

## Appendix: Content Summaries of Best Papers for the Health Information Exchange Section of the 2023 IMIA Yearbook

Mullins AK, Skouteris H, Rankin D, Morris H, Hatzikiriakidis K, Enticott J

**Predictors of clinician use of Australia's national health information exchange in the emergency Department: An analysis of log data**

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This paper describes a retrospective analysis that explored patient and context-related factors associated with use by emergency department (ED) clinicians in Australia of Australia's national personally controlled Health Information Exchange (HIE), My Health Record. The authors assessed secondary routinely-collected data (all patients who presented (between August 2019–2021) to the ED at a not-for-profit hospital in Melbourne (n=48,782 patients). The researchers linked patient level data to the HIE access log-data, and administrative data and conducted multivariable analyses. The results indicated the extent to which the ED pharmacist, physician, or nurse accessed the HIE within three days of the patient presenting to the ED. Nine variables were explored with logistic regression, representing patient (gender, age, diagnosis) and other factors (presentation time, arrival method, referral, acuity/triage, length of stay, admitted into hospital). The study indicated that the HIE was accessed in 17.43% of patient presentations to the ED. Overall, increased HIE access was associated with increasing patient age, with the biggest effect for 75-84-year olds (odds ratio 26.15; 95% confidence interval 15.37-44.50), when compared to < 4 years of age. HIE access was also significantly and positively associated with patients who were later admitted into the hospital from the ED (4.96; 4.61-5.34). The research demonstrates that use of electronic health record (EHR) log data is a good approach and

better than surveys to study use of data. Findings indicate that there was limited use of the information (17.43%) and that use tended to lead to admissions, which increased the costs of care. Other important study findings are the characterization of who used the HIE and for what types of patients. Results suggest that while the clinicians in the ED employ the system to meet their needs, they do not access the information for all patients. The authors suggest that to improve ED patient care, it is important to improve physicians' and nurses' documentation for older people and those suffering from complex medical conditions. The authors indicate some study limitations including those related to generalizability because the study was conducted at one hospital. Additionally, the authors did not provide details concerning the specific data that was accessed and for what clinical problem(s), although since pharmacists were the major users, it can be inferred that medications, or clinical conditions that might influence medication use, were likely of major interest. Countries who are contemplating establishing a national personal health record solution might find the study applicable and informative as would others considering the use of log data for other purposes.

Nwafor O, Johnson NA

**The effect of participation in accountable care organization on electronic health information exchange practices in U.S. hospitals**

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There are major efforts within the United States to move away from fee-for-service care toward various alternative payment models (APMs) such as Accountable Care Organizations (ACOs). ACOs are groups of doctors, hospitals, and other health care providers, who come together voluntarily to give coordinated high-quality care to patients. ACOs, which generate savings for their assigned patient population in a given financial year and meet specific quality benchmarks, are eligible for part of the cost savings. Although ACO incentives are not directly linked to electronic health infor-

mation exchange (HIE), ACO proponents believe that the prospect of financial rewards would motivate participants to increase activities that promote the coordination of care including HIE. Given the variations in prior research findings about ACOs and HIE, the authors examined the relationship between hospital participation in ACOs and HIE practices of care with different participants and how these practices vary across market types. Their study is based on the premise that information sharing is a necessary activity for effective coordination. The authors predicted three hypotheses related to dimensions of HIE. The study used a cross-sectional design that draws on secondary data obtained from the following data sets for 2018: American Hospital Association's (AHA) Annual Survey and Annual Health Information Technology Supplement Survey, Centers for Medicare & Medicaid Services cost reports and impact files, Dartmouth Atlas of Healthcare, and the Leavitt Partners' ACO database ultimately resulting in a sample of 1,926 hospitals belonging to health systems.

- Hypothesis 1: the intraorganizational HIE practice levels of hospitals participating in ACOs will exceed those of nonparticipating hospitals;
- Hypothesis 2: the interorganizational HIE practice levels of hospitals participating in ACOs will exceed those of nonparticipating hospitals;
- Hypothesis 3: the provider-patient HIE practice levels of hospitals participating in ACOs will exceed those of nonparticipating hospitals.

Study findings indicated that hospitals participating in ACOs vary in their HIE practices, and attributes of the local market in which ACO participants are located contribute to this variation. The researchers found that hospital participation in ACOs is associated with greater intraorganizational and provider-patient HIE practices, but ACO participation is not related to interorganizational HIE practices. The authors note that although *"the relationship between ACO participation and intra- and interorganizational HIE practices remains unchanged irrespective of the degree of competition in the health care market, the relationship between*

*ACO participation and provider-patient HIE practices holds true only for hospitals operating in noncompetitive markets”.*

These results are interesting in that interorganizational information sharing is foundation to and an essential component and function of HIE. Information exchange and sharing is also assumed to be important to ACO participants, yet there was no statistically significant difference in interorganizational information sharing between ACO and non-ACO participants. It is possible that this result was because the sample only included

hospitals that were part of health systems, and that information exchange outside those systems may be minimal regardless of ACO membership. The authors discuss limitations of their approach and note the challenges of using cross-sectional data to investigate electronic HIE practices that are likely to change over time. The authors believe that their findings offer theoretical and practical guidance to administrators seeking to improve the effectiveness of their ACOs, to researchers who study new forms of healthcare organizations, and to policy-makers who are

developing policies for value-based care. For example, they highlight that although ACO incentives are not directly linked to HIE practices, these incentives may serve to promote greater information sharing with certain participants in the care process. The authors also discuss the need for additional policy interventions to promote greater HIE practices with patients and unaffiliated provider organizations—especially under competitive market conditions.