

CHAPTER I



INTRODUCTION

BACKGROUND AND RATIONALE

Urinary tract infection is one significant problem and was found as the first rank of nosocomial infection both in the other countries and in Thailand. The infection was mostly due to indwelling urinary catheters (Kunin,1987 cited in Rachanee Wongsan, 1996). The world Health organization studied the magnitude of the problem of nosocomial infection of 47 hospitals from 14 countries worldwide including Thailand in 1988. Results revealed that there were about 31.2 percent of nosocomial urinary tract infection found in the patients with indwelling urinary catheter Mayon White et al.,1988. For Thailand, there were 30-40 percent of nosocomial urinary tract infection found (Pinyowiwat et al.,1988). Indwelling urinary catheters was found most among other causes, about 66-90 percent of all nosocomial urinary tract infection (Martin & Brook, 1962; Infection control committee, Ramathibodi Hospital, 1988). It was also found that averagely 7-25 percent of the hospitalized patients had indwelling urinary catheters. The mentioned data revealed that some patients were susceptible to urinary tract infection because of indwelling urinary catheters, including during and after use of urinary catheters to withdraw urine. In oder to plan an effective program to prevent nosocomial urinary tract infection, some data were needed. This study was aimed to measure the prevalence rate and factors related to nosocomial urinary infection among

patients with indwelling urinary catheters in Thungsong Hospital, Nakhon Si Thammarat Province.

The data from the surveillance program on nosocomial urinary tract infection of Thungsong Hospital show that the trend of urinary tract infection is going up last year, it was found in the In-patient Department every month. Therefore, the nosocomial infection rate has been increased and resulted in longer hospitalization, high cost of treatment, increased severity of the illness, and was the direct cause of death (0.1%) (Center for Disease Control.,1992). Besides, urinary tract infection caused by catheterization may cause other complications and it is also the major cause of septicemia which leads to death. About 70-80 percent of urinary tract infection caused by catheterization. The study of loss from nosocomial urinary tract infection in one hospital in Utah, U.S.A. it was found that the patients with urinary tract infection have to be hospitalized 3.8 days more and the patients spent more for 3,803 U.S. dollars.patients with urinary tract infection are 3 times more likely to die than those who did not have urinary tract infection (Akoë Unhalakaga, 2002).

The infection caused by catheterization may spread to other urinary tract organs which may cause infection around the kidney, bladder, and urethra. Nosocomial urinary tract infection may caused by both endogenous and exogenous infection. For the latter type, the sources of infection may be from staff's hand or contaminated medical instruments. But most of the infection were from exogenous sources. The types of bacteria that caused most of the infection were Psuedomonas, Proteus, Klebseilla, and Serratia. Staphylococcus aureus, was rarely found if this bacteria was found in the

urinary tract system it mean that 80 percent of contamination of this bacteria have been occurred in the urinary tract infection. Generally the short period of infection usually caused by one type of microorganism but for the patients with long-term indwelling urinary catheters, the infection was caused by many types of microorganisms (Akoé Unhalekaga, 2002).

Although it has been aware and realized the significance of the factors affecting nosocomial urinary tract infection among the patients with indwelling urinary catheters, but there are difference regarding personnel's characteristics, sizes and types of the hospitals, hospital environments, particulary the standards of care provided for patients with indwelling urinary catheters. The factors caused nosocomial urinary tract infection among the patients with indwelling urinary catheters are endogenous factors as related to age, sex, and previous illness status. Regarding the exogenous factors that promote the urinary infection, are:- the microorganism, hospital environment, indications for catheterization, the use of unsafe technique, the size of urinary catheter that did not fit with the patient's urethra, improper patient care during the indwelling urinary catheter which caused contamination at the joint of catheter, improper cleansing of reproductive organs before inserting catheter, the prolonged use of indwelling urinary catheters, improper nursing care, irrigation system of the urine, and antibiotics (Degrot & Kunin, 1975; Garibaldi et al., 1974; Stamm, 1992; Turck & Stamm, 1981).

Therefore, the researcher was interested in studying the factors affecting nosocomial urinary tract infection regarding: patients' characteristics as related to age, sex, underlying disease, medical treatment as related to type of antibiotics used,

experience of the patients regarding urinary tract catheterization, indications for catheterization, time duration for indwelling urinary catheters, changing of the urinary bag, and the size of urinary catheters; nursing care relating to: catheterization for withdrawing urine, nursing care of the patients with indwelling urinary catheters, disinfection and sterilization of the urinary catheterization set and flush set Thungsong Hospital is the office where the researcher works and it is convenient to collect data. It is a large community hospital with 150 beds. There are about 168,605 patients come to get services annually (Hospital Statistics, 2002). The hospital provides services for the general patients and patients with severity or complex symptoms of every type of diseases and it was found that nosocomial infection is one important problem, especially the patients with indwelling urinary catheters. There were 23.9 percent of the nosocomial infection patients found with patients with indwelling urinary catheters, and followed by infected surgical wounds (19.5%) and pneumonia (16.5%) respectively, as shown in table 2 presently, nosocomial infection is going up, accordingly with data collected in Thungsong Hospital in 2002. the standard has been set by Thungsong Hospital, in accordance with ISO 9002, that the nosocomial infection of the hospital should not higher than 5 percent.

RESEARCH QUESTION

1. What is the prevalence rate of nosocomial urinary tract infection of the patients with indwelling urinary catheters in the In-patient Department, Thungsong Hospital?

2. What are the factors affecting urinary tract infection of the patients with indwelling urinary catheters, in Thungsong Hospital, Nakhon Si Thammarat Province?

OBJECTIVES

General Objectives

To study the prevalence rate and factors affecting nosocomial urinary tract infection of the patients with indwelling urinary catheters, in Thungsong Hospital, Nakhon Si Thammarat Province.

Specific objectives

1. To study the prevalence rate of nosocomial urinary tract infection of the patients with indwelling urinary catheters, in Thungsong Hospital, Nakhon Si Thammarat province.
2. To study the patients' personal characteristics regarding age, sex, marital status and underlying disease.
3. To study the patients' medical treatment received regarding the types of antibiotics, experience of having urinary catheters inserted in the urethra, indications for getting urinary catheterization, period of catheterization, continuous bladder irrigation, change of the urine bag, and the size of the catheters used.
4. To study the nursing activities regarding urinary catheterization and nursing care provided for the patients with indwelling urinary catheters.

5. To study the processes of disinfection and sterilization used for the urinary catheterization set and the flush set of the central supply unit.

SCOPE OF THE RESEARCH

This study was a descriptive research with the aim to study the prevalence rate and the factors related to the nosocomial urinary tract infection of the patients with indwelling urinary catheters and did not have any complications before admission. No infection or no sign of infection was found from the first urine test at the time that indwelling urinary catheters were used. The sampled patients were those who admitted in the In-patient Department; the male surgical-medical ward, the female surgical-medical ward, obstetrics ward, special patient ward, pediatrics ward, and the Intensive Care Unit, the study was commenced during April to June, 2003. The diagnosis of nosocomial urinary tract infection was carried out in accordance with the standard diagnosis of the United States Centers for Disease Control, 1988 (cited in Jaroeyporn Taglawpundh, 1995).

LIMITATION OF THE STUDY

1. The sampled patients were those who get indwelling urinary catheters by the professional nurses and technician nurses of Thungsong Hospital only.
2. The researcher could not perform 24-hour-observation of the procedures of inserting urinary catheters and nursing care provided to the patients with indwelling urinary catheters.

OPERATION DEFINITIONS OF THE TERMS

Nosocomial Urinary Tract Infection: The infection of the urinary system caused by microorganism that the patient acquired during a hospital stay where as the patient did not have any signs of getting urinary tract infection before admitting or was not in the incubation period of any microorganism. The nosocomial urinary tract infection was diagnosed by following the diagnostic standard developed by the United States Center for Disease Control in 1988.

Urinary Tract Infection: The infection of the urinary tract, both asymptomatic and symptomatic.

- Asymptomatic urinary tract infection: The patient do not have any symptoms or signs but the urine test shows the bacteria that cause the infection remain in the body.
- Symptomatic urinary tract infection: The patient has symptoms of infection include fever (body temperature is higher than 38 degree celsius, frequency of urination, difficult urination, intense pain at the pubic area, and the result of the bacterial culture is positive.

Prevalence Rate: Number of occurrences of a disease or event during a particular period of time, it is usually expressed as a ratio, the numbers of events occurring per a number of units in the population at risk for the occurrence.

Factors affecting the Infection: The factors that may cause the urinary tract infection which include age, sex, illness condition or underlying disease, indications for

urinary catheterization, the person who formed urinary catheterization, number of times to empty the urine bag, disinfection procedures, environment of the ward, the urinary tract surgery, urinary catheterization, continuous bladder irrigation, and antibiotics used while having indwelling urinary catheters.

Age: The number of years since the patient was born to the date that has been interviewed.

Underlying Disease: The chronic illness/disease that the patient had before admitting in this hospital and / or the complications of that disease that caused the patient come to see the physician, since some underlying diseases may affect directly or indirectly the pathology of the urinary tract infection. The diseases that are the causes of the susceptibility to urinary tract infection are diabetes, hypertension, disease of the nervous system and muscles, and the infection of other body system.

Time Duration of Having Indwelling Urinary Catheter: The time of first indwelling of urinary catheter to the date that the catheters are taken off or these no need to use it any more.

The use of Indwelling Urinary Catheter: The insertion of the foley's catheter, which was made of rubber coated with silicon, into the opening part of the urethra, keep it for a certain period of time and let the urine flows into the close drainage system bag.

Antibiotics Used: The patient have antibiotics orally or intravenous injection in any period of time during having indwelling urinary catheter.

Bladder Irrigation: It should be performed only when the catheter is obstructed which may be caused by blood clot or other causes. The following techniques should be followed:

- before taking the urinary catheter off, disinfection procedure should be made by using alcohol 70% at the catheter's joint;
- aseptic technique should be employed;
- if the obstruction of catheter was found it should be replaced.

Close Drainage System: This system can prevent urinary tract infection 70-80 percent of the patients with indwelling urinary catheters.

EXPECTED BENEFITS

1. The Data can be used to plan and implement the program to prevent and control nosocomial urinary tract infection among the patients with indwelling urinary catheters. This program if has been used intensively it will lower the economic cost of both the patients and the hospital as well.
2. The data will be used as a guideline for training the hospital personnel to understand and recognise the significance of the factors relating nosocomial urinary tract infection indwelling peomoting the nurses'roles and responsibilities in providing more efficient nursing care for the patients with indwelling urinary catheters.

3. The data will be used as the guideline for organizing teaching and learning experiences for nursing students to help them gain more knowledge regarding factors relating nosocomial urinary tract infection of the patients with indwelling urinary catheters and also be able to plan an effective nursing care for the patients relevantly to the real situation.

RESEARCH PROCEDURES

1. The urine cultures of the sampled patients with indwelling urinary catheters were made 2 times, the first time was done at the same time that the urine examination for patient screening was made and the second time was made when the urinary catheter were taken off, in case that the indwelling catheters have to be kept for 7 days or longer, the urine samples were taken on the 7th day. The results of the urine cultures were made by the physicians after sending the urine samples for bacterial cultures.
2. Nurses who performed urinary catheterization answered the Self-Evaluation Form regarding the urinary catheterization and catheter care provided for the patients with indwelling urinary catheters.
3. Observing the activities performed by the nurses regarding urinary catheterization and catheter care provided, by the researcher, head nurses and the nurses responsible for infection control of the wards.
4. Observing the procedures for disinfection and sterilizing the urinary catheterization set and the cleaning set at the Central Supply Unit, by the researcher and a nurse responsible for infection control of the ward.

STEPS FOR PRESENTING THE RESEARCH RESULTS

To present the research results as the follow:

Part 1. General characteristics of the sample

Part 2. Prevalence rate of nosocomial urinary tract infection

Part 3. Factors relating nosocomial urinary tract infection

Part 4. Comparison of activities regarding urinary catheterization and nursing care provided for patients with indwelling urinary catheters, between the data from self-evaluation and observation

