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O1171 Testing a framework to develop semi-automated surveillance of surgical site infections

Stephanie Van Rooden*[1], Evelina Tacconelli[2,3], Elodie Couve-Deacon[4], Jan A. J. W. Kluytmans[5,1], Aina Gomila[6], Marc J. Bonten[1], Maaike S. M. Van Mourik[1]

[1] University Medical Center Utrecht, Utrecht, Netherlands, [2] University of Verona, Verona, Italy, [3] University of Tuebingen, Tuebingen, Germany, [4] INSERM, RESINFIT, U1092, CHU Limoges, Limoges, France, [5] Amphia Hospital, Breda, Netherlands, [6] Hospital Universitari de Bellvitge, L'Hospitalet de Llobregat, Spain

Background: Automated surveillance of healthcare associated infections using data stored in electronic health records (EHRs) reduces workload and improves standardization, thereby facilitating local quality improvement, (inter)national comparison and measurement of outcomes in clinical trials. Despite the increasing use of EHRs, automated surveillance is not widely adopted perhaps due to a lack of knowledge and guidance. This study assesses a practical framework for developing semi-automated surveillance of surgical site infections (SSI) without the need for complex analyses in various European hospitals.

Materials/methods: Hospitals performing manual surveillance of SSIs and having electronic recordings of required clinical information from the year 2012 onwards were recruited. Extractions from the EHR had to be possible for at least microbiological culture results, admissions, surgical procedures, and mortality; antibiotic prescriptions were optional. Information on local surveillance and clinical practices were collected through a questionnaire, and used to pre-emptively design algorithms for semi-automated surveillance. We assessed the potential for standardization between hospitals by developing a 'general algorithm' to apply in all hospitals. The performance of the algorithm was compared to traditional surveillance of deep SSI using local definitions. Discrepancy analyses were performed to understand the results and to improve the algorithms.

Results: Data from three hospitals in France, the Netherlands, and Spain were analysed. We included 4470 orthopaedic (38 deep SSI, 0.9%), 5047 cardiac (99 deep SSI, 1.9%) and 3909 colon procedures (233 deep SSI, 6.0%). Algorithm sensitivity was >90% in most hospitals and procedures, with 75-95% reduction in manual chart review workload. For most algorithms, tailoring to local procedures, improved the specificity compared to 'general algorithms', but without improvement of sensitivity.

Conclusions: Using this framework, algorithms with good performance can be developed for semi-automated surveillance of SSIs. Future application appears feasible if minimally required data can be extracted from the EHR. Importantly, data extraction requires close collaboration between infection prevention practitioners, clinical specialists, and the IT department. The high sensitivity and workload reduction achieved by general algorithms, not developed specifically per centre, may indicate that a standardized approach can be applied to multiple hospitals. However, large-scale implementation requires further validation studies and the development of implementation strategies.