

3. Needlestick Safety and Prevention Act of 2000. Pub.L.No. 106-430, 114 Stat. 1901. 11-6-2000.

Janine Jagger, MPH, PhD

University of Virginia School of Medicine
Charlottesville, Virginia

Incidence of Nosocomial Infection in a Brand-new Hospital

To the Editor:

Continuous hospitalwide surveillance for nosocomial infection (NI) was begun on the opening of a new 250-bed community hospital in Alzira, Spain. We report the results of the first year of surveillance.

The hospital has an intensive care unit with 12 beds. Most of the rooms in the inpatient ward are single. The hospital opened on January 1, 1999. During the first month, a multidisciplinary team was formed with the aim of performing surveillance and preventing infections. It included specialists in epidemiology, microbiology, and infectious diseases.

A cross-sectional study of NI was done in February 1999. Continuous surveillance for NI was performed daily during the rest of the year. Data on NI before the cross-sectional study were obtained from the microbiology department records

and computerized medical notes. The cumulative incidence of NI and incidence densities per 1,000 patient-days were calculated by department. All isolated microorganisms were discussed daily by the multidisciplinary team to confirm the presence of NI following the Center for Disease Control (CDC) criteria.^{1,2} The incidence of isolated microorganisms was evaluated by infection site.

The prevalence of NI in the initial cross-sectional survey was 6.5% (95% confidence interval [CI₉₅], 3.0 to 10.0). Sites of infection included surgical (2.7%; CI₉₅, 0.4 to 5.0), lower respiratory tract (1.0%; CI₉₅, 0.0 to 2.4), and soft tissue (1.0%; CI₉₅, 0.0 to 2.4). Of 12,766 patients admitted during the study period, 371 met CDC criteria for NI (2.9 per 100 admissions). The intensive care unit had the highest cumulative incidence (16.6 per 100 admissions), followed by general surgery (4.0 per 100 admissions) and plastic surgery (3.0 per 100 admissions) (Table). The incidence rate in the intensive care unit was 4.2 per 100 patient-days. However, it should be noted that two-thirds of NIs occurred outside the intensive care unit.

By infection sites, cumulative incidence rates per 100 admissions were 0.3% for urinary tract, 0.9% for surgical wound, 0.5% for primary bacteremia, 0.1% for soft tissue, and 0.3% for pneumonia.

Methicillin-resistant *Staphylococcus aureus* accounted for 40% of nosocomial *S. aureus* infection (CI₉₅, 25.7 to 54.3), with an incidence density of 0.3 per 1,000 patient-days (CI₉₅, 0.24 to 0.30). *Escherichia coli* accounted for 33.3% and *Pseudomonas aeruginosa* 25% of urinary tract infections. Among surgical-site infections, *E. coli* was identified in 14.2%, *P. aeruginosa* in 13.5%, and *S. aureus* in 6%. *P. aeruginosa* was identified in 23.7% and *S. aureus* in 21% of lower respiratory tract infections. *P. aeruginosa* and *S. aureus* were isolated in 8.3% of pneumonias. Coagulase-negative staphylococci were isolated in 33.8%, *S. epidermidis* in 22.5%, and *P. aeruginosa* in 3.2% of primary bacteremias.

The prevalence of NI in the initial cross-sectional study was lower than the prevalence published by the EPINE study (Spanish Prevalence Survey of NI).³ Of note, surgical-site infection was the most frequent NI observed (32%), with highest rates in the intensive care unit (2.7 per 100 admissions), general surgery (2.4 per 100 admissions), and orthopedics (1.9 per 100 admissions).

Primary bacteremia rates were higher than those previously reported by the National Nosocomial Infections Surveillance system.⁴ Nosocomial pneumonia rates were lower than those reported by Barsic et al.,⁵ but lower respiratory tract infections were

TABLE

CUMULATIVE INCIDENCE OF NOSOCOMIAL INFECTION BY SERVICE AND INFECTION LOCATION

Service	Total No. Admitted	Total No. Infected	Incidence per 100 Admitted (CI ₉₅)	Incidence per 100 Admissions by Site						Miscellaneous*
				SS	PNE	BS	UT	LR	ST	
General surgery	1,765	71	4.0 (3.0 to 4.9)	2.4	0.3	0.5	0.4	—	—	0.2
Orthopedics	1,234	33	2.5 (1.7 to 3.3)	1.9	0.2	—	0.1	—	—	0.2
Pediatrics	906	7	0.7 (0.2 to 1.2)	0.1	—	0.1	0.1	—	0.2	0.2
Neurosurgery	267	6	2.2 (0.5 to 3.9)	—	1.1	—	0.7	—	—	0.3
Medicine	4,967	74	1.4 (1.1 to 1.7)	0.1	0.3	1.3	0.2	—	—	0.2
Intensive care unit	727	121	16.6 (13.9 to 19.3)	2.7	1.5	4.5	1.7	3.7	0.5	1.7
Gynecology	705	12	1.6 (0.7 to 2.5)	1.1	—	—	0.2	—	—	0.2
Oncology	333	10	2.7 (1.0 to 4.4)	0.3	0.3	0.9	0.6	—	0.3	0.6
ORL	702	8	1.1 (0.4 to 1.8)	0.4	0.2	0.1	—	—	—	0.2
Plastic surgery	132	4	3 (0.1 to 5.9)	1.5	—	—	—	—	0.7	0.7
Thoracic surgery	151	2	1.3 (0 to 3.1)	1.3	—	—	—	—	—	—
Vascular surgery	237	4	1.6 (0.1 to 3.1)	1.2	—	—	—	—	—	0.4
Urology	640	19	2.9 (1.6 to 4.2)	0.7	0.1	0.6	0.6	—	0.1	0.6
Total	12,766	371	2.9 (2.6 to 3.1)	118	46	64	48	28	14	53

CI₉₅ = 95% confidence interval; SS = surgical site; PNE = pneumonia; BS = bloodstream; UT = urinary tract; LR = lower respiratory tract; ST = soft tissue; ORL = otorhinolaryngology.

*Occasional infections involving the gastrointestinal tract, ears, genitals, and oropharynx.

more frequent (3.7 per 100 admissions) and may have represented misdiagnosed nosocomial pneumonias. The distribution of microbes causing NI in this new hospital was similar to that in an older hospital. This database will be used to establish endemic NI rates and to plan interventions to lower these rates.

REFERENCES

1. Garner JS, Emori WR, Horan TC, Hughes JM. CDC definitions for nosocomial infections. *Am J Infect Control* 1988;16:128-140.
2. Horan TC, Gaynes RP, Martone WJ, Jarvis WR, Emori TG. CDC definitions of nosocomial surgical site infections, 1992: a modification of CDC definitions of surgical wound infections. *Infect Control Hosp Epidemiol* 1992;13:606-608.
3. Vaque J, Rossello J, Arribas JL. Prevalence of nosocomial infections in Spain: EPINE study 1990-1997. *J Hosp Infect* 1999; 43(suppl):S105-S111.
4. National Nosocomial Infections Surveillance System. Nosocomial infection rates for inter-hospital comparison: limitations and possible solutions. *Infect Control Hosp Epidemiol* 1991;12:609-621.
5. Barsic B, Beus I, Marton E, Himbele J, Klinar I. Nosocomial infections in critically ill infectious disease patients: results of a 7-year focal surveillance. *Infection* 1999;27:16-22.

Ricardo Bou, MD, PhD
Pilar Ramos, MD
Miguel Peris, MD
Miguel Salavert, MD
Angel Aguilar, MD
Javier Colomina, PhD
Hospital de la Ribera
Alzira, Valencia, Spain