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Abstract (poster session)

The CDC definition of nosocomial infections revised: a prospective study with 1694 patients

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Introduction: The Centers for Disease Control and Prevention (CDC) defines a nosocomial infection (NI) as an infectious event that is diagnosed >48 hours after admission without evidence that the pathogen was already in the incubation phase. This definition will overestimate the true NI rate, since not all infections acquired outside the hospital are identified on admission. We prospectively studied the gap between NIs based on CDC definition compared to a predefined, published clinical definition that defines true NIs. Methods: The study was performed at the University Hospital of Basel, a tertiary care center in Switzerland. All data were recorded in a standardized database, and yearly checked for consistency. Since 2002, all patients that were put on contact isolation were prospectively assessed if they acquired the pathogen in the hospital (=true NI) or detection has been delayed for other reasons to >48 hours and were classified as CDC-NI. True NI was defined as a patient with an epidemiological link to an index patient, phenotypic identical species and identical molecular typing by pulsed-field electrophoresis. The CDC-NI was reclassified to non-NI, if the patient had no exposure to a patient colonized or infected with the same pathogen, and there was no match by molecular typing. Results: Overall, 1694 patients were surveyed from January 1, 2002 until September 28, 2011: 742 had MRSA, 18 VRE, 865 ESBL, and 69 other multidrug resistant gram-negative bacteria other than ESBL. Out of the 1694 patients 306 (18,06%) were classified as CDC-NI and 163 (9,6%) as true NI. On average, only 53,3% of all CDC-NI fulfilled the definition of true NI (Table 1). Discussion: The limitation to resistant pathogens in this study allowed a clear discrimination between true-NI and CDC-NI, a distinction difficult to assess in common NIs with patients not requiring contact isolation. Approximately half of the patients classified as NI by CDC really are true NIs. This is particularly important in countries who work with the reimbursement system DRG (Diagnosis Related Groups). Insurance companies are not necessarily obliged to pay for treatment of NI, bringing hospitals in precarious financial situations, however, only transmissions within the hospital can be prevented by an infection control program.

Table 1: Proportion of patients with CDC-NI and true NI

| Microorganism | Number of patients | CDC-NI | True NI | Proportion true NI/CDC-NI |
|---------------|--------------------|---------------------|-------------------|---------------------------|
| MRSA | 742 | 109 (14.7%) | 67 (9.0%) | 61.5% |
| VRE van A/B | 18 | 6 (33.3%) | 5 (27.8%) | 83.3% |
| ESBL | 865 | 167 (19.3%) | 72 (8.3%) | 43.1% |
| other MDR | 69 | 24 (34.8%) | 19 (27.5%) | 79.2% |
| Total | 1694 | 306 (18.06%) | 163 (9.6%) | 53.3% |

MRSA: Methicillin-resistant *Staphylococcus aureus*, VRE: Vancomycin-resistant *enterococci*, ESBL: Extended-spectrum betalactamase, other MDR: Multidrug-resistant gram-negative bacteria other than ESBL