



VIA ELECTRONIC SUBMISSION

April 2, 2015

Office of the National Coordinator for Health Information Technology
U.S. Department of Health and Human Services
200 Independence Avenue S.W.
Suite 729-D
Washington, D.C. 20201

Dear Dr. DeSalvo:

We would like to use this opportunity to provide Public Comment for the Nationwide Interoperability Roadmap Draft Version 1.0.

1. General

- a. *Are the actions proposed in the draft interoperability Roadmap the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term?*

We appreciate the Office of the National Coordinator for Health IT's (ONC) interest in advancing interoperability based on this draft Roadmap and share the ONC's interest in expanding the focus from "institutional care delivery and health care providers to a much broader person-centered view of health". This has also been the purview of EMS agencies

nationwide and was included in the 1996 EMS Agenda For The Future¹ published by NHTSA and HRSA. In the Agenda, EMS of the future was described as community-based health management fully integrated with the overall health care system. Our goals at the time were to improve community health resulting in more appropriate use of acute health care resources (NHTSA, 1996).

Over the past twenty years EMS has sought to be a learning healthcare system, even before that term came to be in vogue. Through this approach we, as an industry, have learned a lot about community health, person centric care, and quality management and doing these with very little resources or other tools at our disposal. We look forward to working with ONC in the coming weeks, months, and years to share our experiences and to learn from others who have similar objectives.

We also are cognizant of the semantics used throughout the Roadmap and request your consideration in the use of “interoperability”. Although there are many definitions, we bring to your attention the following definitions and suggest you adopt derivations of these for the Roadmap:

Interchangeability: Ability of a system or product to be *compatible with or to be used in place of* other systems or products without special effort by the user (IEEE 2015²).

Interoperability: The capability of two or more networks, systems, devices, applications, or components to externally exchange and readily use information *across* the stated interfaces —securely, effectively, and with little or no inconvenience to the user (IEEE 2010³).

Intraoperability: The capability of two or more networks, systems, devices, applications, or components to *internally exchange* and readily use information internal to the stated interfaces — securely, effectively, and with little or no inconvenience to the user (IEEE 2010⁴).

¹ National Highway Traffic Safety Administration. (1996). *Emergency Medical Services Agenda for the Future* (No. DOT HS 808 441). Washington, DC: U.S. Department of Transportation. Retrieved from: http://www.ems.gov/pdf/2010/emsagendaweb_7-06-10.pdf

² Interchangeability. 2015. In IEEE Standards Glossary online. Retrieved from https://www.ieee.org/education_careers/education/standards/standards_glossary.html

³ *Draft 3.0 Guide for Smart Grid Interoperability of Energy Technology and Information Technology Operation With the Electric Power System (EPS), and End-Use Applications and Loads*, IEEE Standard P2030, 2010.

⁴ *Draft 3.0 Guide for Smart Grid Interoperability of Energy Technology and Information Technology Operation With the Electric Power System (EPS), and End-Use Applications and Loads*, IEEE Standard P2030, 2010.

For fifteen years the EMS industry has developed open data standards that have resulted in the interchangeability, interoperability, and intraoperability of EMS data and software systems used nationwide by all 19,000 EMS agencies and 850,000 field EMS providers. This has been no small feat and the experience of accomplishing this objective has taught our stakeholders many valuable lessons, as a learning healthcare system should.

What has been missing is the long imagined interoperability with non-EMS health care systems. Although the HITECH Act defines emergency medical service providers as Health Care Providers, and the fact that field EMS providers generate “qualified EHRs”, the final rule did not address this gap and as a result there has not yet been a national effort towards enterprise integration of these nearly 50 million⁵ records annually.

b. What, if any, gaps need to be addressed?

A strong focus on *interoperability* will help address the significant remaining gaps. When viewed from outside of a hospital or physician practice, the ONC’s historical approach has not fostered operability across types of health care providers or provider organizations as defined by HITECH, leaving significant gaps in capabilities and opportunities for further development.

Another gap to be addressed is data interoperability with other public safety disciplines. EMS is at the crossroads of health and public safety and as a result serves as the health care system’s data interface to the external actors such as law enforcement and fire departments. There are currently gaps in these models such as the GLOBAL data exchange model (<http://nij.gov/topics/law-enforcement/strategies/information-led-policing/pages/globalxml-compliance.aspx>) and the National Information Exchange Model (<https://www.niem.gov/>). With the establishment of the First Responder Network Authority (“FirstNet”) and its nationwide public safety broadband network, the pressure for public safety data interoperability may become acute. This system will soon begin providing “wall to wall” wireless data services to public safety agencies and will be a significant factor for consideration not mentioned in the Roadmap.

c. Is the timing of specific actions appropriate?

Due to the work already done to develop interoperable EMS data systems, if the ONC were to begin working on interoperability with EMS data

⁵ Approximately 28 million patients are transported to Emergency Departments each year by ambulance out of 36.6 million requests for service to EMS provider agencies. An additional estimated 14 million patients are transported between facilities or to/from non-emergent physician visits and for other procedures.

systems within the next year, the 2015-2017 timeframe seems appropriate for complete interoperability.

d. Are the right actors/stakeholders associated with critical actions?

We cannot be sure that the right stakeholders are included in the Roadmap because they are not listed and to date the EMS stakeholders have not been invited to the table. We would like to see at a minimum the following stakeholders being specifically invited to participate in the furtherance of this effort and particularly representatives with a data and/or software development background:

- American Ambulance Association (AAA)
- Association of Air Medical Services (AAMS)
- Association of Critical Care Transport (ACCT)
- International Association of Fire Chiefs (IAFC)
- National Association of EMS Educators (NAEMSE)
- National Association of EMS Physicians (NAEMSP)
- National Association of EMTs (NAEMT)
- National Association of State EMS Officials (NASEMSO)
- National EMS Management Association (NEMSMA)
- First Responder Network Authority (FirstNet)
- National Information Exchange Model (NIEM)
- Global Data Exchange Model
- Association of Public Safety Communications Officials (APCO)

2. Priority Use Cases

- A. Clinical settings and public health are connected through bi-directional interfaces that enable seamless reporting to public health departments and seamless feedback and decision support from public health to clinical providers.
- B. The status of transitions of care should be available to sending and receiving providers to enable effective transitions and closure of all referral loops.
- C. Federal, State, provider and consumer use of standardized and interoperable patient assessment data to facilitate coordinated care and improved outcomes.

3. Governance

- a. How can ONC best recognize and support the industry-led governance effort?*

The EMS industry developed and initiated a HealthIT shared governance model beginning in 1994 and has maintained it with the support of a NHTSA funded cooperative agreement ever since. The EMS data system governance model works across municipalities, counties, all fifty states

and six territories, regions, and nationally with numerous forms of business models such as private for profit, private not for profit, fire department based, county owned, hospital owned, and others.

We would welcome discussion with ONC about the EMS industry's experiences with a shared HealthIT governance model across administrative and clinical datasets. We also believe it would be advantageous to hold an EMS HealthIT Governance and Privacy Summit where these topics can be discussed to inform the ONC and other HealthIT stakeholders alike.

4. Supportive Business, Cultural, Clinical and Regulatory

- a. *How can private health plans and purchasers support providers to send, find or receive common clinical data across the care continuum through financial incentives? Should they align with federal policies that reinforce adoption of standards and certification?*

The National Association of State EMS Officials (NASEMSO) is an association comprised of and representing state EMS regulatory office professionals. NASEMSO has worked since 1994 providing technical assistance to states that have regulatory authority over EMS HealthIT services and through this regulatory mechanism supported, co-developed, and also implemented interoperable HealthIT systems nationwide.

NASEMSO is also working to provide technical assistance to state regulators developing innovative delivery models and crafting value-based service agreements through smart policy. EMS organizations around the country are conducting pilot and demonstration programs to evaluate the impact of innovative delivery models on individual and community health. Six EMS agencies have been awarded CMMI innovation awards. Other EMS organizations are central participants in Beacon projects having proven their success in reducing the cost of healthcare through HealthIT investments. These programs and partnerships are often focused on empowering patients and caregivers with effective prehospital triage and hospital avoidance strategies. It should also be noted that many of our members also serve on HIE advisory committees providing effective counsel to many of the HIEs nationwide.

Under a cooperative agreement with NHTSA, NASEMSO is conducting the EMS Compass Initiative; to develop value and outcome based performance measures that will become the first electronic Clinical Quality Measures (eCQMs) for the EMS industry.

5. Privacy and Security Protections for Health Information

- a. *What security aspects of RESTful services need to be addressed in a standardized manner?*

The NEMESIS v2, which is being replaced by the NEMESIS v3 data standard, did rely on RESTful Web Services. Now we've enhanced the reliability and security of NEMESIS data exchange with v3 by focusing on SOAP web services for transmission of encrypted XML records⁶. From a technical perspective, that is the easy part.

What is more challenging is developing appropriate and effective mechanisms for federated identity management. Identity management is a huge issue that will be a challenge to solve but we need to continue making progress in order to achieve the aims of the Secretary. Beginning with the NIST⁷ Framework for Improving Critical Infrastructure Cybersecurity, NIST SP 800-55, Security Metrics Guide for Information Technology Systems, and NIST Draft SP 800-80, Guide to Developing Performance Metrics for Information Security, and then considering OMB M04-04 E-Authentication Guidance for Federal Agencies are appropriate however following the ISO27K standards (ISO27000-27016 Information Security Management Systems standards) would also be an appropriate next step as the internationally accepted information security standards.

6. Core Technical Standards and Functions

- a. *Which data elements in the proposed common clinical data set list need to be further standardized? And in what way?*

The use cases for these C-CDAs should align with the following scenarios:

- 1) 911 caller identifies the patient prior to the dispatch of paramedics and accesses the patient's EHR.
- 2) Smartphone or application based triage process occurs prior to dispatch with direct EHR access.
- 3) Paramedics enroute to a patient review past history from the patient's EHR.
- 4) Paramedics on-scene with one or more patients can access and update a patient's EHR.
- 5) Paramedics on-scene can handover care to a community paramedic or other provider and that new provider can continue to access and update the patient's EHR.
- 6) Paramedics provide assessment and care on scene eliminating the need for transport but referrals and updates to the EHR are needed.

⁶ For reference the NEMESIS v3 Web Services Guide has more detailed explanation and is available at: http://www.nemesis.org/v3/downloads/documents/NEMESIS_v3_WebServices_20140312.pdf

⁷ National Institute of Standards and Technology. (2008). NIST Performance Measurement Guide for Information Security. NIST Special Publication 800-55 Revision 1.

- 7) Paramedics transport a patient to an alternative care, specialty care center, or other ED facility.
- 8) Paramedics transport a patient to a doctor's office, substance abuse treatment center, urgent care clinic, Community Health Clinic, etc.
- 9) Patients may not have any control over which hospital a paramedics delivers them to, and in many cases these are ad hoc presentations so that their EHR has not been made available to that facility in advance.

We have provided two examples of a paper-based patient turnover form that EMS agencies use to work-around the lack of a C-CDA standard.

- b. Do you believe the approach proposed for Accurate Individual Data Matching will sufficiently address the industry needs and address current barriers?*

We are optimistic that the proposed approach will adequately address the needs of field EMS providers and call-center or dispatch based providers. Including these stakeholders in the development process will ensure that their unique needs are addressed.

7. Certification and Testing

- a. In what ways can semantic interoperability be best tested? (e.g., C-CDA content and semantics)*

We believe that the C-CDA approach is an excellent opportunity for EMS HealthIT providers to contribute to ONCs mission. For the last 50 years EMS providers have frequently provided a "short form" of a medical record at the time of patient handoff to the ED. In some cases this was literally a short form, containing basic demographic information and initial treatment. A couple sample paper-based forms that are identical to a C-CDA approach are attached for your reference. A similar form does not exist that would inform paramedics of a patient's medical record (bi-directional), we are very interested in developing such a standard.

The National EMS Information System (NEMSIS) data standard has recently incremented to v3 with additional enhancements and improvements based on real world use of a single nationwide data standard over the last 20 years. We rely on LOINC, HL7, and other XML data standards to document the nearly 50 million annual patient encounters by paramedics nationwide.

8. Measurement

1. *Does the measurement and evaluation framework cover key areas? What concepts are missing?*

The NIST SP 800-55 provides the following types and definitions for measurement, although specifically for information security we propose the framework should also be applied to interoperability (NIST, 2008) herein:

- **Implementation Measures:** are used to demonstrate progress in implementing information security programs, specific security controls, and associated policies and procedures.
- **Effectiveness/Efficiency measures:** are used to monitor if program-level processes and system-level security controls are implemented correctly, operating as intended, and meeting the desired outcome.
- **Impact measures:** are used to articulate the impact of information security on an organization's mission.

The focus of the final rule has been on implementation, with implementation measures focused on binary aspects such as “did they buy a certified system” and “did they submit electronic measures”. What we have not yet seen are measures of effectiveness/efficiency of neither HealthIT systems nor their impact on patient outcomes or the health care system as would be expected in a Learning Healthcare System.

Field EMS providers are the entry point to the healthcare system for approximately 28 million patients per year. The patient's entering the health care system via paramedic services contribute significantly to the costs involved as they begin their health care navigation through the ED. With no measures of hospital interoperability with EMS provider data systems, the effectiveness of HealthIT systems and their impact have been ignored.

2. *Which concepts from the framework are the most important to measure? What types of measures should be included in a "core" measure set?*

Data exchanging in an interoperable manner are clearly the most important capabilities to measure! To date the development has not focused on *interoperability*, rather it has focused on *intraoperability* within domains. The intrahospital and intraprovider focus has left out key partners and stakeholders therefore we would suggest developing measures that address the entire matrix of organizational types within the ecosystem to specifically include field EMS providers.

3. *Should measurement focus on certain use cases, priority populations or at certain levels of the ecosystem (e.g., encounter, patient, provider, organization)?*

Until now much of the EHR certification process has focused on depth while ignoring the breadth of interoperability. We feel that much is to be gained by refocusing on leveraging the advancements made in the non-hospital and non-physician areas of the ecosystem. By starting the “use cases” from the patient’s perspective, which means at their home or place of business, the field EMS provider perspective is most likely to be included.

4. *What other types of metrics have been successfully used at the local or regional level that might be considered for nationwide use? Would stakeholders be willing to propose novel metrics and provide "test beds" to assess the potential for nationwide use?*

Data Completeness: Proportion that identified data fields are completed. Goal 95%.

- Gender
- Mass Casualty Incident
- Number of Patients at Scene
- Possible Injury
- Cardiac Arrest
- Transport Mode from Scene
- Reason for Destination

Data Consistency: Proportion of child element completion to parent element completion. Goal 95%.

- (Cardiac) Arrest Etiology
- (Cardiac) Arrest Resuscitation
- Age Units

Valid Times: Proportion of elapsed time calculations that are within expected range. Goal 95%.

- Response Time
- Scene Time
- Transport Time

5. *What measurement gaps should be prioritized and addressed quickly?*
The yes/no aspect of implementation is easy to measure but is not actually representative of the status of HealthIT to make a difference in efficient and effective sharing and use of electronic health information when and where it is needed as an important contributor to improving health outcomes, improving health care quality and lowering health care costs.
6. *What other available data sources at the national level could be leveraged to monitor progress?*

The National EMS Information System (NEMSIS) national dataset should be leveraged for monitoring the progress of interoperable HealthIT systems.

7. *Are the potential mechanisms for addressing gaps adequate? What are other suggestions?*

The Roadmap states the mechanism for addressing gaps is: “ONC will solicit input from external stakeholders on specific identified gaps related to measurement, such as standards and pursue various mechanisms to address gaps.” This is certainly a good yet passive start but is hardly an effective “mechanism” and much more will need to be done.

8. *How should data holders share information to support reporting on nationwide progress?*

The data holders should be compelled to describe metrics based on implementation, effectiveness/efficiency, and their impact towards the national triple aim objectives.

9. *What are appropriate, even if imperfect, sources of data for measuring impact in the short term? In the long term? Is there adequate data presently to start some measurement of impact?*

A proportion of patient encounters that began with field EMS provider care that have bidirectional interoperable information exchange would be a foundational measure.

Thank you for considering our concerns and recommendations. We look forward to your response and working with you going forward. If you have any questions, please contact Dia Gainor at dia@nasmso.org or (208) 861-4841.

Sincerely,

American Ambulance Association (AAA)
Association of Air Medical Services (AAMS)
Association of Critical Care Transport (ACCT)
International Association of Fire Chiefs (IAFC)
National Association of EMS Educators (NAEMSE)
National Association of EMS Physicians (NAEMSP)
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