

# Enhancement of sensitivity with gathering Internet-based systems for early threat detection within the global health security initiative (GHSI): the EAR project

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## **ABSTRACT**

**Background:** Early Alerting and Reporting (EAR) is a project based on epidemic intelligence (EI) and dedicated to the enhancement of the detection and the risk assessment of CBRN terrorism threats. Hence, a state-of-the-art technology gathering 7 systems mining unstructured data from internet media and social networks (ProMED, BioCaster, HealthMap, MedISys, PULS, ARGUS, GPHIN) has been developed within an EI experts network, the Global Health Security Initiative (GHSI). To estimate the complementarity of each existing systems, we focused on sensitivity evaluation.

**Method:** Reference was chosen in a French perspective, which corresponds to the public health events identified as relevant for French population. Sensitivity (defined as the number of events detected by the system before the publication date divided by the total number of events) has been calculated for each system and for each possible aggregation of the systems (2, 3, 4 and 5 systems together).

**Results:** Among the 88 identified events, 94% have been detected by at least one system. The sensitivity of each system varied from 63% to 82%. The sensitivity reached its maximum when gathering at least 4 systems together.

**Conclusion:** The presented data illustrated the added values of developing synergies and cross-fertilisation between human expertise and Web-based systems aggregator.