Enhancing Continuity of Care through an Emergency Medical Card at Intermountain Healthcare: Using Continuity of Care Record (CCR) Standard

Christopher H.O. Olola, MSc1, Belle Rowan, BSN2, Scott Narus, PhD1, Joseph Hales, PhD1,2, Mollie Poynton, APRN, PhD1,3, Jonathan Nebeker, MD4, R. Scott Evans, PhD1,2
1University of Utah, Department of Biomedical Informatics, Salt Lake City, UT, USA; 2Intermountain, Salt Lake City, UT, USA; 3University of Utah, College of Nursing, Salt Lake City, UT, USA; 4VA Hospital, Salt Lake City, UT, USA.

Abstract
The objective of this study was to develop and evaluate a CCR - compliant system to enable patients at Intermountain Healthcare to (a) create/print a pocket emergency medical card - EMC (b) create/print a full CCR document, from existing data in their personal database (c) modify/add information in the database. The aim was to promote continuity of care at reduced cost, data errors, and increased patient safety.

Introduction
Today, complex and fragmented healthcare systems, deny care where it is needed most1 and in most cases, for referred, transferred, discharged patients from one caregiver to another, continuity of care (CoC) is rarely considered2. The dearth of pertinent CoC information may lead to medical errors, adverse events, and poor outcome3. Intermountain Healthcare is a nonprofit health system based in Salt Lake City, with over 26,000 employees and via its 21 hospitals, clinics, health plans and physicians, serves healthcare needs of Utah and Southeastern Idaho residents. A personal record system was implemented for use by over 9,000 adult patients (aged 18-90 years) enrolled in the personal health console (PHC) project in 13 clinics with 56 doctors. Patients create their access credentials to view sections of Intermountain EMR.

The Problem
Often, PHC patients who seek care outside the Intermountain, do not have crucial information (e.g., patient identifiers, insurance information, allergies, recent medications, procedures, adverse reactions, care plans and laboratory) to enable appropriate continuity of care when they return to Intermountain Healthcare. This poster describes the method we will use to improve access to personal health information throughout the continuum of care.

Methods
(a) Site and population: Nine-thousand patients from 13 Intermountain Healthcare clinics in Utah.
(b) EMC implementation specifications
The EMC is based on the CCR standard4 which comprises information on document/patient identification, insurance/financial, patient health status (i.e., problems, family and social history, allergies, medications, immunization, vital signs, laboratory results, procedures/imaging, advance directives, care documentation/plans, and providers). Doctor-entered and patient-entered data will be stored in a clinical data repository (CDR) and the EMC database, respectively. These datasets will be integrated with other several databases to obtain complete CCR. An application is being developed to extract the datasets into clinical document (CDA)/eXtensible Markup Language (XML) format, upon which (printable pdf and web-browsable) CCR documents will be generated. The EMC is a tri-fold pocket card while the full CCR document is an A4 size report. For each CCR data category, patients will view (fig. 1), and modify/add data to their PHR.

EMC Evaluations: EMC usability test will be performed. We will also evaluate Data quality by comparing doctor-entered and patient-entered data. Simulation studies of doctors with/without patient’s EMC data will be done for quality of care. Hospital utilization will be measured for patients in PHC before/after use of EMC, via pre-/post-EMC design to evaluate the impact of EMC on readmissions within 1 month after discharge, ED use and length of stay.

References

Figure 1: Doctor-entered and patient-entered data