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Research Article

### Accuracy of an Electronic Health Record Patient Linkage Module Evaluated between Neighboring Academic Health Care Centers

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Abstract

**Background** Patients often seek medical treatment among different health care organizations, which can lead to redundant tests and treatments. One electronic health record (EHR) platform, Epic Systems, uses a patient linkage tool called Care Everywhere (CE), to match patients across institutions. To the extent that such linkages accurately identify shared patients across organizations, they would hold potential for improving care.

**Objective** This study aimed to understand how accurate the CE tool with default settings is to identify identical patients between two neighboring academic health care systems in Southern California, The University of California Los Angeles (UCLA) and Cedars-Sinai Medical Center.

**Methods** We studied CE patient linkage queries received at UCLA from Cedars-Sinai between November 1, 2016, and April 30, 2017. We constructed datasets comprised of linkages (“successful” queries), as well as nonlinkages (“unsuccessful” queries) during this time period. To identify false positive linkages, we screened the “successful” linkages for potential errors and then manually reviewed all that screened positive. To identify false-negative linkages, we applied our own patient matching algorithm to the “unsuccessful” queries and then manually reviewed a sample to identify missed patient linkages.

**Results** During the 6-month study period, Cedars-Sinai attempted to link 181,567 unique patient identities to records at UCLA. CE made 22,923 “successful” linkages and returned 158,644 “unsuccessful” queries among these patients. Manual review of the screened “successful” linkages between the two institutions determined there were no false positives. Manual review of a sample of the “unsuccessful” queries (*n* = 623), demonstrated an extrapolated false-negative rate of 2.97% (95% confidence interval [CI]: 1.6–4.4%).

**Conclusion** We found that CE provided very reliable patient matching across institutions. The system missed a few linkages, but the false-negative rate was low and there were no false-positive matches over 6 months of use between two nearby institutions.

Keywords

electronic health records/standards - health information exchange/standards - medical record linkage/methods

Protection of Human and Animal Subjects

No human subjects were involved in the project.

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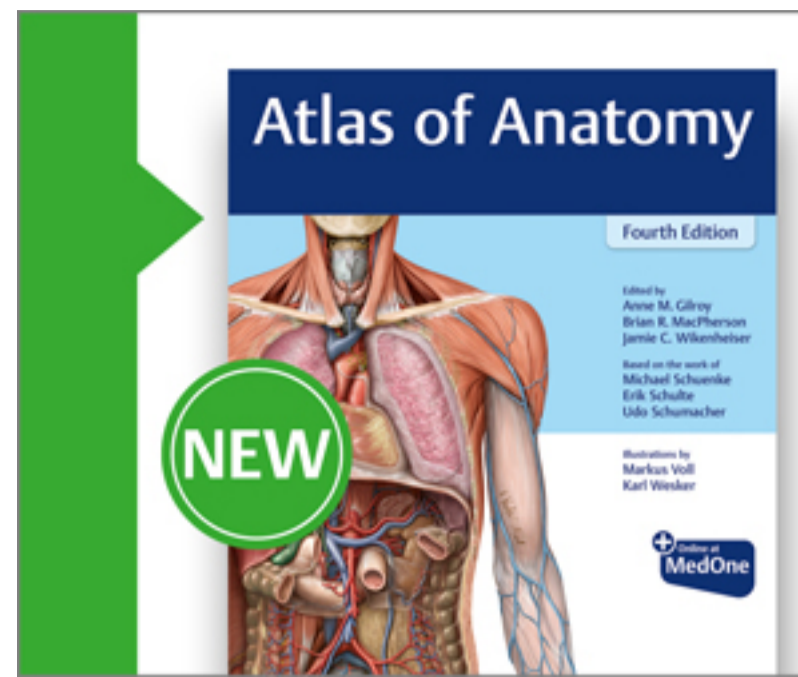
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