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Effect of Electronic Health Record Systems Access on Communicable Disease Report Completeness

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Objective

To assess the effect of electronic health record (EHR) system access on notifiable disease case data completeness.

Introduction

Disease surveillance is a core public health (PH) function. To manage and adjudicate cases of suspected notifiable disease, PH workers gather data elements about persons, clinical care, and providers from various clinical sources, including providers, laboratories, among others. Current processes often yield incomplete and untimely reporting across different diseases requiring time-consuming follow-up by PH to get needed information [1,2]. To improve the completeness and timeliness of case reporting, health departments have explored accessing EHR systems, which are increasingly available. We examine whether providing PH with EHR access to gather notifiable disease case information affects data completeness.

Methods

The Marion County Public Health Department (MCPHD) has limited access to the EHR system used at Wishard Health Services, a local safety net provider. EHR access is provided to case investigators to gather information for case adjudication. We reviewed completed case files for 4 diseases investigated by MCPHD:

- Histoplasmosis – 42 cases; Aug 2010 - July 2012;
- Acute hepatitis B – 40 cases; Aug 2010 - July 2012;
- Hepatitis C – 446 cases; Feb 2012 - July 2012;
- Salmonella – 162 cases; Aug 2010 - July 2012.

We previously identified data fields needed to adjudicate cases [3] and extracted data from each report type (e.g., fax from provider, EHR, electronic lab) submitted to MCPHD for each case. A total of 1299 reports for 690 total cases adjudicated were included.

We calculated the average number of reports submitted per case per disease, stratifying reports based on whether MCPHD had access to the EHR. We further calculated the average completeness of data fields for each group. We treated conflicting information as missing for these fields.

Results

The average number of reports per case was 1.9 (median 2) for all cases combined. The report per case average for EHR system case was higher than conventional case (2.6 vs. 1.7; p <.0001) (fig. 1a). On the 17 report fields we prioritized, EHR system cases had higher completeness rates in 7 fields, very similar values in 7 fields and less completeness values than conventional reports in 3 fields (fig. 1b).

Conclusions

Our results suggest that EHR access may increase completeness rates for key data fields needed to adjudicate cases of notifiable disease. Optimizing EHR's and clinical data capture processes, informed by public health experience, may support improved surveillance practice.

Using EHR systems to gather information necessary for notifiable disease surveillance may lead to more timely and complete processes. Future research is necessary to understand when EHR data are preferred over other data sources and how to optimize data gathering by clinical providers to support re-use of electronic clinical data for purposes such as public health surveillance.

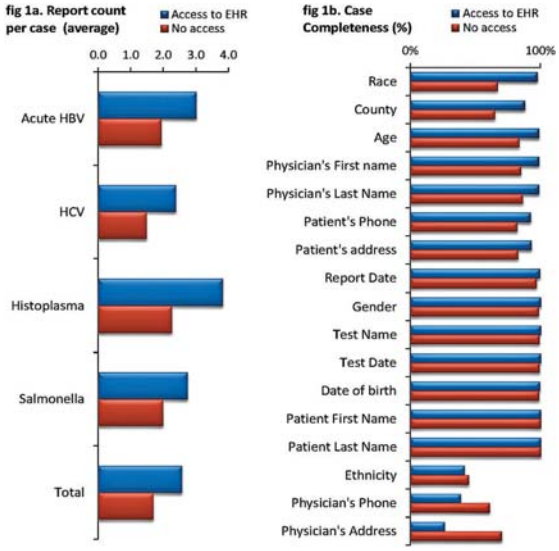

Figure 1a. Average number of reports filed per case, by disease (left).
Figure 1b. Completeness values for selected fields from CDRs (right). Only 3 fields had lower completeness rates for EHR access cases than conventional cases.

Keywords

Communicable disease reports; EHR system; Data completeness

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