can be very beneficial to all stakeholders. While there are legal and technical challenges, the more formidable ones may be more political and economic. A collaborative effort between EMS agencies and hospitals in a region, working together as a cohesive system of care, may be the best way forward.

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