SHORT REPORT

The First Point Prevalence Survey of Nosocomial Infections in Albania: Pilot Study

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Summary

In May 2003, investigators were trained and a prevalence pilot study was conducted at the University Hospital of Tirana, Albania. Investigators were trained to assess the organizational problems of the first prevalence survey of nosocomial infections (NIs) in Albania. Twelve investigators were trained in 2 days. After the training, the pilot study was conducted in 3 wards. The investigators collected data using a standard form and the definitions of the Centers for Disease Control, USA. The training improved the investigators' knowledge of NI epidemiology and surveillance. The pilot study underlined the lack of information in the clinical documentation and lack of collaboration between clinicians and the laboratory: microbiological examinations were performed only in 13 (16.5%) patients and none of the 11 NIs reported was confirmed in the laboratory. This led to a review of the survey protocol, above all in order to increase the use of the microbiological laboratory.

Key words: Nosocomial infections, prevalence study, Albania, developing country.

INTRODUCTION

Nosocomial infections (NIs) represent a critical issue for health care delivery and their surveillance is an essential tool for achieving their control and prevention. There is a consensus that surveillance is effective in reducing NIs,[1] and for this reason the development of an effective surveillance system is important in all hospitals. Despite the fact that prevalence studies present well-known disadvantages,[2] repeated, comparable prevalence surveys can provide useful information regarding the trend of NIs [3, 4]. In addition, they can help to identify areas for further investigation, specially in developing countries with limited professional and financial resources.

The University Hospital Center "Mother Teresa" of Tirana (UHCT) is the largest hospital and the only tertiary-care referral center in Albania, with a capacity of 1,600 beds. The only source of information about NIs in Albania are two limited incidence studies of surgical site infections (SSIs) carried out in 1996 and 2001 in a General Surgery ward of the UHCT; the incidence rate was 37.8% and 33% respectively (unpublished data).

In order to organize the first prevalence survey of NIs in Albania, the Italian National Institute of Health (INIH) and the UHCT performed a training course of the investigators and a one-day pilot study. The objectives were to train the investigators and to assess the organizational problems of the survey.

MATERIALS AND METHODS

In May 2003, the training of the investigators and a 1-day prevalence pilot study were carried out in the UHCT.

Twelve investigators were selected for the data collection; the investigators were 3 nurses and 9 physicians in specialization courses: 2 in Public Health, 2 in General Surgery, 2 in Anesthesia and Resuscitation, 1 in Gastroenterology, 1 in Pediatrics and 1 in Infectious Diseases. In addition, 2 technicians of the microbiological laboratory were chosen to support the microbiological examinations. Investigators were divided into 3 groups; each group was composed of 1 nurse and 3 physicians. For the first phase of the case validation at the patient's bedside, 2 specialists in Infectious Diseases and 1 in Anesthesia and Resuscitation were selected.

The investigators were trained in 2 full-immersion days. At the beginning of the training, the investigators underwent a test composed of 10 multiple choice questions (5 possible answers for each question). After the test, an overview of the NI epidemiology and of the methods of the NI surveillance was presented by 2 specialists of the Public Health of the INHS, with vast experience of NI surveillance. The second day of the training, a draft of the data collection form was discussed, and the organizational aspects of the pilot study were analyzed so that several items of the form were modified. At the end of the second training day, the investigators underwent the same test as the beginning, in order to verify their learning level.

The day after the training course, the pilot study was carried out in 3 wards: Gastrointestinal Surgery, Pediatric Hematology and the Central Intensive Care Unit (ICU). All patients, excluding those admitted after 8.00 a.m., were enrolled. The investigators conducted a medical visit at bedside and collected the following data from clinical charts and surgical records using the *ad hoc* form: patient demographics, surgical procedures, invasive devices, antibiotic therapy, microbiological and radiological examinations, infection signs and symptoms.

The pilot study was supported by two experts of the INIH who also completed the case validation.

A NI was counted to be prevalent as long as the patient had clinical symptoms or was receiving antimicrobial treatment [5]. Criteria of the Centers for Disease Control and Prevention (CDC) Atlanta, USA,[6] were used to define the following NIs: SSIs, pneumonia, lower respiratory tract infections other than pneumonia (LRTIs), bloodstream infections, urinary tract infections (UTIs), arterial or venous infections (AVIs), gastroenteritis. NIs were considered "certain" when case definitions were strictly applied and "probable" if microbiological examinations were not performed (only when CDC definitions absolutely required microbiological confirmation). Hospital admission diagnosis and surgical procedures were classified according to the International Classification of Diseases, 9th revision [7]. Urinary catheters connected to a container and surgical drains connected to a surgical glove were classified as "open".

After quality control of the data, the prevalence of NIs and of infected patients was calculated. The confidence interval (CI) was established at 95%. Categorical differences were checked by the Fischer exact method. All p values calculated were two-tailed and a value <0.05 was considered statistically significant. Input data and statistical analysis were performed by using Epi Info Version 2002 software (CDC Atlanta, USA).

RESULTS

A total of 14 professionals participated in the training. The mean of the correct answers to the questions was significantly different before and after the training (5.5 vs 8.1, $p<0.001$), as well as the average number of professionals who correctly answered each question (8.1 vs 11.4, $p=0.01$).

A total of 79 patients (6.7% of bed capacity of the wards to be enrolled in the prevalence study) was investigated; 49.4% were female. Their mean age was 36.6 ± 22.3 years (range 1-77 years). The average length of hospital stay from admission to the pilot study was 9.2 ± 12.7 days (range 1-63 days). A total of 63 invasive devices were registered in 46 patients; 5 of the 8 urinary catheters and 17 (80%) surgical drains were classified as "open". Fifty-two patients (65.8%) prior to the pilot study underwent 58 surgical procedures classified as follows: clean 17.2%, clean-contaminated 51.7%, contaminated 27.6% and dirty 3.5%.

At the time of the pilot study, 52 (65.8%) patients were receiving a total of 83 antibiotics, distributed as follows: aminoglycosides 39.8%, penicillins 28.9%, cephalosporins 16.9%, trimethoprim/sulfamethoxazole 7.2% and others 7.2%.

Microbiological examinations had been performed only in 13 (16.5%) patients.

Patient characteristics by ward are reported in *Table 1*.

There was a total of 11 NIs in 7 patients. Thus, the overall prevalence of NIs and of infected patients was 13.9% (95% CI: 7.2-23.5) and 8.9% (95% CI: 3.6-17.4). NIs were distributed as follows: 3 pneumonia, 2 symptomatic UTIs, 4 SSIs, 1 gastroenteritis, 1 AVI. None of the NIs reported was confirmed by microbiological examinations, so 3 of them (UTIs and AVI) were classified as "probable" and 8 (gastroenteritis, SSIs and pneumonia) as "certain". The prevalence of NIs was significantly higher ($p<0.05$) in the ICU (87.5%) than in the other two wards (Pediatric Hematology 5.0% and Gastrointestinal Surgery 5.9%). All infected patients were exposed to invasive devices and no difference in NI rate was observed between operated and unoperated patients

TABLE 1 - *Patient characteristics by ward.*

Patient's characteristics	Gastrointestinal Surgery n=51	Pediatric Hematology n=20	ICU n=8
Age*	50 (17-76)	6.5 (1-15)	32 (19-77)
Hospital stay up to survey*	3 (1-29)	6 (1-63)	6 (1-55)
Female **	31 (60.8)	5 (25.0)	4 (50.0)
Patients under antibiotic treatment **	31 (60.8)	13 (65.0)	8 (100.0)
Operated patients **	47 (92.2)	0 (0.0)	5 (62.5)
Patients with invasive: devices **	23 (45.1)	15 (75.0)	8 (100.0)
urinary catheter	1 (2.0)	0 (0.0)	7 (87.5)
surgical drain	16 (31.4)	0 (0.0)	4 (50.0)
intravascular catheter	10 (19.6)	14 (70.0)	4 (50.0)
intubation	0 (0.0)	0 (0.0)	3 (37.5)
parenteral nutrition	1 (2.0)	1 (5.0)	2 (25.0)

*median (range) is reported
** (percentage)

(p=0.55). Even though the use of antibiotics was higher in infected patients (85.7%) than in uninfected (64.8%), the difference was not significant (p=0.25).

During the pilot study we verified the following critical points:
– the lack of information in the clinical documentation, above all regarding the operated patients;
– the scarce use of diagnostic tests, such as radiological and microbiological examinations, by clinicians;
– the need for expertise and materials for the microbiological laboratory.

CONCLUSIONS

Although this pilot study reports a higher prevalence of NIs in the UHCT, Albania, than in other European countries,[8, 9, 10, 11] or in some developing ones,[3, 12, 13] these findings may underestimate the real frequency, because of the lack of clinical and microbiological information. The high frequency of "open" urinary catheters and surgical drains may be an important risk factor for UTIs and SSIs in this hospital. These results must be validated with those of the prevalence survey.

The use of standardized methods is very important to achieve accurate data and to allow the comparison of results among different studies,[9] but, considering the setting of the UHCT, we decided to fit the international experience to our specific needs.

The training of the investigators improved their knowledge of NI epidemiology and surveillance. The pilot study was useful for instructing them so they can conduct the first prevalence survey in the UHCT. Furthermore, the pilot study allowed us to introduce some changes in the prevalence study protocol,[14] as follows:
– to organize a meeting with the hospital managers, the survey coordinators, and the professionals in charge of the wards in order to make them aware of the prevalence study;
– to identify a "contact" doctor and/or nurse for each ward in order to have their support during the survey and more information on patients;
– to develop an *ad hoc* protocol to collect specimens for microbiological testing and to send them to the laboratory the day of the survey;
– to supply the microbiological laboratory of the UHCT with the needed materials;
– to keep the isolated strains and send them to the INIH for further antimicrobial susceptibility testing;
– to perform a chest X-ray of patients suspected of having pneumonia and LRTIs;
– to register patient temperature twice a day during the week before the survey day.

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