Identification and definition of attributes to evaluate international event-based surveillance using Epidemic Intelligence from Open Sources (EIOS) at the Robert Koch Institute, Germany

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EIOS for international event-based surveillance

The Public Health Intelligence (PHI) team at the Robert Koch Institute (RKI) conducts event-based surveillance (EBS) focusing on media scanning to detect, verify, assess and communicate international events that may pose a threat to public health in Germany and/or the German population (PH events). The EIOS system is increasingly used worldwide to conduct EBS with publicly available information.

Evaluation framework and attribute relevance prioritisation

Figure 1. Framework for the evaluation of international EBS using EIOS at RKI

Figure 2. Relevance assessment of 12 attributes for the evaluation of international EBS using EIOS at RKI by the PHI team (N=7)

Conclusions

1. Surveillance system attributes have to be adapted to be used for EBS and to the specific surveillance system characteristics.
2. Timeliness was the most relevant attribute for the evaluation of EBS using EIOS at RKI according to the PHI team, followed by sensitivity and completeness.
3. Data collection methods and tools have to be designed according to the prioritised evaluation attributes and defined indicators.

Recommendations

We recommend (1) further development of methods for EBS evaluation and inclusion in surveillance system evaluation guidelines and (2) the reporting of attribute selection methods and definitions as an essential part of the evaluation of surveillance systems.

Note: The coloured dots represent each member’s rating and the black dots the median for each attribute. The boxes extremes show the interquartile range, while the lines extending from the boxes indicate the range of data excluding outliers. PPV: positive predictive value.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
<th>Indicator(s)</th>
<th>Data source</th>
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</thead>
<tbody>
<tr>
<td>Timeliness</td>
<td>Ability of international EBS using EIOS to detect PHI events at a time point that allows appropriate public health action</td>
<td>e.g. days between a PH event is first reported and it is first communicated as a PHI-relevant signal</td>
<td>Operational data collection tool</td>
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<tr>
<td>Sensitivity</td>
<td>Capacity of international EBS using EIOS to detect PHI-relevant signals</td>
<td>PHI-relevant signals coming from EIOS / PHI-relevant signals (overall and by board)</td>
<td>Operational data collection tool</td>
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<tr>
<td>Completeness</td>
<td>Extent to which EIOS contains all necessary sources to perform international EBS</td>
<td>EIOS sources in EIOS board / relevant sources needed for international EBS at RKI</td>
<td>Operational data collection tool and EIOS source check</td>
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