

P17.01

Mandatory Surveillance of Surgical Site Infections (SSI) in Flanders: Do Data Indicate Underreporting?

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Background: In 2000, surveillance of SSI became mandatory for all acute hospitals of the Flemish region of Belgium for the NNIS categories: colon surgery, herniorrhaphy, hip replacement, laminectomy, vascular surgery and coronary artery bypass. Participation in the voluntary national nosocomial infection surveillance programme was recommended.

Objective: To examine whether the SSI surveillance data for the Flemish hospitals collected after 2000 indicated underreporting of infections.

Methods: Data from 61 hospitals and 22 644 operations have been collected from 2001 to 2003. For each operation category, NNIS risk index-specific SSI rates, based on the data of hospitals that reported at least 20 operations for the given category, were calculated. Standardised Infection Ratios (SIR) were calculated for each hospital, using the national risk index-specific SSI rates to calculate the expected number of SSI. A binomial test was used to determine if the SIR was significantly different from 1 ($p < 0.05$).

Results: Ten hospitals (16%) did not register any SSI at all for a total of 1206 operations but only for 3 hospitals this was significantly less than the number of SSI expected, based on the number of operations included and case mix. The SIR was between 0 and 1 for 27 hospitals (44%, for 6 $p < 0.05$). Overall SSI rates for Belgium were similar to those observed in HELICS and NNIS.

Discussion: The fact that 61% (37/61) of the hospitals reported less infections than expected suggests that underreporting may have occurred in some hospitals. However, due to the small number of operations the level of significance was only attained by 9 (15%). In personal contact with the hospitals the workload of the surveillance and lack of collaboration of surgeons were often highlighted as constraints. It is essential that accuracy and validity of reported data in mandatory surveillance systems be regularly assessed before drawing conclusions about performance of a single hospital.

P17.02

Surveillance of MRSA over 3 Years shows a Significant Reduction of the Nosocomial MRSA Incidence Density - Analysis of 26 German MRSA-KISS Hospitals

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Background: A prospective multicenter hospital-based surveillance of MRSA case-patients (pts.) was established in the year 2003 with participating hospitals of the national German nosocomial infections surveillance system (MRSA-KISS module).

Objective: To determine a trend of the MRSA situation in 26 hospitals who have participated in the MRSA-KISS module throughout the past 3 years.

Method: The data were recorded during the routine surveillance by the infection control team of each hospital. The following rates were calculated: (1) the nosocomial incidence density; (2) the average daily MRSA burden to describe the colonization pressure in each hospital; (3) the MRSA days-associated nosocomial MRSA rate to assess the infection risk for the other pts. in the hospitals due to a large number of pts. with MRSA at admission. The Wilcoxon signed rank test was performed in order to determine trends.

Results: Data from 6,444 MRSA pts. with 115,726 MRSA patient days and a total number of 10,122,928 patient days were considered for this analysis. The initial total MRSA incidence density was 0.52. The analysis of the rates showed differences during the past years. From 2003 to 2004, there was a significant

increase in the MRSA burden (median 0.18; $p = 0.016$) as well as in the nosocomial MRSA incidence density (median 0.07; $p = 0.007$). From 2004 to 2005, a slightly decreasing rate was observed in the MRSA burden (median 0.021), but there was a significant decrease in the nosocomial MRSA incidence density (median 0.03; $p = 0.009$). The MRSA days-associated nosocomial MRSA rate showed a slight decrease from year to year (median 1.44; 1.63).

Conclusion: The continuous prospective surveillance of the MRSA pts. according to the MRSA-KISS module including the feedback of reference data resulted in a significant reduction of the nosocomial MRSA incidence density in the third year. Due to this observation a hospital-based MRSA surveillance like the MRSA-KISS module should be recommended for all hospitals.

P17.03

Stenotrophomonas maltophilia bacteremia: an analysis of 35 episodes

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Background: *Stenotrophomonas maltophilia* is a nosocomial pathogen with increasing frequency in recent years especially in immunocompromised and clinically debilitated patients. Treatment of infections can be problematic due to resistance of the organism to multiple antimicrobial agents.

Aim: The aim of this study is to describe the characteristics of 35 episodes of bacteremia in 25 hospitalized patients and the antibiotic sensitivity patterns of this organism.

Method: The study is designed to investigate the bloodstream infections due to *S. maltophilia* at Celal Bayar University hospital in Turkey over a 3 year period from January 2002 to December 2005. Cases were identified with microbiology laboratory records and clinical data were collected from the medical record of each patient.

Results: 60% (15) of patients were male and 40% (10) were female. The mean age was 58.34 ± 19.25 years and the mean hospitalization period was 55.62 ± 46.52 days. Most of the patients (84%) were hospitalized in anesthesiology intensive care unit. The source of bacteremia was central venous catheter (CVC) in 65.7% (23) and respiratory tract infection in 9% (1) of episodes while the source of bacteremia was unknown in 11 (31.4%) episodes of bacteremia. Eight bacteremia episodes had polymicrobial isolates. Sixteen patients (64%) had underlying diseases, 8 (32%) had surgical operations and 21 (84%) had prior antibiotic therapy. The most sensitive antibiotic was found as trimethoprim-sulfamethoxazole (91.4%) in antibiotic susceptibility testing of the isolates.

Conclusion: Knowledge about the characteristics of *S. maltophilia* infection and the antibiotic susceptibility patterns is important in determining the empirical therapy especially in intensive care units.

P17.04

Antibacterial Resistance in Microbiologically Confirmed Nosocomial Bacteremia Related Pseudomonas aeruginosa Strains in a Tertiary Care Educational Hospital in Turkey

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Background: *P. aeruginosa* (PSA) is one of the most important pathogens causing nosocomial bacteremia in most parts of the world. In this study it was aimed to evaluate the resistance patterns of microbiologically confirmed nosocomial bacteremia (NB) related PSA strains between 2001-2005. **Setting:** Our hospital is a 1788 bedded tertiary care educational hospital 77 of which are in ICUs.

Method: Resistance patterns of PSA, strains isolated from hospital wide microbiologically confirmed NB patients between 2001 and 2005 were evaluated retrospectively. Any patient in whom PSA was isolated in at least one set of blood cultures (Sent to the bacteriology laboratory 72 h after hospital admission) was considered to have microbiologically confirmed NB. Data of antibacterial resistance and hospital admission dates were extracted from hospital patient record database. Double or more isolates during each episode were counted as one episode. Resistance patterns in the 2001-2002 and 2004-2005 periods were compared by Chi-square test. 2003 data were excluded to see the probable effect of governmental antibiotic restriction policy, which was started in March 2003. A p value less than 0.05 was considered significant. Blood cultures were performed on Bact/Alert (bioMerieux, Durham, NC). Bacterial identifications were performed by automated API (bioMerieux, Durham, NC). Antibacterial susceptibility tests for antibiotics shown in tables (all discs Oxoid, England) were performed by Kirby Bauer disc diffusion method following the recommendations of CLSI. Mueller Hinton agar (Oxoid, England) was used for all susceptibility tests. Zone sizes were interpreted as described by CLSI.

Results: Results are shown in tables 1 and 2.

Table 1: Resistance rates of *P. aeruginosa* strains

	Resistance rate (%)				
	2001 (n=75)	2002 (n=83)	2003 (n=41)	2004 (n=77)	2005 (n=69)
Amikacin	45	24	30	16	16
Netilmicin	50	22	22	36	33
Aztreonam	58	35	41	56	45
Ceftazidime	42	22	27	48	28
Cefoperazone	48	25	22	30	13
Cefepime	18	36	30	42	20
Pip/Taz	41	28	31	40	36
Ciprofloxacin	42	62	33	30	40
Imipenem	52	19	15	27	26
Meropenem	53	16	10	24	22

Table 2: Comparison of 2001-2002 and 2004-2005 periods

	2001-2002 (n=158)	2004-2005 (n=146)	P
Amikacin	34.4	16	<0.001
Netilmicin	36.8	31.8	NS
Aztreonam	46.5	51.5	NS
Ceftazidime	32.3	39	NS
Cefoperazone	37.2	24	<0.05
Cefepime	42.6	30.0	<0.05
Pip/Taz	34.6	38.7	NS
Ciprofloxacin	30.5	32.6	NS
Imipenem	34.6	26.6	NS
Meropenem	34.6	23.5	<0.05

NS: Not significant.

Conclusion: Decrease in the resistance rates is possibly because of the requirement of prior authorization by infectious diseases specialists for extended spectrum antibiotics since March 2003 due to 2003 Turkish Ministry of Finance budget application.

P17.05

Microbial Aetiology of Nosocomial Septicaemia in a Tertiary Danish NICU

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Background: Intensive care in neonatology has advanced during the last decades. Changes in population and procedures in Neonatal Intensive Care Units (NICU), may lead to a change in the distribution of microorganisms causing neonatal sepsis.

Aim: To compare the microbial aetiology of nosocomial septicaemia in a Danish NICU population in 2002-05 with similar data from 1984-89.

Methods: NICU at Rigshospitalet, Copenhagen, is a tertiary unit with a yearly admission of approx. 1000 patients. We have retrospectively analyzed microbiological and clinical data from the period 2002-2005. Inclusion criteria were onset >48 hours after admission. The following criteria were used to define microbiologically confirmed septicaemia: The combination of clinical septicaemia and (1) the isolation of a known pathogen, or (2) two separate isolates of the same microorganism, or (3) one isolate identified also in a relevant focus, or (4) one isolate and appropriate and successful antibiotic treatment.

Results: 95 episodes of bacteraemia and candidaemia were recorded. 10 episodes were polymicrobial. Of the 85 monomicrobial episodes, 19 (22.4%) and 40 (47.1%) were caused by *S. aureus* and coagulase negative staphylococci (CNS), respectively, whereas 12 (14.1%) were due to Enterobacteriaceae. Among the 85 monomicrobial episodes death occurred within 5 days of onset in 8 (9.4%), of which 6 (37.5%) were in patients with gram negative bacteraemia and none in CNS bacteraemia.

Discussion: Results were compared with a similar Danish study from the period 1984-88, which showed 40% Enterobacteriaceae, 12.5% *S. aureus*, and 10.9% CNS in 70 episodes of monomicrobial septicaemia. Thus a shift towards gram positive bacteria as aetiology was seen. These results will be discussed in relation to changes in patient population and the recommended empirical antibiotic treatment which has remained basically unchanged since the former study.

P17.06

Risk Factors for MRSA Infection Among in-Patients Colonized with MRSA

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Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) is endemic in Irish hospitals. Data on MRSA bloodstream infections and the number of newly colonized patients are available. However the extent of all infections attributable to MRSA is unknown.

Aims: To determine the extent of MRSA infection, and the associated risk factors in an Irish teaching hospital.

Methods: A point prevalence study was carried out on a single day in each month from October 2005 to May 2006 inclusive. All in-patients known to be colonized with MRSA were assessed to determine whether they had infection attributable to MRSA on the day of study. Information on risk factors for MRSA infection was also collected.

Results: Over the study period, the prevalence of MRSA infection (definite, probable and possible) among in-patients colonized with MRSA ranged from 12% to 31% (mean 21%). A total of 67 infections were found in 328 colonized patients. Lower respiratory tract infections and skin and soft tissue infections were the most common. There was no significant difference in cases of infection between males and females; however there was a significant difference in age between infected and colonized patients ($t=-2.95$, $df=14$, $p<0.05$). Neither admission to the intensive care unit nor the presence of a urinary catheter were found to be risk factors for infection