

Epidemiology Bulletin

REPUBLIC OF CHINA

- Contents -

Nosocomial Infection in Taiwan Area, January 1986-June 1988

Nosocomial Infection in Taiwan Area, January 1986-June 1988

Nosocomial infection refers to the infection contracted by the patient during his hospitalization, not including any infection or latent infection at the time of hospitalization, but including infection contracted during hospitalization with symptoms developed later after discharge

The studies of nosocomial infection focus on the survey of the general nosocomial infection rate and the investigation of nosocomial infection outbreaks. Outbreaks always present critical situations and require hospitals to take immediate action to prevent the spreading. The purpose of nosocomial control is to collect data on the infection of hospitalized patients, to analyze the data by epidemiological methods, and to apply the findings to the management of hospitals to prevent or to reduce nosocomial infection to minimize the loss of both the hospital and the patients

The purpose of the study is to understand both the current situation of nosocomial infection in Taiwan Area and the functions and organization of the nosocomial control programs

There is nosocomial infection in every hospital. Outbreaks though are not frequent, they can cause heavy loss to both the hospital and the patients. In order to effectively prevent outbreaks or to handle them effectively to minimize the loss, it is necessary to understand the nature of outbreaks and their mechanism and causes. Many hospitals in Taiwan Area though have set up nosocomial infection control committees to handle the routine infection control work and to conduct active surveillance, their activities are often kept confidential, only a few hospitals report their activities once in a while. To facilitate the exchange of information on nosocomial infection between hospitals thus to prevent the occurrence of similar infection or outbreak to avoid unnecessary loss, the present study has collected and analyzed data from various types of hospitals for comparison

There are at present 121 accredited hospitals in Taiwan Area: 4 medical centers, 4 would-be medical centers, 20 regional hospitals, 17 would-be regional hospitals, 66 district general hospitals, and 10 district specialty hospitals. A questionnaire was mailed to each of them on 1st July 1988 and returned by 30 November 1988 (Table 1)

Table 1. Mailing of Questionnaire on Nosocomial Infection Outbreaks

	Hospitals						Total
	A	B	C	D	E	F	
No. of questionnaires mailed	4	4	20	17	66	10	121
No. of questionnaires returned	4	4	20	13	37	0	77
No. of hospitals with outbreaks during 1986-88	3	3	12	5	6		29

A: medical center

B: would-be medical center

C: regional hospital

D: would-be regional hospital

E: distric general hospital

F: district specialty hospital

The questionnaire includes two parts: the first part concerns with the manpower, facility and functions of the existing nosocomial infection control committees; the second part asks about the experience of nosocomial infection during 1986 and June 1988, the handling procedures and the outcomes, to be answered anonymously

The findings show that between 1986 and June 1988, of the 77 hospitals reported, 29 have had 85 nosocomial infection outbreaks: 32 in nursery, 9 in NICU, and 14 in ICU (Tables 2, 3, and 4).

Of the pathogenic agents of outbreaks, Staphylococcus aureus accounts for 13 outbreaks (including 3 MRSA), E. coli for 8 outbreaks, and Pseudomonas another 8. No pathogenic agent has been isolated for as many as 46 outbreaks (54.1%). The failure in isolating pathogenic agents for more than a half of the outbreaks is due partially to the shortage of manpower of the infection control committees and partially to the unavailability of full-time medical technologists on many of the committees. The busy laboratories of the hospitals may not be able to attend to every request of the committee. Many specimens collected may not be tested at all or kept too long to be of any use. MMWR in 1984 showed only a 16% of non-isolation outbreaks.

Table 2. Nosocomial Infection Outbreaks by Service, 1986

Hospital	BR	NICU	Burn	ICU	Ped	Surg	PICU	Derm	OBS	Oncol	GI	Neuro	SICU	MICU	Gen	HD	Tot
A	1		1		1			1		2	1	1					8
B		2	1				1										4
C	2		1	2											1		6
D	1																1
E	3																3
Total	7	2	3	2	1		1	1		2	1	1			1		22

BR: baby room NICU: newborn ICU Burn: burn unit ICU: intensive care unit

Ped: paediatric ward Derm: dermatology ward OBS: obstetrics ward

Oncol: oncology ward GI: gastro-intestinal ward (internal medicine)

Neuro: neurology ward (surgery) SICU: surgical ICU MICU: medical ICU

Gen: general ward HD: heart disease (surgery)

Table 3. Nosocomial Infection Outbreaks by Service, 1987

Hospital	BR	NICU	Burn	ICU	Ped	Surg	PICU	Derm	OBS	Oncol	GI	Neuro	SICU	MICU	Gen	HD	Tot
A	1	2		2	1				1	1							8
B	3	2	2		2	1	1	1									12
C	4	3	1	5		2											15
D	3																3
E	6														1		7
Total	17	7	3	7	3	3	1	1	1	1					1		45

Table 4. Nosocomial Infection Outbreaks by Service, January-June 1988

Hospital	BR	NICU	Burn ICU	Ped	Surg	PICU	Derm	OBS	Oncol	GI	Neuro	SICU	MICU	Gen	HD	Tot
A	1															1
B					1	1					1	1	1			5
C	4		1		1										1	7
D	3		1		1											5
E																0
Total	8		2		3	1					1	1	1	1		18

By the type of hospitals, there have been 17 outbreaks in 3 medical centers, 21 outbreaks in 3 would be **medical** centers, 28 outbreaks in 12 regional hospitals, 9 outbreaks in 5 would-be regional hospitals, and 10 outbreaks in 6 district general hospitals. The number of outbreaks does not seem to be related to the type of the hospitals. Available literature, however, shows that the nosocomial infection rates are positively related to the **type of** hospitals. The findings of the present study show, however, that the number of outbreaks is the highest in the would-be medical centers. The probable reason may be that the surveillance system of the infection control **committee** is not adequate enough to prevent the outbreaks from the beginning. On the other hand, the infection control committees of some hospitals may not be functioning effectively at all to detect the outbreaks, and **therefore**, no outbreaks have been reported. One study (Infection Control, 1985, vol 6, pp 223-236) points out that **there** is at least one outbreak per year for a community hospital with more than 150 beds (or one per 12,000 discharged patients). The considerable discrepancy in the number of outbreaks reported by various hospitals **requires** further study.

As shown in the available literature, the pathogenic agents that frequently cause outbreaks are the major **causes** of nosocomial infection. Many outbreaks can be prevented if nosocomial infection is controlled.

Nosocomial infection is inevitable. To reduce it is a tedious challenge. When the nosocomial infection rate increases unusually or some unusual situation occurs, the infection control personnel must apply the epidemiological principles and methods to handle the situation. Not that every nosocomial infection has to be investigated, the targets set for the control measures, however, should be executed without failure. The present study indicates that hospitals in Taiwan Area though carry out the routine control measures adequately, their ability in handling outbreaks requires further strengthening.

Each hospital is similar in its facilities, nursing care of patients, and the process of medical care. The experience of other hospitals in preventing and handling outbreaks can be shared to avoid the occurrence of **similar** events.

At the rate of at least one outbreak per every community hospital of more than 150 beds per year (or **one** per 12,000 discharged patients) as mentioned above, the present findings that out of 75 hospitals, 29 have had 85 outbreaks in two and a half years are an underestimate. Surveillance systems do not seem to operate **ade-**quately. Therefore, while the hospitals are under the process of computerization, infection control should **also** be promoted with computers to strengthen the surveillance system, to reduce the workload of the infection **control** personnel, and to improve the efficiency as well.

Though epidemiological methods are most effective in the investigation of outbreaks, laboratories also play an important role. The pathogenic agents that are collected for nosocomial infection investigation are currently tested only for drug sensitivity. If phage typing and plasmid analysis of the agents can be conducted to ascertain whether they are the epidemic strains, the results can be, from the epidemiological point of view, more persuasive.

Continuing education for hospital staff on nosocomial infection control is important to remind them to **follow** the medical care and sterilization procedures. Patients of the high risk group who are more prone to **induce** nosocomial infection should be watched carefully to avoid infecting other patients. What is most important in the prevention of nosocomial infection is that the infection control committee should function properly, **should** be equipped with sufficient and adequate facilities and manpower to engage in the control of nosocomial **infection**.