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30. Adler-Milstein J, Bates DW, Jha AK. A survey of Health Information Exchange organizations in the United States: implications for meaningful use. *Ann Intern Med* 2011;154(10):666-71.
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Appendix: Content Summaries of Selected Best Papers for the IMIA Yearbook 2017, Section Health Information Management

Bahous MC, Shadmi E

Health Information Exchange and information gaps in referrals to a pediatric emergency department

Int J Med Inform 2016;87:68-74

This paper assesses the extent of information congruence and/or gaps among three information sources available at admission to a pediatric Emergency Department (ED): a Health Information Exchange (HIE) system; physicians' referral letters; and information collected directly from patients/parents. The authors conducted a retrospective cohort study of 170 medical records of children aged 6 months to 18 years referred to an Israeli pediatric ED. Each medical record was reviewed for the presence of key pieces of information in each of the information sources. The results demonstrated that the most informative source was the patient's medical history; next was the HIE system; the least informative was the referral letter.

The authors' analyses indicate that each of the information sources available lacks important data and each makes its own unique contribution. Further, the authors conclude that improving documentation in electronic health records can address significant information gaps in HIE. With the increasing diffusion of electronic health records and HIE, the availability, completeness, accuracy and quality of data, and documentation available

at the point of care continues to be a major issue that must be addressed.

Esmailzadeh P, Sambasivan M

Health Information Exchange (HIE): A literature review, assimilation pattern and a proposed classification for a new policy approach

J Biomed Inform 2016;64:74-86

The authors conducted a study to define Health Information Exchange (HIE) assimilation phases, and they proposed a classification to highlight the unique issues associated with these phases. These authors define HIE as the electronic transfer of patient data and health information between healthcare providers. The study includes a literature review of existing studies of HIE between January 2005 and April 2016. Out of an initial 254 articles, 44 studies met the inclusion criteria and were reviewed. The paper discusses the authors' use of the term "assimilation" rather than "adoption", noting that although the two terms are often used interchangeably, there has been no consensus on the definition of adoption. The authors emphasize that they use assimilation to better articulate the complex nature of HIE and all related factors affecting HIE at various levels of analysis. The authors describe four main phases of HIE assimilation: initiation, organizational adoption decision, implementation, and institutionalization. The authors note that most of the existing studies focused on only one HIE assimilation phase --- institutionalization. The paper shows the importance of raising national awareness of HIE potential benefits, financial incentive programs, use of standard guidelines, implementation of certified technology, technical assistance, training programs, and trust between healthcare providers.

Massoudi BL, Marcial LH, Tant E, Adler-Milstein J, West SL

Using Health Information Exchanges to calculate clinical quality measures: A study of barriers and facilitators

Healthc (Amst) 2016;4(2):104-8

The study explores the extent to which Health Information Exchanges (defined

as organizations dedicated to the secure exchange of health-related data [29]) are used to calculate clinical quality measures. The authors' goals were to understand the availability of EHR data needed to compute clinical quality measures (CQMs), and the barriers to data collection and/or CQM calculation. The particular CQMs examined were the National Quality Forum (NQF) eMeasures for the ABCs (aspirin therapy, blood pressure screening, cholesterol screening, and smoking cessation), body mass index (BMI), and diabetes measures.

The authors conducted semi-structured interviews with 36 Health Information Exchanges that, in a prior national HIE survey [30], self-reported their ability to exchange data that could be used to calculate standard quality metrics. Identified barriers to computing CQMs include: agreements about access to information and data sharing; costs; limited EHR functionality and availability of EHR vendor services. Specific challenges include data accessibility, usability, and formatting; lack of EHR data standardization; diverse HIE business and governance models; potential purposes of HIE data (re) use; and the business case/value proposition for HIEs. The authors' conclusions present suggestions for future policy.

Toscos T, Daley C, Heral L, Doshi R, Chen YC, Eckert GJ, Plant RL, Mirro MJ

Impact of electronic personal health record use on engagement and intermediate health outcomes among cardiac patients: a quasi-experimental study

J Am Med Inform Assoc 2016;23(1):119-28

This article addresses issues related to the effect of Personal Health Records (PHRs) on patient engagement and patient outcomes. The study was conducted to determine the impact of tethered PHR use on patient engagement and intermediate health outcomes among patients with coronary artery disease (CAD). For the purposes of this effort, a PHR was defined "as an Internet-based set of tools that allows people to access and coordinate their lifelong health information and make appropriate parts of it available to

those who need it.” The authors evaluated patient engagement using the 13-item Patient Activation Measure® (PAM®), a validated measure of patient activation. They also measured health outcomes (smoking cessation, weight control, diet, exercise) which may be influenced by patient engagement. The researchers used a quasi-experimental design with a single group involving pre–post evaluations. The authors found that PHR use did not impact patient engagement and only had a limited impact on health outcomes. The article sheds light on evolving issues related to patients’ engagement in managing their chronic conditions; patients’ role in their health outcomes; the use of technologies to improve health outcomes; and the various sociotechnical factors affecting health information and informatics research.

Warner JL, Rioth MJ, Mandl KD, Mandel JC, Kreda DA, Kohane IS, Carbone D, Oreto R, Wang L, Zhu S, Yao H, Alterovitz G

SMART precision cancer medicine: a FHIR-based app to provide genomic information at the point of care

J Am Med Inform Assoc 2016;23(4):701-10

The article discusses precision cancer medicine which increasingly requires access to genomic data within the clinical workflow and tools to assist clinical interpretation and enable decisions. The authors note that since most electronic health record (EHR) systems do not offer such functionality, they developed an EHR-agnostic clinico-genomic mobile application (app) to improve point-of-care decisions. The authors developed an open-source application based on the Substitutable

Medical Applications and Reusable Technology (SMART) Health IT platform [31], an open-access Application Programming Interface (API) that enables apps to run broadly across the health care ecosystem. They used HL7’s FHIR standard and its extension features to represent molecular profile data. The app presents population-level genomic health information to oncologists and their patients in real time during clinical practice. The article describes the application development, pilot testing, samples and screens. The source code for the app has been made openly available. Results from the project include descriptions of clinician feedback about the app. The article contributes to the understanding of the use of mobile technologies and applications in cancer diagnosis, care, and treatment while exploring the evolving nature of precision medicine and the use of new interoperability standards.