Facilitating Influenza Surveillance Capabilities using an Electronic Health Record System

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Abstract
Currently, influenza surveillance data in the U.S. is collected through the U.S. outpatient Influenza-like Illness Surveillance Network (ILINet). However, there is no system in place to track the incidence of laboratory-confirmed influenza in outpatient visits for influenza-like illness (ILI). The goal of the Influenza Incidence Surveillance Project (IISP) is the improvement of disease surveillance by monitoring ARI and ILI. As there is much attention on Electronic Health Record (EHR) Systems for the improvement of healthcare over paper-based records, and the achievement of “meaningful use”, we report on our experiences of utilizing EHRs to monitor influenza and influenza-like illness.

Project Design

4 practices (3 small practices with 1-2 providers, 1 large practice with multiple providers)

- EHR Integration
  - each selected practice used an EHR system for patient management
  - patient data entered into electronic data collection form
  - Automated secure transmission of aggregate patient data and lab results to project coordinator

EHR Evaluation:
- report was submitted on time 39/41 weeks (95%)
- issues related to data transmission
- data collection form completeness:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Large Practice (n=1)</th>
<th>Small Practices (n=3)</th>
<th>All Practices (n=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (%)</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Sex (%)</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Rapid result (%)</td>
<td>81</td>
<td>91</td>
<td>88</td>
</tr>
<tr>
<td>Symptoms (%)</td>
<td>16</td>
<td>91</td>
<td>71</td>
</tr>
<tr>
<td>Onset date (%)</td>
<td>23</td>
<td>80</td>
<td>64</td>
</tr>
<tr>
<td>Flu vaccine (%)</td>
<td>11</td>
<td>73</td>
<td>56</td>
</tr>
<tr>
<td>Antivirals (%)</td>
<td>11</td>
<td>48</td>
<td>38</td>
</tr>
</tbody>
</table>

Other Protocol Issues:
- categorizing ILI cases as ARI or not checking ARI/ILI
- not ordering PCR tests for ILI cases

Results

Discussion
Successes:
- electronic data collection via smart forms, and subsequent transmission of secure aggregate reports resulted in timely reporting, while saving time/manpower

Challenges:
- large practice performed notably worse:
  - categorizing ILI cases as ARI
  - not ordering PCR tests for ILI cases
  - completion of data collection form
- attributed to workflow, high number of rotating staff, merger with another practice
- small practices better adhered to project protocol – may be a result of fewer staff with a more direct interaction and as a result, greater project familiarity

Solutions:
- identify attributes of successful practices for future
- increase level of staff training

Improved and enhanced methods:
- facilitation of enhanced surveillance (tracking ARI, ILI, denominator)
- Ability to evaluate data for practice-specific issues
- project manager-practice-laboratory interfaces
- ability to look up practice attributes (i.e., # of providers, support staff, patient volume) and performance (Super Score - EHR use evaluation)

Conclusions
Our experience with influenza surveillance using EHRs was positive, though we found that maintaining data quality hinges upon proper training of staff and monitoring whether protocol is being followed. Overall, EHRs can facilitate surveillance by saving time and manpower as well as providing additional metrics for close evaluation by the project manager.

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