

DISSERTATION DEFENSE

Essays on Health Information Technologies

Zia Hydari

Friday, October 3, 2014
10:00 am
145 Posner

Essay 1: Saving Patient Ryan - Can Health IT Make Patient Care Safer? Evidence from Pennsylvania Hospitals

Patient safety is widely expected to benefit from health information technology (IT), but the evidence of its impact on safety is inconclusive. A key challenge to evaluating health IT's impact on safety has been the lack of reliable and comprehensive data. We overcome this challenge by constructing a panel of Pennsylvania hospitals over 2005–2012 using data from several sources. In particular, we source confidential patient safety data from the Pennsylvania Patient Safety Authority (PSA). Since mid-2004, Pennsylvania state law has mandated that hospitals report all patient safety events to the PSA. Using a differences-in-differences identification strategy, we find that advanced electronic medical records (EMRs) lead to a 27% decline in patient safety events. This overall decline is driven by declines in several important subcategories—30% decline in events due to medication errors and 25% decline in events due to complications. Our results hold against a number of robustness checks, including, but not limited to, falsification test with non-clinical IT and falsification test with a subcategory of events that is not expected to benefit from advanced EMRs. Our results also suggest that advanced EMRs beneficially impact mid-severity events but have no statistically significant impact on low and high severity events. Overall, we provide evidence to policy makers, hospital administrators, and other stakeholders that hospitals' adoption of advanced EMRs improves patient safety.

Essay 2: Can Hospital Competition Harm Patient Privacy? Evidence from US Hospital Data Breaches

We study the effect of hospital market concentration on the quality of patient data protection practices. We use approximately 200 reported data breaches in US hospitals over the period 2006--2011 as a measure of the quality of patient data protection practices. We measure market concentration using the Herfindahl-Hirschman Index (HHI) and estimate our models by exploiting cross-sectional HHI variation. Surprisingly, we find that increased competition is associated with a decline in the quality of patient data protection. Our main result is that a 100 point increase in HHI indicates a 5% decline in the average count of data breach incidents. The results are directionally robust to a number of alternate model specifications. To explain our findings, we posit that hospitals in more competitive markets may be inclined to shift resources to more consumer visible activities from the less consumer visible activity of data protection.

Essay 3: Health Information Technology and Patient Safety: Review and Assessment

This essay reviews the literature on (i) the factors that affect the adoption of electronic medical records (EMRs) at US hospitals, and (ii) the impact of EMRs on patient safety in US hospitals. The adoption of EMR in US hospitals is positively correlated with hospitals' size, system affiliation, urban location, non-profit ownership structure, and teaching status. There is weak or no evidence that competition, payer mix, and households' or patients' income correlate with hospitals' adoption of EMRs. On the impact of EMR on patient safety, the literature is unable to convincingly establish an effect. The studies either use questionable outcome measures such as Patient Safety Indicators for large samples or narrow outcomes such as medication errors for very small samples. In addition to sample issues, many of the studies use contestable methods. Given the importance, to managers and public policy makers, of measuring the impact of EMR on patient safety, further research is needed to rigorously identify the impact of EMR on patient safety.