Notice of the Final Oral Examination
for the Degree of Master of Science

of

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MD, (University of Toronto, 2009)
BMath (University of Waterloo, 2005)

“The trade-offs of using different physician attribution methods for audit and feedback interventions in general medicine inpatient care”

School of Health Information Science

Thursday, April 22, 2021
10:00am
Remote Defence

Supervisory Committee:
Dr. Francis Lau, School of Health Information Science, University of Victoria (Supervisor)
Dr. Keith Denny, School of Health Information Science, UVic (Member)

External Examiner:
Dr. Tyler Williamson, Community Health Services, University of Calgary

Chair of Oral Examination:
Dr. Angie Chau, Department of Pacific and Asian Studies, UVic

Dr. Stephen V. Evans, Acting Dean, Faculty of Graduate Studies
Abstract

BACKGROUND: Audit and feedback interventions have the potential to improve clinical care. Electronically captured administrative and clinical data routinely collected in Canadian hospitals may be used to provide feedback to physicians in general medicine in-patient care. The computation of appropriate quality indicator requires patient care to be attributed to individual physician(s). The appropriate attribution method in contexts where multiple physicians are involved in the care with varying degree of responsibilities that change over time is not straight forward. There has so far been little guidance in the literature of how to best accomplish this. The objective of this study is to identify tradeoffs of different physician attribution methods by applying them to the same large clinical dataset.

METHODS: A retrospective cohort study was conducted using the GEMINI dataset consisting of administrative and clinical data of hospitalized patients discharged from General Medicine service between April 1, 2010 and October 31, 2017 extracted from electronic systems at 7 hospitals in the Greater Toronto Area. A set of four quality indicators (length of stay, 30-day re-admission, in-patient mortality, use of advanced imaging) used in an audit and feedback intervention was calculated for each physician using 5 different physician attribution methods: STRICT (only patients with the same admitting, discharging, and most responsible physician with length of stay less than 14 days were included to capture those patients whose care was provided by only 1 physician), ADMIT (attribute care to admitting physician), DISCHARGE (attribute care to discharging physician), MRP (attribute care to most responsible physician), and ANY (attribute care to admitting, discharging, and most responsible physicians). The comprehensiveness and comparability of each attribution method were calculated. The actual differences of the indicator value and physician ranking for each indicator was compared between each pair of attribution methods.

RESULTS: 222,490 hospitalization cared for by 203 physicians were included. STRICT attribution method was least comprehensive, capturing only 40% of patients cared for by a physician), while ADMIT, DISCHARGE, and MRP captured 70% of patients. All attribution methods produced patient populations for individual physicians that were comparable to those seen at each hospital. STRICT attribution method resulted in length of stay values 4.7 to 6.8 days shorter than other attribution methods and had poor rank correlation of physicians when compared to other attribution methods (spearman rank correlation 0.27 to 0.52). Absolute differences for the other 3 indicators were small between all attribution methods, and relative ranking of physicians were reasonably preserved (strong or very strong rank correlation).

INTERPRETATION: Different attribution methods have different comprehensiveness, but all produced mostly comparable patient populations for physicians. Certain attribution method can affect apparent physician performance for some quality indicators but not others. The impact of physician attribution methods deserve consideration during the design of audit and feedback interventions.