

# Patient care improves when hospitals choose a single vendor for medical records software, study shows

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Electronic medical records (EMR) are digital versions of the paper charts in doctors' offices and hospitals that contain notes and information collected by and used for health care providers. The

digitally stored information can be shared across health care settings, and an appropriately implemented system allows providers to document and monitor patient care.

Hospitals can choose to purchase all EMR components in a suite from a single supplier (single-sourcing), or they can use multiple suppliers (multi-sourcing).

New research from the University of Notre Dame shows for the first time that the sourcing strategy chosen by hospitals impacts the quality of [patient care](#). When hospitals move closer to a single-sourcing strategy, patients receive better evidence-based care.

With multi-sourcing strategies, mismatches between supplier components can create situations where key medical concepts don't share the same meaning, which can disrupt the exchange of data, lowering the quality of care provided. For example, allergies could be defined and coded differently in EMR components by different suppliers.

"Strategic sourcing of multi-component software systems: The case of [electronic medical records](#)" is forthcoming in the *Decision Sciences* journal from lead author Kaitlin Wowak; Ken Kelley and Corey Angst, professors of information technology, analytics and operations at Notre Dame's Mendoza College of Business; and Sean Handley from the University of South Carolina.

Using data from U.S. hospitals that operated continuously from 2006 to 2013 and analyzing change over time, the team examined how a key dimension of the sourcing strategy for EMR systems—change in closeness to single-sourcing—impacts conformance quality, a critical measure of hospital performance that assesses how frequently hospitals comply with evidence-based practices.

They found that moving closer to single-sourcing increases conformance quality, but the positive effect is reduced over time, meaning the benefits realized by hospitals using a single-sourcing approach become less substantial later in the observation period.

"Our study contributes much-needed insight into the performance implications of an organization's sourcing strategy for multi-component software systems, which are increasingly prevalent in modern organizations," Wowak said. "We show that how, not just if, EMRs are implemented is consequential to the quality of patient care provided.

"Administrators must consider how the number of different suppliers affects routines, interoperability (the capability of two different components to receive and send data) and, ultimately, conformance quality."

Wowak says aligning the sourcing strategy with technical and operational considerations is likely to result in better patient care. The study shows that the effect size has considerable practical significance, as a move toward single-sourcing corresponds to more patients receiving appropriate care as a result.

"To put this into perspective, during the timeframe of our study, U.S. hospitals admitted approximately 35 million patients per year," Kelley said. "All else being equal, if hospitals moved slightly closer to single-sourcing in a given year, say 0.5 units, approximately 175,000 more patients per year would have received evidence-based care."

Because hospital performance can often mean life or death for patients, the team hopes this study will help lay the foundation for future research on the relationship between health IT, sourcing decisions and [hospital performance](#).

"Even though there are industry efforts to help translate key concepts between components that are sourced from different suppliers to improve interoperability, competing EMR firms have little incentive to get their systems to work and communicate with competitor systems," Angst said. So integrating one system with another is time-consuming, expensive and potentially error-prone.

**More information:** Kaitlin D. Wowak et al, Strategic sourcing of multicomponent software systems: The case of electronic medical records, *Decision Sciences* (2022). [DOI: 10.1111/deci.12576](https://doi.org/10.1111/deci.12576)

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