

“BETWEEN A TRAUMA CALL AND A WELLNESS CHECK”: A meta-analysis of prehospital (Fire & EMS) data in patient handoff and readmission avoidance.

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OVERVIEW AND STUDY OBJECTIVE:

The siloed nature of most Emergency medical services (EMS) operations means that many studies suffer from the use of a single data set belonging to the agency where the researchers are affiliated. It can be unclear to what degree the findings apply elsewhere. As a result, focus has shifted recently toward the conduct of research by electronic patient care record (ePCR) technology firms that enjoy a cross-sectional view of data collected across a broad swath of regional agencies, so as to identify trends, themes and commonalities. This study was a meta-analysis of the data requirements for documentation systems used in prehospital care of acute-care patients, and for longitudinal (“over time”) tracking of chronically ill and substance-addicted patients who experience a high degree of recidivism to emergency departments (ED). It is based on the design and implementation of such systems for variously funded readmission avoidance programs in Arizona, California, Indiana, Kentucky, and Texas over three years. A key finding of these programs is that *sometimes a wellness check becomes something other than a wellness check*, i.e., an emergency response, due to the acute nature of the patient’s condition as discovered by the provider. This may appear intuitive because the chronically ill suffer from emergency needs at least as often as the general population, due to compromised health circumstances, while patients who are addicted to harmful substances engage in routine conduct that increases their vulnerability. However, many readmission avoidance programs maintain a nonoverlapping database of chronic care patients, sequestered from their database of emergency patients. Restricting a side-by-side view, such data sequestration limits agencies’ ability to demonstrate the impact of the provider’s interventions over time relative to a baseline population, or even to compare the health of any particular patient prior to enrollment in a managed care program.

METHODS:

We interviewed administrative and medical officers affiliated with so-called community paramedicine (alternatively, “mobile integrated health,” “community-based paramedic,” or “community health integrated paramedic”) programs across five states. Such programs variously focused on congestive heart failure, COPD, sepsis, fall risk, post-surgical discharge, uncontrolled diabetes, opioid use disorder, and dementia. The oldest program was founded in 2015 and all programs were in operation at year-end 2017, most into 2018. The admission criteria for specific patients into each local program varied. Our objective was to assess and aggregate the data elements needed to measure such programs’ efficacy, and to conducting a technical gap analysis with respect to the data output required for use in longitudinal care managed by Fire / EMS vs. standard and required documentation criteria for acute-care by same.

RESULTS & DISCUSSION:

Of all the modern myths about the prehospital care industry, perhaps the most problematic but persistent—to blame for extremely mismanaged expectations—is that electronic patient care record (ePCR) systems can simply pull data out of a hospital-side electronic health record (EHR) and return to the patient care record from which it originated. Unfortunately, this is not possible due to certain federal data protections under HIPAA-HITECH; the frequent lack of information in the source EHR itself; and the technical structure of the data systems used by prehospital care providers (i.e., the National EMS Information System, “NEMSIS”). NEMSIS is *distinct* from:

- Health Level 7 (HL7) is the backbone of EHRs that have been certified by the federal Office of the National Coordinator of Healthcare Information Technology (ONCHIT). A comprehensive dataset used by hospitals, nursing facilities and physicians offices, its latest variant is a pliant query-response spec called Fast Health Information Resources (FHIR);
- the Outcome and Assessment Information Set (OASIS) dataset used by home health providers under the Center for Medicare and Medicaid Services (CMS); and
- the National Fire Incident Reporting System (NFIRS), that fire departments are required to submit in accordance with regulations from the Federal Emergency Management Agency (FEMA).

As with most conflicting technical specs, each of these data sets does not easily intermix with the other. But a commercial translation engine exists to convert NEMSIS into the federally standardized, HL7-constructed interoperable forms collectively known as the “Clinical Document Architecture.” Among the oldest and most widely accepted HL7 v3 CDA variants is the Continuity of Care Document (CCD). Nationwide, hospitals have grown increasingly comfortable with the idea of leveraging prehospital data for clinical and operational insights, both for triage and to avoid ED readmissions from both chronic care and acute care (e.g., addicted-related) patients. In 2013, an interventional radiologist near Philadelphia said that doctors are familiar with saving lives in the absence of information, so why should they care about EMS data? He expressed concern that if clinicians could not real-time verify the accuracy of prehospital data, they could face liability due to iatrogenic errors. By contrast, in December 2018, two fire departments and a local deployment of the world’s largest ambulance operator met with a hospital in the Pacific Northwest, alongside the nursing director, trauma coordinator, registration team manager, and IT manager. When the IT manager was asked about his comfort and preferred methods for sharing EMS data with the hospital’s Epic EHR, he told his colleagues that: “If EMS is providing CCDs [Continuity of Care Documents], we do that every day of the week. No issue.” The diagrams (*right*) show the overlap between prehospital and in-hospital data systems, including a selection of the data that were appended to an EMS ePCR for it to meet the government-validated CDA file structure for interoperability and tracking.

