NIHR | Health Protection Research Unit in Gastrointestinal Infections at University of Liverpool

NHS National Institute for Health Research

The Effectiveness Of Syndromic Surveillance For The Early Detection Of GI Infections: A Systematic Review

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BACKGROUND

Early detection is essential for successful prevention and management of gastrointestinal (GI) infections. UKHSA coordinates a programme of GI surveillance including laboratory reporting of viral and bacterial pathogens. In addition to traditional GI surveillance, syndromic surveillance can be utilised to support laboratory surveillance.

Real-time syndromic surveillance provides public health intelligence to aid in early warning and monitoring of public health impacts, or reassurance when an impact has not occurred. It uses information collected during routine patient care based on signs, symptoms, or preliminary diagnoses.

Examples of syndromic surveillance data range from; calls from those who are ill in the community to telehealth advice phone lines to patients attending in person in primary care, or in emergency care situations including emergency departments (ED).

AIM:
To identify and describe evidence of the utility of syndromic surveillance for the early detection and monitoring of GI infection.

METHODS

LITERATURE SEARCH

The search strategy will include searching the Cochrane Library, Medline/PubMed, EMBASE, Scopus, and Web of Science for relevant published articles using a combination of the keywords related to both Syndromic Surveillance, and Gastrointestinal infection, for example:

("syndromic surveillance" OR "real-time surveillance" OR "real time surveillance" OR "syndrome surveillance" OR "early detection" OR "chief complaint" OR "presenting complaint")

AND ("Gastrointestinal infection" OR "gastrointestinal activity" OR "diarrhoea" OR "diarrhea")

Grey literature such as conference abstracts will be excluded and other studies like systematic reviews, interviews, case reports, newsletters, government reports, technical reports, and dissertations will also be excluded. The publication period will be set from 2000 to date, and only peer reviewed publications in English will be included in the search strategy. The bibliographies of the eligible articles will be screened to identify additional studies. We will also search Google Scholar for articles using the same key words to assess potential publications not identified in the bibliographic databases.

Inclusion Criteria	Exclusion Criteria
Studies that evaluate the effectiveness of GI infections using a range of GI syndromic indicators including vomiting, diarrhoea, nausea, and abdominal pain. These are symptoms commonly reported in GI infections (e.g. norovirus, rotavirus, intestinal, and even water-borne diseases).	Studies with outbreaks from contaminated food sources,
Studies that report outcomes on timing, frequency, methods of data collection, and transfer of data.	Studies that does not involve the use of real-time, syndromic surveillance e.g. traditional laboratory-based surveillance, event-based surveillance, non-GI syndromes and conditions e.g. influenza-like illnesses, simulation studies and studies reporting health surveillance due to temporary emergency settings or as a response to natural disasters.

DATA EXTRACTION/ANALYSIS

The first pass, and second pass screening will be conducted using the Cochrane tool, *Covidence* and the selected studies will be compiled in an *Endnote library*. Studies meeting selection criteria will be subjected to qualitative data extraction. Some of the technical core assets to evaluate a surveillance system's ability to detect a true outbreak are timeliness, sensitivity, and specificity.

Therefore, the data to be extracted in this review will include surveillance systems, data signal, indicators monitored, motivation for system creation, system start date, sensitivity/specificity, and geographical coverage. Where possible, information will be extracted detailing the technicalities of the surveillance system such as timings, frequency, methods of data collection and transfer of data from the surveillance systems to the syndromic surveillance database.

The utility of syndromic surveillance will be thematically analysed by signs of early warnings of an outbreak, trends, and magnitude of outbreak. The CASP checklist will be used for the quality assessment and critical appraisal of the studies.

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