



The national surveillance of healthcare associated infections and antimicrobial resistance in Belgian hospitals (NSIH)

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OVERVIEW AND SOFTWARE TOOLS

Since 1992, the NSIH programme of the IPH coordinates the national surveillance of health care associated infections (HCAI) and antimicrobial resistance (AMR) in Belgian hospitals in addition to other projects concerning infection control (Fig.1). This surveillance network offers hospitals standardised methods to measure and follow-up different HCAI or AMR indicators and to compare them with other hospitals through confidential feedback of the results.

Fig 1: Overview of the NSIH surveillances and projects, 1992-2007

	2004	2005	2006	2007
Surveillance of nosocomial septicemia (hospital-wide) (NSIH-SEP)				
Surveillance of surgical site infections (NSIH-SSI)				
Surveillance of ICU-acquired infections (NSIH-ICU)				
Surveillance of MRSA				
Surveillance of MRE/ESBL (MRE)				
Surveillance of C. difficile associated disease (CDIFF)				
Surveillance of antibiotic use (ABU)				
Surveillance of accidental blood contact (ABC)				
National hand hygiene campaign (HH)				
Coordination of EU surveillance ICU (HELICS-ICU)				
Coordination of EU surveillance SSI (HELICS-SSI)				
NSIHweb + feedback & ZH4 tools				
Follow up of nosocomial epidemics (with VIG/CF/CCC)				
Validation visits in hospitals				
Courses Epistat and Epi-info for IC staff				
Divers projects on quality and MRSA in nursing homes (NH)				
Prevalence study of MRSA in high skilled NH (KULJFP)				

Surveillance data are collected and entered by infection control, intensive care or other staff and sent to the IPH for analysis and feedback. NSIHwin (MS Access) is used for data of SEP, ICU, SSI and HH, EPINet (MS Access) for ABC-data and NSIHweb (<https://www2.iph.fgov.be/nsih/>) for CDIFF, MRSA and ABU (dec.07). All software programs provide a standard analysis of the surveillance data.

Fig 2: Screenshots of NSIHwin and NSIHweb



SURVEILLANCE

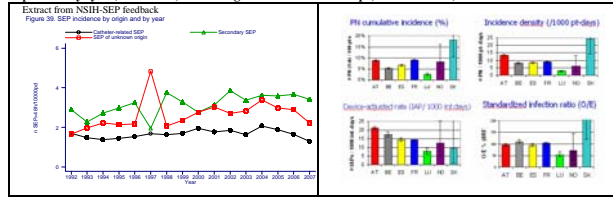
Surveillance of nosocomial bloodstream infections (hospital-wide)(SEP)

The incidence of nosocomial bloodstream infections (BSI) increased over the years due to an increase in the sensitivity of surveillance and increasing AMR in enterobacteriaceae, as reflected mainly in secondary BSI. However, the incidence of catheter-related BSI, most related to infection control, is decreasing (Fig 3).

Surveillance of ICU-acquired infections (ICU)

In the surveillance of ICU-acquired infections, risk-adjustment is crucial to make valid comparisons. Fig 4 shows the comparison of 7 EU countries using different indicators of ICU-acquired pneumonia in the European surveillance network HELICS.

Fig 3: Incidence of nosocomial septicemia/10000 patient days/year, 1992-2007, NSIH-Belgium
Fig 4: Comparison of ICU-acquired pneumonia in Europe, HELICS-ICU, 2004-2005



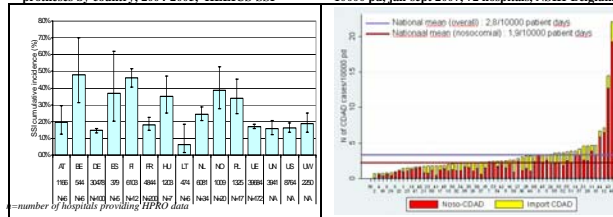
Surveillance of Surgical Site Infections (SSI)

Surveillance of SSI is the most frequent type of surveillance in Europe. In Belgium participation to this module is rather limited, resulting in relatively high rates in few voluntarily participating hospitals, probably because of specific problems (Fig 5).

Surveillance of Clostridium difficile associated disease (CDIFF)

Clostridium difficile is the most frequent cause of nosocomial diarrhoea. Since July 2006, national surveillance has been organised for all acute care hospitals in Belgium. Preliminary analysis of available data gives a mean national incidence of 2,8 cases(overall)/10.000 patient days and of 1,9 nosocomial cases/10.000 pd (Fig 6).

Fig 5: Cumulative incidence (%) of SSI in hip prostheses by country, 2004-2005, HELICS-SSI
Fig 6: Incidence of nosocomial and imported CDAD/10000 pd, jan-sept 2007, 72 hospitals, NSIH-Belgium



Surveillance of MRSA and MRE

Antibiotic resistance is a huge problem all over the world. In Belgium, many initiatives were undertaken to slow down the increasing trend. Recently, a promising evolution of MRSA and MRE-rates has been observed in acute care hospitals (Fig 7 & 8).

Fig 7: Evolution of MRSA incidence and resistance rate, 1992-2006, Belgium

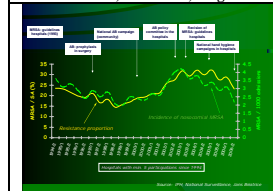
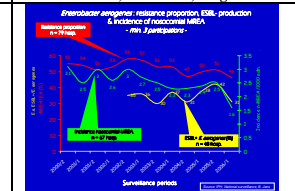


Fig 8: Evolution of MREA incidence and resistance rate, 2000-2006, Belgium



Surveillance of accidental blood contact (ABC) EPINet

Needlestick injuries and blood and body fluid exposures among HCW are frequent (mean: 10 ABC/100 beds/yr, or approximately 12.000 ABC corrected for underreporting) although 70% is preventable. Fig 9 shows when needlestick accidents occur the most. EPINet allows hospitals to create awareness amongst hospital staff, identify and analyse risk factors and evaluate prevention measures.

Surveillance of antibiotic use (ABU)

Prudent use of anti-infectious drugs is regarded essential to contain antimicrobial resistance. The Federal Public Service of Health (FPSH) therefore finances specialists in antibiotic policy in all acute care hospitals and chronic institutions with more than 150 beds. A methodology to monitor the use of a defined set of drugs and benchmarking are available in this context (fig. 10).

Fig 9: Proportion of needlestick injuries (%) by type of mechanism

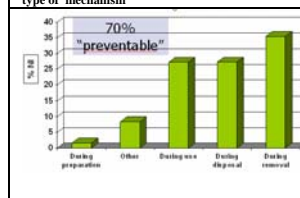
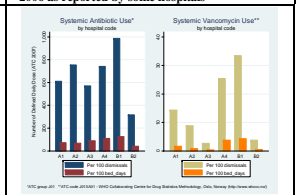


Fig 10: Systemic use of anti-infectious drugs in 2006 as reported by some hospitals



NATIONAL HAND HYGIENE CAMPAIGN

In 2005 and 2007 hand hygiene (HH) was promoted by a national campaign in Belgian health care institutions. The effect of the campaign was measured by the compliance of HH before and after awareness campaigns. Figure 11 shows that this kind of campaign is effective but repetition of the HH message is needed. During the 2nd campaign an interactive quiz was available on the internet for all health care workers in order to test and increase knowledge about HH (Fig 12).

Fig 11: Evolution of HH compliance before and after campaign, 2005 and 2007

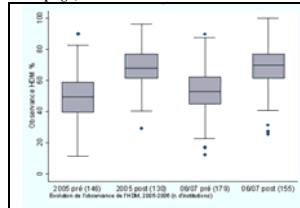


Fig 12: Screenshot of Hand Hygiene quiz



CONCLUSION

NSIH has offered to numerous hospitals indispensable tools for the local implementation of infection control strategies. NSIH also provides the necessary data to BAPCOC and the FPSH to guide national policy-making. 100% of the acute care hospitals participated to at least one of the modules in 2005 and 2006.