National Emergency Medical Services Advisory Council
INTERIM
Advisory and Recommendations

Title: **Bidirectional Data Sharing Between EMS and Other Healthcare and Public Health Entities**

As prepared by the Subcommittee on **Integration and Technology**

A. Executive Summary

Healthcare information interoperability, one version of which is "bidirectional data sharing," between healthcare facilities and Emergency Medical Services (EMS) is an expectation in 21st century healthcare, but much of the focus on achieving this technical objective has traditionally been between healthcare facilities and excluded EMS or out-of-hospital healthcare. While in the performance of essential and critical healthcare functions, EMS often experiences significant challenges in the real-time access of important healthcare data on their patient from relevant medical facilities where the patient may already be established, potentially limiting the situational awareness of EMS and the quality of care provided to the patient. In contrast, however, EMS is expected to provide large amounts of patient data in both written and electronic formats to receiving facilities for the purposes of continuity of care.

Additionally, upon conclusion of the traditional EMS patient encounter and handoff to the receiving facility, there is limited to no feedback of any patient data or outcomes back to EMS, thus limiting prime opportunities for performance of quality assurance and quality improvement, as well as limiting improvement in patient outcomes and the advancement of the practice of evidence-based prehospital medicine, and ultimately making this a "unidirectional" flow of data. While there are many potential causes, one of the obstacles to this bidirectional flow includes exorbitant costs for full-scope interoperability, including the costs of cyber-insurance.

Although multifactorial, one reason for the non-sharing of EHR-based data does not pertain to HIPAA-HITECH (US DHHS, 1996), as is often assumed and misunderstood, and has been thoroughly debunked by ample literature and subject matter expertise (Page, Wolfberg, & Wirth, 2020). Rather, the primary reason for non-sharing is a function of limitations within the document-based sharing requirements associated with the Office of the National Coordinator for Health Information Technology's (ONC, now known as the Assistant Secretary for Technology Policy) Meaningful Use framework, coupled with data protection and consent requirements imposed by 42 CFR Part 2 and other SAMHSA-related privacy regulations that form bona fide legal barriers to information sharing. Some of these barriers have been resolved by the 21st Century Cares Act and recent modifications to 42 CFR Part 2

(US DHHS, 2024). These concerns centralize on the general lack of mechanisms for sharing patient data and outcomes securely, selectively, and efficiently back to EMS, per 42 CFR Part 2.

Facilitation of bidirectional data sharing between hospitals and EMS will require open communication between these entities, addressing the unique system-level barriers that are present within their respective lines of communication, recognizing that a range of standards exist that healthcare institutions and EMS agencies can use to determine the optimal methods for information sharing, if only all parties are aware of those options and respective benefits, costs, and implications for clinical care and healthcare operations. Just as EMS is usually mandated to provide patient data to the receiving hospital, there are written rules and guidance in place to both require and facilitate discrete bidirectional data sharing between healthcare facilities and EMS.

B. Recommendations

Federal Interagency Committee on Emergency Medical Services
NEMSAC recommendations for consideration to FICEMS via NHTSA

Recommendation 1:

Urge FICEMS to work with federal partners and subject matter experts to establish a longitudinal task force or ad hoc workgroup to evaluate and further inform strategies that might incentivize, strengthen, facilitate, and encourage bidirectional data sharing through the recommendations and ideas laid out in this advisory, as well as through additional mechanisms not covered here. Given the rapid advancement of technology, a longitudinal task force specifically focused on bidirectional data sharing between EMS and hospitals would be more ideal rather than a limited advisory serving as a snapshot of the capabilities and ideas which existed during its development.

Recommendation 2:

Via FICEMS member CMS, use its regulatory authority to incentivize bidirectional data exchange between healthcare facilities and EMS agencies through exploring existing regulations and conditions of participation and by expanding subregulatory guidance which might further strengthen, facilitate, and encourage bidirectional data sharing.

Recommendation 3:

Via FICEMS member CMS, explore new conditions of participation and regulations that would explicitly require data sharing between participating healthcare facilities and EMS.

Recommendation 4:

Via FICEMS Technical Working Group, Data System Exchange and Analytics Subgroup, as well as the National EMS Information System (NEMSIS) Technical Assistance Center, develop a task force or ad hoc workgroup for researching and making recommendations for significantly expanding the use of the Universally Unique Identifier (UUID) from only trauma registries currently to include additional patient disease-specific or complaint-specific case types for the purposes of helping states build more robust patient registries and tying EMS and hospital data and outcomes together.

Recommendation 5:

Urge FICEMS to work with NASEMSO to provide guidance and education for State, Local, Tribal, and Territorial (SLTT) governments and state EMS directors to utilize the NEMSIS UUID from EMS patient care records and tie it to existing local patient registries, both for trauma as well as for the expanded list of patient disease-specific or complaint-specific case types developed by the NEMSIS TAC as recommended above. The UUID would serve as a single common reference point for which a patient encounter could be tied or joined between EMS data, state-level data, and hospital data. As a result, the UUID could become the data linkage point for which state- or regional-level health information exchanges (HIEs) are built and accessed by both hospitals and EMS agencies.

Recommendation 6:

Via FICEMS member Health Resources & Service Administration (HRSA), consider the addition of a requirement in future Hospital Preparedness Program (HPP) cooperative agreements that each funding recipient designate an EMS Liaison, whose purpose would be to facilitate collaboration, communication, and bidirectional feedback mechanisms with EMS agencies. Recognizing this is not a revenue-generating position, this requirement should also include recommendations on the sustainability of funding for such a position, considering sources such as HRSA/PPRP. This recommendation is expanded upon from a similar recommendation in a previous NEMSAC advisory titled "*Strengthening Emergency Medical Services (EMS) and Hospital Relationships to Improve Efficiencies and Positively Impact Patient Outcomes"* (National EMS Advisory Council, 2022). (Placeholder to crosswalk with EMS Data Manager Advisory)

Recommendation 7:

Via FICEMS member CMS, through the Office of Burden Reduction and Health Informatics, review its authorities through HIPAA interoperability rules to explore whether there are new opportunities for bidirectional data sharing. CMS and the Assistant Secretary for Technology Policy (ASTP, formerly the Office of the National Coordinator for Health Information Technology) have the responsibility and authority to write rules for the non-privacy components of HIPAA which focus on bidirectional data flow and interoperability, and thus define what meets the standard for a certified healthcare record.

Recommendation 8:

Via FICEMS member CMS, make use of its accrediting organization (AO) programs to influence the development of standards to support bidirectional data sharing. Specifically, AOs should incentivize the flow and access of relevant data to EMS agencies by tying the compliance of this task to hospital and healthcare facility accreditation.

Recommendation 9:

Via FICEMS member HHS, recommend the Office for Civil Rights to evaluate 45 CFR Parts 160 and 164 and modify the rules where appropriate to explicitly require healthcare providers to share protected health information with each other for the purposes of treatment and healthcare operations. If the Office for Civil Rights is unable or lacks the authority to modify rules, they should at minimum make written recommendations, provide interpretative guidance, or produce and publish educational materials for healthcare entities to explicitly allow and promote bidirectional data sharing throughout the entire continuum of care between EMS and hospitals.

Recommendation 10:

Recommend that FICEMS work with the ONC/Assistant Secretary for Technology Policy (ASTP) to determine ways to fund further expansion of the Qualified Health Information Network (QHIN) to increase interoperability and information sharing via the framework outlined by the Trusted Exchange Framework and Common Agreement (TEFCA). Currently, individual QHINs are responsible for the costs associated with the personnel, infrastructure, technology, and security associated with a massive amount of healthcare queries from their participating entities and are prohibited from passing those costs onto other QHINs. Thus, mechanisms to provide federal funding to support QHINs would presumably result in additional QHIN development.

Recommendation 11:

Recommend that FICEMS work with the ONC/ASTP to coordinate with state health departments, hospital associations, NASEMSO, SLTT, and state EMS directors to incentivize more broad participation and continued expansion of QHINs to increase interoperability and information sharing via the framework outlined by TEFCA. Currently, TEFCA participation is voluntary and can be selected as an option for meeting CMS' Promoting Interoperability health information exchange measure, but the incentives for participation could be even further expanded to facilitate higher enrollment rates. Additionally, FICEMS should work with ASTP to expand TEFCA governance to specifically include EMS representation.

Recommendation 12:

Recommend that FICEMS work with ONC/ASTP to expand TEFCA requirements to explicitly require responses to queries for quality management and follow-up. Currently, quality management and follow-up are already part of the "health care operations" (HCO) exchange purpose, which is one of six "Exchange Purposes" (treatment, payment, health care operations, public health, government benefits determination, and individual access services). The ability for EMS or smaller rural facilities to obtain follow-up on their patient after delivery to the higher-level receiving facility will drive improved future patient care and is further outlined in the Analysis section below. These responses for follow-up requests and queries are currently not required (Office of the National Coordinator for Health Information Technology, 2024).

Recommendation 13:

Recommend that FICEMS work with ONC/ASTP to create industry standards and best practices for prehospital and EMS software products for patient care documentation. Currently, many EMS software products are on the market and have not been tested or certified by ONC/ASTP and have not implemented the technical standards or capabilities necessary to interact on health information networks. Additionally, many vendors who claim to have the necessary technical standards or capabilities currently lack the certification to prove they have implemented correctly. The certification should also include reciprocity requirements where EMS not only "pushes" the patient care record to the hospital and can successfully query other healthcare providers' data, but should be able to respond to other healthcare providers' queries as well.

Recommendation 14:

Via FICEMS member Administration for Strategic Preparedness and Response (ASPR), further develop the Hospital Preparedness Program (HPP) to incentivize the requirement for designating an EMS Liaison. In addition to many crucial roles, an EMS Liaison would be responsible for developing and ensuring that bidirectional feedback mechanisms remain intact, updated, and efficient. Given the requirement of the HPP to develop healthcare system preparedness and response and collaborate with state and local health departments, the EMS Liaison would be an ideal position to improve interoperability with prehospital and hospital care, which includes the flow of bidirectional data (US DHHS Administration for Strategic Preparedness and Response, n.d.).

C. Scope and Definition

The scope of this Advisory is to improve the healthcare information interoperability between EMS and stakeholders receiving healthcare facilities for the overall improvement of patient care. This is to be accomplished through multiple recommendations to FICEMS members and the Secretary of the Department of Transportation.

For the purposes of this Advisory, bidirectional data sharing refers to the overall healthcare information interoperability. This includes 1) the ability for EMS to access critical data in real-time to facilitate knowledge and decision-making for their patient, 2) provide additional

data to the receiving facility regarding EMS treatment and care, and 3) obtain follow-up information including, but not limited to, the patient's full demographic information, test results, emergency department (ED), outpatient, or inpatient treatment course, updated medical and surgical history, active medications, allergies, final diagnoses, and disposition or final outcome.

Additionally, the term EMS refers not only to transporting agencies, but also to first responder organizations who initially evaluate and treat the patient while awaiting the arrival of the transporting clinicians. While these first responder organizations are not the entities handing off to definitive care, they are critical role players in the healthcare system who deserve the same access to patient data during the initial phases and in follow-up.

Finally, the term "healthcare facilities" can be broad, and traditionally thought of as only hospital emergency departments, given the traditional role of EMS to be paid only for transporting patients to the ED. However, given the rise of ED overcrowding and boarding, there has been more focus placed on empowering EMS to deliver patients to facilities that can best serve their needs and further expand alternative treatment and destination programs. Therefore, for the purposes of this Advisory, "healthcare facilities" refers not only to hospital emergency departments, but also to other receiving facilities including, but not limited to, urgent care facilities, primary care offices, specialty care outpatient clinics, infusion centers, hospital inpatient units, rehabilitation facilities, mental health facilities, hospice agencies, home health, skilled nursing facilities, independent living facilities, sobering centers, long-term acute care facilities, and dialysis facilities.

D. Analysis

The sharing of patient information and data has historically been primarily unidirectional, transferring from EMS to hospital emergency departments or few other receiving facilities, with limited abilities for EMS to get information or critical data in advance of their arrival to facilitate improved care by EMS, or to obtain outcomes data upon completion of the patient encounter. From the moment of first patient contact in the prehospital setting, whether by a non-transporting first responder organization or critical care ambulance, an EMS clinician should have enough access to the patient's medical records and health data to facilitate proper, safe, accurate, and efficient care of the patient, rather than relying solely on information from the patient, family, or friends. EMS Agenda 2050 states "EMS cannot adequately serve members of the community without being better integrated with its partners in healthcare. While the healthcare industry has made some progress breaking down barriers and removing silos, much work remains – and EMS has often struggled to find a seat at the table." Additionally, EMS Agenda 2050 states "the potential to improve information sharing already exists but has yet to be realized. Technology has made it possible for EMS to provide and receive real-time data that can help with decision-making, from patient's health records to safety information about a response location" (NHTSA, 2019). Today, if EMS participates in TEFCA, CareQuality, or a Health Information Exchange, they will likely have access to patient medical history and certainly the ability to send their patient care report to the hospital,

but they currently lack any guarantee for reciprocal data, such as patient outcome. Similarly, if healthcare institutions or facilities attempt to query EMS records, many EMS software vendors lack the technical capabilities to respond to queries. This could be remedied by requiring that EMS software vendors undergo testing and certification by ONC/ASTP to vet their technical capabilities and interoperability and receive a certification to prove that specifications have been met.

Recognizing the importance of bidirectional data sharing between healthcare entities and EMS to facilitate improved patient care and access, the Centers for Medicare and Medicaid Services (CMS) called for participants in the Emergency Triage, Treat, and Transport (ET3) Model to submit an "interoperability plan" demonstrating the ability to share patient data among key stakeholders, as well as mandating participation in a health information exchange (HIE) during the model performance period (Centers for Medicare & Medicaid Services, 2019). This mandate underscored the importance of having bidirectional data sharing to improve patient care, outcomes, and navigation to the right resources. However, since this model was scheduled to end early in December 2023, there is no longer any emphasis or incentive for continued ongoing bidirectional data sharing or interoperability.

Prior to this, in 2015, the U.S. Department of Health and Human Services produced the Federal Health Information Technology Strategic Plan, establishing four goals, of which 2B states "…standardize and expand regional multi-payer claims and clinical data infrastructure to facilitate clinical performance reporting and timely feedback to providers", and also states "EMS practitioners provide stabilizing care and transportation services; having access to a patient's salient clinical information as a first responder can improve patient health and safety. Access to linked outcomes data from hospitals can help EMS systems measure performance, improve their provision of care, and provide timely feedback to providers. Behavioral health, long-term, and post-acute care settings require access to a patient's information to ensure continuity in care services and prevent adverse events, such as medication allergies or errors, from occurring. Public health entities and clinical settings need bidirectional interfaces. These will enable unencumbered provider reporting to public health entities and allow seamless feedback and decision support from public health to clinical providers relevant to chronic health and emergent threats" (Office of the National Coordinator for Health Information Technology, 2015). Understanding this and given that EMS is often the first point of medical contact for civilians into the healthcare system, EMS has been recommended to be deemed an "essential service" that provides important and necessary healthcare services (National EMS Advisory Council, 2022). For this reason, it is critical that EMS be granted access to patient information relevant to the presenting complaint for that encounter.

There have been ample additional documents, reports, and literature that further strengthen the argument that bidirectional data sharing can improve patient treatment and outcomes, public health, and disaster response (Office of the National Coordinator for Health Information Technology, 2016); (Office of the National Coordinator for Health Information Technology, 2017); (Gunderson, Forin, Price, & Reed, 2021). Common themes exist in each of these documents to emphasize the importance of bidirectional data sharing.

Despite multiple entities and sources describing the benefits of bidirectional data sharing between hospitals and EMS, barriers still exist to the full realization and implementation of such. The primary barrier often cited is that of patient data and security via HIPAA, preventing the sharing of data from the hospitals back to EMS. This issue has been thoroughly analyzed and determined that not only does HIPAA allow bidirectional data sharing, it actually encourages it (Page, Wolfberg, & Wirth, 2020); (Office of Civil Rights, 2020). HIPAA was developed "to improve the efficiency and effectiveness of the healthcare system", and central to this is the ability to measure and improve quality in the prehospital healthcare system by analyzing outcome data from patients across the continuum of care – from prehospital treatment through hospital discharge (Page, Wolfberg, & Wirth, 2020); (Office of Civil Rights, 2017). Furthermore, HIPAA provides ample safeguards required by the HIPAA Security and Breach Notification Rules to ensure the protection and integrity of protected health information that is shared with or accessed by EMS agencies, and explicitly states that both hospitals and EMS, with their roles as healthcare providers, are considered "covered entities" (Page, Wolfberg, & Wirth, 2020); (Code of Federal Regulations, 2023), and since EMS practitioners are providing treatment, then disclosures or transmissions of patient information to or from other providers are permissible without the need to obtain patient consent (Page, Wolfberg, & Wirth, 2020); (Code of Federal Regulations, 2023); (Office of Civil Rights, 2002).

Similar to a primary care physician who maintains a relationship with their patient even when the patient is not in their physical presence, an EMS clinician who provides care for a patient is very likely to encounter that patient again within the community. According to a recent large study, repeat utilizers constituted 16% of patients and one-third of all ambulance runs (Sovso, Klojgaard, Hansen, & Christensen, 2019). In addition to patients with chronic diseases, it is well understood that elderly patients are also frequent utilizers of EMS, with another recent study demonstrating that more than 1 in 6 EMS transports of older adults in one state were followed by another repeat transport of the same patient within 30 days (Evans, et al., 2017). The repeat utilization of EMS by these patients further necessitates that EMS have real-time access to the previous encounters at the respective healthcare facilities, given that patients often are unable to fully and accurately report the summary of their recent encounters with the healthcare system.

Not only will EMS have better informed real-time patient assessment and care due to their ability to access the patient's recent complete chart from the respective healthcare facilities, but receiving hospital feedback on this patient afterward from previous encounters will provide a quality assurance that would also improve future care encounters with the patient. The mindset that EMS should no longer have access to a patient's clinical information upon the "conclusion" of the EMS encounter is short-sighted and demonstrates a lack of understanding of the critical and essential role that EMS plays in the overall healthcare system.

In an eye-opening survey conducted by the National Association of EMTs (NAEMT) in 2022 on EMS workforce satisfaction and engagement, 48% of respondents indicated "Strongly Disagree" or "Disagree" when asked whether their agency provides easily accessible patient

outcome information to its EMS practitioners, and only 28% responded "Agree" or "Strongly Agree" (National Association of EMTs, 2022). This was considered one of the multifactorial reasons leading to EMS practitioner burnout and workforce shortages, despite 92% of the same respondents agreeing that they find satisfaction in providing patient care.

The historical mindset of thinking of EMS as simply a transportation commodity needs to evolve into an understanding that EMS is a highly sophisticated, well-trained, licensed, credentialed, and qualified healthcare professional, serving a critical and essential role in the continuum of healthcare. As such, given the emergent or urgent nature of needing rapid access to a patient's medical information, EMS should have real-time access to pertinent medical history from within the patient's medical record, using methods that are accessible and actionable in the field, for the purposes and reasons outlined in this Advisory.

E. Strategic Vision

Currently, many EMS agencies and EMS clinicians are unable to access and obtain relevant patient history which could facilitate improved real-time evaluation and treatment. Additionally, it is not standard practice for healthcare facilities to provide feedback on patient outcomes for EMS clinicians to understand how their prehospital care may have positively or negatively impacted the patient's clinical course downstream. However, there are many examples of communities that have recognized these deficiencies and established quality HIEs that accomplish the exact goals outlined in this Advisory.

The healthcare industry should move beyond a simple mutual understanding or awareness of the need for bidirectional data sharing and towards actionable items that create the mechanisms for bidirectional data sharing and mandate or incentivize compliance with providing pre-arrival and real-time access to patient information, as well as feedback, data, and outcomes to EMS upon completion of the EMS-patient interaction. Utilizing the recommendations and examples outlined in this Advisory, our partner entities should formulate a plan to move EMS closer toward the ideals laid out in EMS Agenda 2050.

F. Strategic Goals

a. Within six months of the publication of this Advisory, FICEMS will assemble a task force or ad hoc workgroup for the development of opinions and subject matter expertise to inform federal partner agencies which might incentivize, strengthen, facilitate, and encourage bidirectional data sharing.

b. Within one year of the publication of this Advisory, DHHS will have CMS publish written guidance on its existing regulatory conditions of participation and expansion of subregulatory guidance to explicitly require bidirectional data exchange.

c. Within one year of the publication of this Advisory, FICEMS member CMS will produce written guidance on how it will use its regulatory authority to incentivize bidirectional data

exchange through existing regulations and conditions of participation and by expanding subregulatory guidance.

d. Within two years of the publication of this Advisory, DHHS will have CMS publish new conditions of participation and regulations that would explicitly require bidirectional data exchange between EMS and hospitals.

e. Within one year of the publication of this Advisory, FICEMS or their designee will have published guidance or education for SLTT governments and State EMS Directors on how to best utilize the UUID to tie EMS data, state-level data, and hospital data, to improve bidirectional data exchange.

f. Within one year of the publication of this Advisory, FICEMS member DHHS will provide written guidance or directives to ASPR on establishing an EMS Liaison as an important component of the Hospital Preparedness Program as outlined in this Advisory.

g. Within one year of the publication of this Advisory, DHHS will have the CMS Office of Burden Reduction and Health Informatics, in collaboration with the Office of the National Coordinator for Health Information Technology, publish new or updated interoperability rules for the non-privacy components of HIPAA for bidirectional data exchange.

h. Within one year of the publication of this Advisory, DHHS will have CMS publish a plan for how its accrediting organization (AO) programs will influence the development of standards to support bidirectional data sharing, including incentives for compliance tied to accreditation.

i. Within one year of the publication of this Advisory, the DHHS Office for Civil Rights will publish modifications to 45 CFR Parts 160 and 164 to explicitly require healthcare providers to share protected health information with each other for the purposes of treatment and healthcare operations.

j. Within one year of the publication of this Advisory, the ASTP will publish written guidance on a process for certification of prehospital patient care documentation systems and vendors to verify interoperability and technical capabilities.

k. Within one year of the publication of this Advisory, the ASTP will publish written guidance on ways to fund the expansion of QHINs and methods to incentivize further participation.

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