

(Young's ratio). So, the consistency of material can be measured by monitoring the shift in the frequency. Using the tactile sensor system, the measurements were made. We measured skin consistency during surgery in aged (65+) patients with gastrectomy. The primary disease, procedures, operative time, antibiotics, ASA classification, preoperative skin treatment, comorbidity, smoking history, BMI, wound contamination, postoperative hyperglycemia, postoperative albumin, postoperative delirium and length of hospital stay were recorded. In case with infection, type of wound infection and the day of diagnosis as infection were also recorded.

Results: 39 patients had gastrectomy for gastric cancer and 7 patients suffered from wound infection. Age (75.6 with infection versus 73.7 without infection) and BMI (23.4 vs 21.7) indicated no statistical difference between with and without wound infection, as well as, skin consistency (503.8 vs 480.1). The operative time more than 180 minutes and NNIS risk index were only risk factors for infection. In patient with SSI, the length of hospital stay was longer than the patients without wound infection.

Conclusion: The skin consistency did not associate with the wound infection. Long time procedure and higher risk index were only risk factors for wound infection in mature patients with gastrectomy.

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Vancomycin-resistant *Enterococcus faecium* prevalent in Russian neonatal intensive care units

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Background: Outbreaks of vancomycin-resistant *Enterococcus faecium* (VRE) strains is an emerging problem worldwide. The important risk group for VRE infection and colonization are neonatal intensive care units (NICU) patients

The aim of study was to estimate a point prevalence of VRE in neonatal ICUs and to study clonal characteristics of isolated VRE.

Methods: A cross-sectional microbiological study of the neonates and environment repeated after a two months interval in NICU of two pediatric hospitals has been conducted. Resistance to vancomycin was defined by PCR detection of vanA cassette. 7 of isolated vancomycin-resistant *Enterococcus faecium* strains were characterized with respect to clonal relationships by using VNTR typing (MLVA) according to published recently protocol presented by Top J. et al., (2008).

Results: During the first cross-sectional study, VRE were isolated from 7 neonates with prevalence rates of infection 13.6 (95% CI= 3.6 - 32.8) in one unit and 16.7 (95% CI= 5.5 - 35.5) in another. After the first examination strict contact isolation precautions were recommended for patients infected with VRE. These recommendations were introduced in one of the units only. The second cross-sectional study was conducted in 2 months after the first one. In the unit where the strict contact isolation was implemented, there were no new cases of colonization of the neonates with VRE.

detected (with the prevalence rate of 8.3 per 100 patients).

Based on VNTR-typing the circulation of the three clonal lines of the vancomycin-resistant *Enterococcus faecium* has been demonstrated, one of which was common to the both hospitals.

Conclusion: Effective control of VRE requires microbiological monitoring of VRE in the high risk facilities, such as intensive care units. Detection of circulating VRE is possible with periodic cross-sectional studies. Strict contact precautions should be applied to the patients colonized with VRE.

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Changing etiology and risk factors of nosocomial bacterial meningitis: a nationwide multicenter study 1993-2010 in Slovakia

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Background: Nosocomial meningitis is still associated with unrespectable high mortality and sequelae. The aim of this study was to assess if differences in etiology, risk factors and outcome of bacterial nosocomial meningitis (NM) between three periods of survey (1993 - 1998, 1999 - 2006 and 2007 - 2010) in Slovakia.

Methods: We performed multicentric observational study of nosocomial meningitis appearing in clinically hospital stay patients in 10 major hospitals (Bratislava, Trnava, Kosice, Ruzomberok, Nitra, Banská Bystrica, Nove Zamky, Presov, Zilina, Lucenec) in Slovakia. Two hundred and sixty-one patients diagnosed with NM, according to the criteria of the Centers for Disease Control and Prevention between 1993 and 2010 were evaluated retrospectively. Trends in risk factors and etiology of NM appearing 1993 - 1998, 1999- 2006 and 2007 - 2010 were compared. Differences between periods were assessed by univariate analysis. Chi-square test and Fisher's exact test computerized with the open source statistical package "R" were used and $P < 0, 05$ was considered statistical significant.

Results: During 17 years, we have detected 261 cases with attributable mortality of 12,1% and sequelae in 19%. Comparing the three periods in our study of nosocomial meningitis in etiology staphylococci was decreasing (18,2% vs. 3,4%; $P=0,023$) and gram-negative etiology was stable during all study period (52,7% vs. 41,6% vs. 55,9%; $P=0,876$). Perinatal pathology or CNS abnormality, hydrocephalus as a complications and very low birth weight neonates significant decreasing between first and last period of study. Concerning risk factors craniocerebral trauma (7, 1% vs. 20%, $P<0,01$) were more significant prevalent in late study period in comparison to the first study period. No significant change in mor-

tality among three periods of study (14.9% vs. 14.9% vs. 6.7%; $P=NS$), however there was a significant increase of neurologic sequelae or relapse, in 1993–1998 comparing 2007–2010 (17.8% vs. 33.3%; $P=0.02$).

Conclusion: Nosocomial bacterial meningitis is still frequent complications of trauma and surgery with 10–15% mortality rate. Gram-negative bacillary meningitis has become an important cause of hospital-associated central nervous system infection.

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Nosocomial influenza A outbreak among HIV-infected patients in a tertiary-care hospital

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Background: Nosocomial infection associated with respiratory viruses can lead to devastating complications in immunocompromised patients. In spite of long-standing recommendations for healthcare workers (HCWs) vaccination against seasonal influenza, vaccine uptake among HCWs remains lower than 45% worldwide. In June 2010, an influenza A outbreak occurred among HIV-infected patients admitted to a tertiary care hospital in Singapore. The study objective was to examine clinical information and vaccination coverage against influenza in infected patients and HCWs, and determine the possible reason for the outbreak.

Methods: A retrospective study was conducted on infected patients and staff from the ward who presented with respiratory illness and/or had exposure to these symptomatic patients, and/or a 4-fold increase in antibody titre by HI (hemagglutinin inhibition) testing from paired serum samples taken from HCWs two weeks apart. Epidemiologic, clinical, laboratory and vaccination data were collected.

Results: Of 10 patients and 30 staff from the ward, four patients (clinical attack rate 40%) and four staff (clinical attack rate 13.3%) fulfilled our case definitions. All infected patients and HCWs had mild illness. All infected patients had positive A/H3N2 results. Only two affected patients received 2009 H1N1 influenza vaccine and the 2009–2010 seasonal influenza vaccines. Among 21 HCWs who provided paired sera, the influenza vaccine coverage for the 2009 H1N1 and the 2009–2010 seasonal influenza were 23.8% and 76.2%, respectively. Seroconversion against the A/Wisconsin/15/2009 H3N2 and the A/California/7/2009 H1N1 pandemic viruses were found in 2 (9.5%) HCWs who had not been vaccinated previously with 2009–2010 seasonal influenza vaccines. Genetic studies on all the positive specimens from patients showed their probable common source, and all viruses were close to the local circulating strain.

Conclusion: Unvaccinated HCWs when exposed to cases of influenza can acquire infection and pass the virus to the other

patients. Since the efficacy of vaccination among these highly vulnerable patients may be lower, attempts should also be aimed at reducing chances of influenza transmission in healthcare settings by mandatory seasonal influenza vaccination of HCWs. Influenza vaccination should be the primary tool to decrease the frequency of nosocomial influenza outbreaks.

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Testing of the sensitivity and specificity of the User-Seal-Check procedure on “gross leakage” of N95 respirators

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Background: User-Seal-Check is a self-examination procedure for wearers of N95 respirators to identify “gross leakage”. It is a recommended routine practice that is widely adopted by front-line healthcare workers for health protection. However, its validity has not yet been testified by research study. A study was therefore conducted to examine the sensitivity and specificity of the User-Seal-Check procedure on leakage detection of two types of N95 respirator.

Methods: Adopting a descriptive design, 312 nursing students were invited to participate in the study as convenience samples. The participants were made familiar with a standardized respirator wearing protocol and a guideline for performing User-Seal-Check procedure. Upon the wearing of two types of N95 respirator, namely the cup-shaped 3M-1860s and 3-panel designed 3M-1862, each participant was instructed to carry out the User-Seal-Check procedure to identify “gross leakage”. Repeated testing of leakage was followed by the use of a quantitative fit testing (QNFT) device (i.e. PortaCount Respirator Fit Tester System). The QNFT device gives a fit factor (range from 0–200) as a measurement of the fit of a respirator for a wearer, and a fit factor of less than 100 under “normal breathing” condition is defined as “gross leakage”.

The sensitivity (the ability of User-Seal-Check to correctly identify a case with gross leakage) and specificity (the ability of User-Seal-Check to correctly identify a case without gross leakage) were calculated from the measurements. A combination of high sensitivity and specificity (>80%) is an indication that User-Seal-Check is valid.

Results: Among the participants, 24.0% reported “gross leakage” was found with User-Seal-Check for both types of N95 respirator. However, measurements of the QNFT device indicated that the prevalence of “gross leakage” during “normal breathing” was 35.3% and 26.4% with 3M-1860s and 3M-1862 respectively.

The sensitivity and specificity of User-Seal-Check for identifying “gross leakage” were 23.6% and 75.3% for 3M-1860s, and 23.2% and 76.0% for 3M-1862, respectively. These results were found to be far below the standard (>80%).

Conclusion: The findings indicated that User-Seal-Check was unable to accurately identify the presence or absence of “gross leakages” in the “normal breathing” condition. Therefore, the validity of such routine practice is highly doubtful.

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