The Organization of Hospital Infection Control Committees and Their Importance in Brazil

Fabiane El Far, Cristiane G. J. Marino and Eduardo Alexandrino Servolo Medeiros

Hospital Epidemiology Committee, São Paulo Hospital, São Paulo School of Medicine (EPM) - Federal University at São Paulo (UNIFESP), Brazil

The importance of Hospital Infection Control Committees (HICC) increases every year due to the emergence of multiresistant bacterial strains, hospital outbreaks, and other factors that cause HI. This demonstrates the fragility of the quality of hospital and medical care. Having a well-organized HICC benefits hospitals by improving quality, lowering costs and, most important, reducing patient morbidity and mortality. This review records the history of the development of HICCs, their present organizational structure, and offers recommendations for the best methods of infection surveillance.

Key Words: Hospital infection, prevention, committee, control, costs, mortality, surveillance, quality.

History of the development of Hospital Infection Control Committees (HICC)

Hospital infections (HI) are a frequent and serious problem that Brazilian hospitals grapple with on a daily basis. HI contribute to increased morbidity and mortality rates, longer hospital stays, and higher costs, and pose the constant threat of spreading multiresistant bacteria. In response to these problems, it became necessary to create a specific department within the hospital that is charged with the responsibility for preventing and controlling HI, which led to the establishment of Hospital Infection Control Committees (HICC).

HI have been present since the 18th century, when urban maternity hospitals were established. HI frequently appeared in the form of puerperal ("childbed") fever, previously a rare disease cited by the Ancient Greeks. Then, in 1846, Ignaz Philipp Semmelweis, a Hungarian doctor, began working at the General Hospital of Vienna, where death rates from childbed fever were alarmingly high (as much as 18%). Through systematic observation, Semmelweis observed that the women seen by doctors were more likely to contract the disease than those cared for by nurses, and that these pregnant patients were frequently examined by doctors who moved freely between the dissecting room and the ward. He theorized that the hands of the students and doctors carried cadaveric materials from the dissecting room to the pregnant women when they conducted gynecological examinations. Therefore, in 1847, he proposed that doctors should wash their hands in chlorinated water. Mortality rates among expectant mothers fell to 1.89% after these measures were taken [1].

The American doctor, Oliver Wendell Holmes, published "The Contagiousness of Puerperal Fever," in 1843, where he observed that childbed fever could be transmitted from patient to patient by the doctors that examined them. However, the medical profession rejected his findings [1].

Received on 2 August 2001; revised 27 November 2001.
Address for correspondence: Dr. Fabiane El Far. Comissão de Epidemiologia Hospitalar do Hospital São Paulo, Escola Paulista de Medicina (EPM) – Universidade Federal de São Paulo (UNIFESP), Brazil. Rua Napoleão de Barros, 690 2º andar Vila Clementino. Zip Code: 04024-002 – São Paulo – SP Brazil. Tel: (55 11) 576-4463. Fax: (55 11) 571-8935.
E-mail: fabiane-el-far@hotmail.com

The Brazilian Journal of Infectious Diseases 2001;5(6):290-293.

1413-8670

It was not until 1968, that the Centers for Disease Control and Prevention (CDC) in Atlanta (USA), began training groups of nurses to apply their knowledge in general hospitals. In 1970, it recommended the presence of a nurse and an epidemiologist in each hospital. That same year, the establishment of a program called the National Nosocomial Infections Surveillance System (NNISS) was proposed to improve and standardize surveillance in several hospitals.

The NNISS was initially introduced in several American hospitals for the purpose of issuing periodic reports on their surveillance data and HI found in their Intensive Care Units (ICU), high-risk nurseries, surgical wards and other areas. The main objectives of this evaluation system are to estimate the incidence of HI, compare data from hospitals with similar populations when data gathering is uniform and standardized, ensure early detection of emerging nosocomial pathogens and outbreaks, and develop prevention strategies [1].

The Brazilian Health Ministry published Decree 196, in 1983, that required the creation and standardization of HICCs. It was not successful. However, training programs were begun in 44 centers. Despite its deficiencies, such as recommending passive HI surveillance, decree 196 brought about some advances.

In the late 1980s, specific associations were created in Brazil to study and control HI, such as the Associação Paulista de Estudos e Controle de Infecção Hospitalar (APECIH) in São Paulo, and the Associação Mineira de Estudos e Controle de Infecção Hospitalar (AMECIH) in Minas Gerais [2]. In 1992, the Health Ministry replaced Decree 196 with Decree 930, which stated that, "All hospitals in the country must maintain hospital infection control programs that are independent from the maintaining entity," and the HICCs were charged with responsibility for standardizing and running the Hospital Infection Control Service (HICS), which would be its executive arm. This edict led to the creation of 127 HICCs.

The most recent decree, number 2,616, dated May 12, 1998, also requires the maintenance of HICCs in hospitals with over 200 beds, which must have at least two health-care workers with college degrees on their staff. Preferably, one of the executive staff members should be a nurse.

HI is a proven cause of longer hospital stays, increased costs, and higher morbidity and mortality rates. Due to the complexity and economic importance of this issue, data are frequently published to testify to these facts.

In their "Guidelines for Prevention of Surgical Site Infection – 1999," Mangram, et. al., published data on surgical site infection (SSI) from American hospitals that conducted surveillance using the NISS method during a 10-year period (1986 to 1996). They reported 15,523 SSIs per 593,334 surgeries. Therefore, SSI was the most frequent HI, totalling 38% of all HI cases. SSI added 7.3 days to patients' hospital stays and an average extra cost of $3,152 per patient. When SSI patients died, 77% of those deaths were related to the HI [3].

Estimates show that up to 200,000 nosocomial bloodstream infections per year occur in the United States of America, most of which are related to vascular catheters [4]. This type of HI can increase the morbidity and mortality rate by 10% to 20%, lengthen hospital stays by an average of 7 days, and add as much as $6,000 per patient to the cost [5].

At present, HICCs are faced with a serious problem: the emergence of multiresistant bacteria. For example, among the Gram-positive bacteria, *Staphylococcus aureus* is the most frequent agent of SSI and the second most important in nosocomial bloodstream infections, surpassed only by coagulase-negative staphylococcus. Since the 1980s, *Staphylococcus aureus* has shown resistance to methicillin and has become endemic in most hospitals. The abusive use of glycopeptides and other factors led to the emergence of *Staphylococcus aureus* strains with intermediate resistance to glycopeptides in Japan, in 1996, and in the United States in 1997 [6]. In these cases, it is important to detect *Staphylococcus aureus*-infected or -colonized patients as soon as possible in order to begin isolation procedures and precautions and prevent these agents from spreading.

Present organizational structure of an HICC

An HICC is a department or committee that regulates the HICS's activities and reports directly to

the hospital's administration. Its members must be highly qualified and skilled professionals able to gain the support of the administrative sector and the clinical staff to ensure that the HICC's control policies are approved and followed, as well as winning the support of the hospital's Board of Directors.

At the same time, the HICS must be an independent authority within the hospital that adopts control measures ranging from surveillance of cultures to quarantining an infected unit. Each HICS is organized according to the type of hospital involved and its specific characteristics. The number of members should be in compliance with the terms of the 1998 Health Ministry edict number 2,616, which requires at least one physician and one nurse for every 200 beds. Preferably, these professionals should be trained in epidemiology, with physicians being paid for 4 hours daily, and nurses assigned exclusively to the HICS and paid for 6 hours daily.

It is also important for those in related areas of the hospital to participate, including clinical medicine and surgery, gynecology – obstetrics, pediatrics, the intensive care unit, microbiology lab, pharmacy, nutrition, medical and nursing residents, and others, to maintain the multidisciplinary nature of the HICS. However, only epidemiologists and trained nurses should conduct surveillance procedures and analyze data and trends [2,7]. An infectious diseases specialist with knowledge of epidemiology, bio-statistics and information technology should be put in charge of organizing the HICS's activities, consultancy, standardization, and discussions with other hospital physicians and the administration to present data on HI rates, preventive measures, control and the investigation of outbreaks. The HICS's executive team must have sufficient time and dedication in order to ensure that the established procedures and control policies are implemented.

Surveillance methods that should be used by HICC

Every hospital must have its own surveillance model that can provide data on the characteristics of each unit, as well as ensuring early detection of any problem that might arise. Surveillance can also provide information on current priorities, such as an infection outbreak, and ensure that it is handled immediately [8]. The NNIS conducts active surveillance, meaning that a health-care worker must visit high-risk sectors of the hospital including the ICU, high-risk nursery, surgical ward, and transplant unit. This must be done frequently or daily, as necessary, and includes seeking out HI cases, reporting them, and implementing control measures for each case.

The Committee should meet on the same day of the week in the same place, at least once a month, because this routine will make it easier for members to remember to attend the meeting. Wenzel, et al., stress the importance of scheduling specific days to prepare for the meetings, including reviewing the literature that can bolster decisions and keep the staff up-to-date [8]. The hospital epidemiologist must be prepared to give a clear and objective presentation of the data and suggest possible interventions.

Collegiality between the administrator, who has executive powers, and the other meeting participants makes the team more involved and can improve compliance with proposed measures. Negotiating control policies by providing a cost-benefit analysis in conjunction with a solid scientific and technical basis ensures success when seeking approval for a specific proposal [9].

Specialists on the topics on the agenda, and the heads of units having problems related to the HICC, should also be invited to the meeting [7].

Direct confrontations with opponents should be avoided. It will be greatly appreciated if the meeting participants can be convinced that the proposed strategy affords a good cost-benefit ratio and that the subject has been thoroughly researched. To be prepared, the HICC must hold an advance meeting to standardize behaviors and avoid deadlocks. Minutes of the meetings must be taken and kept in a book by a secretary or staff member from the sector. Minutes are legal documents and must contain all of the topics on the agenda, the proposals discussed, those approved, and the measures to be taken. Copies should be distributed to participants for review and approval at the following meeting, as these minutes may be consulted

by members of the ethics board and hospital administration, as well as meeting participants [7,8].

The HICC's agenda must include days set aside for other activities, such as updates on subjects of interest (outbreaks, the emergence of multiresistant bacteria, etc.), meetings to pool and interpret surveillance data, discussion of protocols and ongoing projects, updates on control policies on the basis of new results and training, and standardized behaviors regarding anti-microbial agents, biological accidents and materials processing [7].

The active members of the HICS must always be on the alert for new surveillance data; for example, an increased number of HI cases related to central venous catheters, due to a specific agent, in the intensive care unit. In this case, an investigation should begin with a visit to the affected sector where all measures should be observed, including hand washing, antiseptic solutions used, use of maximum barrier protection and the method of catheter insertion, as well as the quality of the materials used, the dressing technique, and the nurse's management of the catheter. At this point, on-the-spot surveillance must increase and preventive measures should be taken immediately to prevent new cases from occurring. Classes and training sessions for the health-care workers are essential for the successful implementation of preventive measures.

This is just one example of how the HICS should establish good communications with all areas of the hospital. Educational reports on these activities must be produced and disseminated to other members of the health staff [1].

References

1. Sgarbi L.P.S., Conterno L.O. Estruturação e Dinâmica das Comissões de Infecção Hospitalar. In: Rodrigues E.A.C., Mendonça J.S., Amarante J.M.B., et al. Infecções Hospitalares Prevenção e Controle. Sarvier ed. São Paulo, Brasil, **1997**:37-41.
2. Pereira M.S., Moreya T.M. Infecção Hospitalar: estrutura básica de vigilância e controle. Goiani AB **1994**:193.
3. Mangram A.J., Horan T.C., Pearson M.L., et al. Guideline for prevention of surgical site infection. Infect Control Hosp Epidemiol **1999**;20:247-80.
4. Maki D.G. Infections due to Infusion Therapy. In: Bennett J.V., Brachman P.S., eds. Hospital Infections. 3rd ed. Boston, MA: Litlle, Brown and Co, **1992**.
5. Pearson M.L. Guideline for prevention of intravascular device-related infections. Infect Control Hosp Epidemiol **1996**;17:438-73.
6. Smith T.L., Pearson M.L., Wilcox K.R., et al. Emergence of Vancomycin Resistence in *Staphylococcus aureus*. N Engl J Med **1999**;340:493-501.
7. Loreen A., Herwaldt, M.D. A Pratical Handbook for Hospital for Epidemiologistis. Slack Incorporated: USA; **1998**:29-32.
8. Ponce de Leon S.R., Frausto S.R. Organizing for infection control with limited resources. In: Wenzel, R.P. ed. Prevention and Control of Nosocomial Infectious. 2nd ed. Baltimore, Md: William al Wilkins, **1993**:82-8.
9. Haley R.W., Culver D.H., White J.W., et al. The efficacy of infection surveillance and control programs in US hospitals. Am J Epidemiol **1985**;121:182-205.