Appendix: Content Summaries of Best Papers for the Health Information Management Section of the 2020 IMIA Yearbook

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Impact of document consolidation on healthcare providers' perceived workload and information reconciliation tasks: a mixed methods study

Clinicians need access to information about patients' medical history and prior treatment. Obtaining, integrating, and reconciling such information with current health records is a necessary yet labor intensive, burdensome, and cumbersome (mostly manual) undertaking. This study is highly relevant to HIM and informatics and addresses the importance of health information exchange, information usability, reconciliation, and integration.

Challenges in integrating patient information across multiple sources include accurate patient matching and duplicative and/or conflicting information, verification and validation. The authors of this study had previously developed and reported on an information system designed to automate the process of reconciling information across multiple electronic documents (based on the Health Level Seven (HL7) Clinical Document Architecture (CDA) standard). This study evaluated how the review of documents produced by the system impacted clinicians' perceptions of their workload.

This study involved simulated continuity of care documents (CCDs) that were provided to nine healthcare providers to review. The participants had to process and reconcile information that came from multiple sources. The study measured participants' perceived workload, and the accuracy and efficiency of information reconciliation, while reviewing two types of medical records: 1) multiple CCDs for a patient vs. 2) one consolidated CCD generated by the CDA-consolidation system. The authors presented participants with three case scenarios related to transitions of care: 1) referral, 2) medication reconciliation, and 3) problem reconciliation. Potential challenges to information reconciliation include increased provider burdens, fatigue, and mental workload. Authors audio-recorded open-ended interviews with participants which were transcribed and thematically analyzed. The results showed that the single consolidated CCD was more efficient to review and was perceived to be less burdensome. The findings demonstrated that an information system that consolidated data from multiple sources could help reduce time and effort for clinicians when performing information reconciliation tasks associated with routine care. The study showed that different ways of organizing the cognitive task of information reconciliation, which is necessary with health information exchange, have different effects on perceived workload and time spent. The study concluded that automating retrieval and reconciliation of information across multiple electronic documents could reduce healthcare providers' task complexity and workload.

Yeung T

Local health department adoption of electronic health records and health information exchanges and its impact on population health

In contrast to studies examining the impact on health outcomes of hospital or physician adoption of EHRs and HIE, this research studied the use of EHRs and HIE by local health departments. The outcomes studied were county-wide measures of various population health measures. Using questions about health information technology from the 2013 National Association of County and City Health Officials (NACCHO) Profile and the 2016 County Health Rankings (produced by the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute), the study examined population-based data across 433 counties in the United States and used multiple linear regression to analyze the impact on population health of the adoption of health information technology by local health departments. For the study, population health was defined as "the health of a population at the county level." It was measured by health outcomes (premature death and health-related quality of life). Findings showed that EHR adoption by health departments was associated with improved population health at the county level. However, HIE adoption did not have a statistically significant effect. The author notes that the implementation of public health HIT is rarely analyzed or reported and she emphasized the criticality of analyzing the effectiveness of the public health IT infrastructure, given emerging threats to the safety of communities and health of populations. The author recommends that future studies focus on the following: 1) analyzing other types of health IT and how those systems impact population health, and 2) identifying barriers in health IT adoption by local health departments.

Souza J, Santos JV, Canedo VB, Betanzos A, Alves D, Freitas A

Importance of coding co-morbidities for APR-DRG assignment: Focus on cardiovascular and respiratory diseases

The quality of coded clinical data is a central foundational element of health information management. This study examines the extent of and impact on reimbursement of failing to record comorbidities. A topic of high relevance to the HIM domain and its functions including: completeness of documentation, coding, data accuracy, and severity of illness, as well as payments. In this study, All Patient Refined Diagnosis Related Groups (APR DRGs) are used to account for severity of illness and risk of mortality[1] by incorporating severity of illness subclasses into the APR-DRGs. The study applied a machine learning approach to assess the APR-DRG classification structure and characterize the impact of co-morbidities on APR-DRG classification of respiratory and cardiovascular diseases. The authors used support vector machine (SVM) models to analyze the impact of removing Charlson and Elixhauser co-morbidities on six years of coded

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[1]   https://www.forwardhealth.wi.gov/kw/pdf/handouts/3M_APR_DRG_Presentation.pdf

clinical data from a nationwide Portuguese inpatient database. They also estimated the amount of hospital payments that could have been lost when co-morbidities are under-reported. Their findings showed that co-morbidities influenced severity of illness (SOI) determination but had little impact on base APR-DRG assignment. They noted that the degree of influence on SOI of each co-morbidity was specific to the base APR-DRG. The authors also found that for those co-morbidities studied, under-coding led to losses in hospital payments. Their results were consistent with overall APR-DRG grouping logics. The results demonstrate the importance of documenting, reporting, and coding co-morbidities given their effect on SOI assignment and, therefore, on reimbursement and hospital funding.

Hannigan A, Villarroel N, Roura M, LeMaster J, Basogomba A, Bradley C, MacFarlane A

Ethnicity recording in health and social care data collections in Ireland: where and how is it measured and what is it used for?

This study focused on the extent of recording of ethnicity data in Ireland, a variable often used in studies on health equity and disparities. This study was part of a larger project which aimed to build the evidence base on ethnic minority health in Ireland. The aim of the study was to identify all existing national health and social care data collections that contained information on ethnicity and to explore how ethnicity data had been collected and used. The Health Information and Quality Authority (HIQA) is an independent authority in the Republic of Ireland that produces a catalogue of all national collections of routine health and social care data. It should be noted that there is a national policy that ethnicity data be collected in healthcare settings. This research is highly relevant to the HIM domain and functions (i.e., documentation, clinical and socio-demographic data collection, and data quality). More broadly, the study identified data shortcomings and related implications for public policy and public health, which is especially important in designing policies aimed at improving health, achieving health equity, and increasing awareness of racial and ethnic disparities in health care.

The authors reviewed the 2018 HIQA catalogue that includes information on 97 national health and social care data collections (75 national data collections, 10 national surveys, nine data collections with regional coverage, three censuses) and 23 collated sources of health and social care information including national performance and activity reports. The study provides a descriptive analysis of extracted data across all data collections with information on ethnicity. Of the 97 national health and social care data collections in the catalogue, only 14 (14%) collected information on ethnic or cultural background. Only one of the three national censuses in the catalogue recorded ethnic or cultural background. Eight of the 75 national health and social care data collections recorded ethnic or cultural background and five of the ten national surveys in the catalogue recorded ethnic or cultural background.

The authors did not find any evidence of previous audits examining the integrity of the data collected on ethnicity across data collections. They also found that data collections which recorded ethnicity tended to be focused on potentially high-risk populations and there was no routine recording of ethnicity in primary care settings, where most of the healthcare in Ireland is delivered. They did not find much data on ethnicity for hospital inpatients either, other than psychiatric inpatients and there was no routine recording of ethnicity in cancer registry or cancer screening data. The authors identified that despite strong policy and legal imperatives, there was limited data collection about ethnicity. They recommended improvements that are needed to better address and promote health equity in Ireland, including access to care and adoption of evidenced-based care practices. The COVID-19 pandemic has increased global attention to factors such as race and ethnicity on diagnosis, treatment, and outcomes. This study illustrates that despite clear guidelines to record this type of data, there are still many gaps in documentation.