

Abstract

Background: Germany received an increased number of asylum-seekers since 2015. Due to lowered living conditions, asylum seekers are considered vulnerable to infectious diseases. A syndromic surveillance system that allows early and real-time detection of infectious disease outbreaks is currently being developed within the electronic medical records software RefCare© (Refugee Care Manager). This study aimed to pre-evaluate the syndromic surveillance feature 1) to assess the quality and clinical relevance of the syndromic surveillance algorithm for the detection of infectious disease outbreaks and 2) to identify determinants for the implementation in the practice of outpatient clinics in facilities for asylum-seekers.

Methods: An explorative mixed-methods evaluation study was conducted. The qualitative approach included five semi-structured expert interviews with on-site healthcare services to identify challenges and potentials for the implementation. Interviews were recorded, transcribed, and analysed following the approach of content analysis. A quantitative statistical analysis was conducted to assess the validity and reproducibility of the syndromic surveillance signals. As reference to the syndrome indicators, distinguished between single case indicators (chronic cough, fever and bleeding, fever and rash, meningitis/encephalitis, bloody diarrhoea) and threshold indicators (acute respiratory infections, acute jaundice, gastroenteritis, skin parasitosis), anonymous clinical data on potential outbreaks was collected from 01/09/2019 to 31/05/2020 from six facilities. Diagnostic tests were applied for each syndromic indicator to assess the validity (sensitivity, specificity, positive and negative predictive value, likelihood ratios) and reproducibility (Youden and Kappa statistics) of the syndromic surveillance system.

Results: Implementation challenges have been seen in the heterogeneous setting and unstructured assessment procedures of infectious disease events as well as a lack of communication structures in the facilities. Implementation potentials have been seen considering the recognized benefit of syndromic surveillance for health care services and available implementation requirements. The syndromic surveillance algorithm mostly generated signals for acute respiratory infection, skin parasitosis and acute jaundice. The analysis showed high estimates for specificity (SP) and negative predictive values (NPV) throughout all considered indicators, however, estimates for sensitivity and positive

predictive values were comparably low or not available. Youden and Kappa statistics showed only low levels of reproducibility.

Conclusions: The introduction of a syndromic surveillance in RefCare© shows several advantages in medical practice, especially early reliable detection and standardisation of the detection process. However, further research is needed using reliable data to statistically validate the syndromic surveillance approach.

Keywords: Asylum seekers, infectious diseases, syndromic surveillance, reception centre, accommodation centre, outbreaks