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Microbiological Data from the University Medical Center Freiburg

An important part of infection prevention and control is the rapid detection of the nosocomial spread of microbial pathogens and the formation of clusters of infection to enable early intervention that prevents further transmission. For surveillance purposes nosocomial clusters of individual pathogens can be defined by using simple rules (like threshold values for case numbers of a certain pathogen on a ward/in a hospital), the instinct of clinicians, nurses, and infection control and microbiology personnel, and automated statistical methods. Reliance on the first two options may lead to false-positive alerts and may also miss true clusters in certain situations (e.g. when the pathogen does not have an exceptional resistance phenotype or when transmission takes place out-of-ward at a shared location). The surveillance of nosocomial clusters should therefore also include prospective automated statistical methods using routine microbiological data. A statistical method incorporating temporal and spatial information without the need for population-at-risk data (e.g. space-time permutation scan statistic) may be the most useful one for early detection and rapid response.
The Institute of Medical Microbiology and Hygiene provides microbiological services for all departments of the University Medical Center located in the city of Freiburg. Complete microbiological data are available for departments treating adult patients since 2007, and since 2013 for pediatric departments. The data structure including issues related to the type of data will be presented, as well as an example of the identification of a known cluster using one software package. The literature concerning the use of the space-time permutation scan statistic for the detection of clusters of nosocomial infections will also be summarized.