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## ICU Volume 13 - Issue 3 - Autumn 2013 - Matrix Features

### Infection Control: A Constant Battle

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European hospitals are in a constant struggle with healthcare associated infections (HAI). While some infections, although not ideal, are easily treatable, others have serious effects on both patient health and the hospital budget. New programmes and initiatives for reducing infection in our hospitals appear every day, ranging from communication and awareness to new protocols and even new technologies. The European Centre for Disease Prevention and Control have been making strides in recent weeks with a comprehensive European survey on HAIs and new guidance on the prevention of surgical site infections.

**Each Day, One in 18 Patients in European Hospitals has a Healthcare-Associated Infection: ECDC Estimates** ECDC has published the results of its first point prevalence survey (PPS) on healthcare-associated infections and antimicrobial use in European hospitals. Based on findings from this survey, ECDC estimates that on any given day, one in 18 patients in European hospitals has at least one healthcare-associated infection. The report also presents data on the most commonly reported infections, which microorganisms are most commonly reported as causing them, how often antimicrobial drugs are being used to treat these infections and data on infection control structure and processes in the hospitals. More than 1,000 hospitals in 30 European countries participated in this first Europe-wide PPS.

#### Background

Healthcare-associated infections are those acquired by patients during their stay in a hospital or other healthcare setting. Although some of these infections can be treated easily, others may more seriously affect a patient's health, increasing their stay in the hospital, requiring further surgical intervention or prolonged treatment with antimicrobials and causing considerable distress to these patients.

A prevalence survey is a count of the number of patients with a particular condition/treatment (in this case either a healthcare-associated infection or an antimicrobial agent) at a particular time (in this case a day), as a proportion of the total number of patients who are hospitalised at that particular time. A point prevalence survey only counts the condition/treatment if present at the time (on the day) of the survey, but does not count it if present at other times during the patient stay in the hospital.

For this study, 30 countries used the same point prevalence survey standardised protocol. An estimated 2,800 healthcare workers from 1,200 hospitals across Europe were trained by national coordinating staff to implement the standardised methodology. Data from a total of 273,753 patients in 1,149 hospitals were submitted to ECDC. Of these, 231,459 patients from 947 hospitals were included in the final European sample for analysis.

#### Increasing Surveillance and Raising Awareness

Through the ECDC PPS, a major step has been made towards increasing the skills for surveillance of healthcare-associated infections and antimicrobial use, and raising awareness of healthcare-associated infections among thousands of healthcare workers across Europe. The survey provides the most comprehensive database on healthcare associated infections and antimicrobial use in European acute care hospitals to date, and based on these results ECDC has made recommendations that should be further developed and implemented across Europe.

Marc Sprenger, ECDC Director, said: "The survey confirms that healthcare-associated infections pose a major public health problem and a threat to European patients: ECDC estimates that on any given day, about 80,000 patients, i.e. one in 18 patients, in European hospitals have at least one healthcare-associated infection". Overall, this amounts to an estimated total of 3.2 million patients (95% confidence interval: from 1.9 to 5.2 million) each year.

He added: "Many of these infections could be prevented by sustained, multifaceted infection prevention and control programmes, including surveillance of healthcare-associated infections. Such programmes, as well as prudent use of antibiotics, will help all actors involved to protect the patients of European hospitals".

Paola Testori Coggi, Director General of DG Health and Consumers, European Commission, said: "This survey represents an important milestone in monitoring healthcare-associated infections across Europe. Their prevalence is worrying and increased efforts are needed at local, national and European level to prevent such infections, for the safety of patients. Such efforts are also needed to fight against the development of antimicrobial resistance. The European Commission is actively monitoring the situation with the support of the European Centre for Disease

Prevention and Control, and works in cooperation with the Member States to implement the 2009 Council Recommendation on Patient Safety.”

### Survey Findings

The prevalence of healthcare-associated infections was the highest among patients admitted to intensive care units (ICUs) in these hospitals, where 19.5% patients had at least one. The most common types of healthcare associated infection in these ICUs were respiratory tract infections and bloodstream infections. Overall, of a total of 15,000 reported healthcare-associated infections, the most commonly reported types were respiratory tract infections (pneumonia, 19.4%; lower respiratory tract infections, 4.1%), surgical site infections (19.6%) and urinary tract infections (19.0%).

The survey also confirms that a large proportion of patients receive antimicrobial agents while being hospitalised. ECDC estimates that more than 400,000 patients, i.e. one in three patients, receive at least one antimicrobial agent on any given day in European hospitals. The following areas for improvement were identified:

- Limiting the use of broad-spectrum antimicrobials;
- Reducing the unnecessary prolongation of surgical prophylaxis;
- Promoting earlier change from parenteral to oral administration of antimicrobials; and
- Improving the documentation of the reason for the antimicrobial use in the patients' charts.

Individual results were disseminated to the participating hospitals through the national PPS coordinators allowing them to interpret the data, compare themselves with other hospitals on a national level and identify areas for improvement.

ECDC will organise a second Europe-wide point prevalence survey in all Member States in 2016–2017 and will continue supporting the organisation, data collection, validation and analysis of national surveys during the period 2013–2015.

### Other Key Findings

About half (54.1%) of the healthcare-associated infections were reported with microbiological results on the day of the survey. Among these, the most commonly isolated microorganisms in HAIs were:

1. Escherichia coli (15.9%)
2. Staphylococcus aureus (12.3%)
3. Enterococcus species (9.6%)
4. Pseudomonas aeruginosa (8.9%)
5. Klebsiella species (8.7%)
6. Coagulase-negative staphylococci (7.5%)
7. Candida species (6.1%)
8. Clostridium difficile (5.4%)
9. Enterobacter species (4.2%)
10. Proteus species (3.8%)
11. Acinetobacter species (3.6%).

Among all Staphylococcus aureus isolates with known results from antimicrobial susceptibility testing, 41.2% were reported as resistant to meticillin (i.e. were MRSA). Among all isolates of Enterococcus species with known results, 10.2% were reported as resistant to vancomycin. Among all isolates of Enterobacteriaceae with known results, 33.4% and 7.6% were reported as resistant to third-generation cephalosporins and to carbapenems, respectively.

### Preventing Surgical Site Infections

The European Centre for Disease Prevention and Control has released guidance for healthcare professionals on five key perioperative antibiotic prophylaxis modalities for preventing surgical site infections.

Perioperative antibiotic prophylaxis (PAP) is considered one of the most effective measures for the prevention of surgical site infections (SSIs). An ECDC commissioned 'Systematic review and evidence-based guidance on perioperative antibiotic prophylaxis' was performed to identify effective measures to improve compliance with PAP among healthcare professionals. The evidence-based conclusions of this systematic review

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were further evaluated and ranked by an expert group, thus producing five “key modalities”. The ranking was performed taking into account the evidence with respect to effectiveness, implementability and EU-wide applicability.

The five key modalities presented in the guidance are the five most effective measures shown to improve the compliance of healthcare professionals with appropriate administration, timing, dosage and duration of PAP for the prevention of SSIs.

Indicators were also developed as part of the process, for the monitoring of the five key modalities. These include, among others, compliance with the indication, selection, timing, dosage and duration of PAP, the frequency of administration of PAP by an anesthesiologist or another designated professional when PAP is indicated and the presence and frequency of meetings of a multidisciplinary team.

These key modalities and indicators can be adopted or adapted by hospitals across Europe to supply a platform for healthcare professionals to use to increase compliance with the appropriate administration of PAP in European hospitals.

For more information, please visit: [www.ecdc.europa.eu](http://www.ecdc.europa.eu)

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