

CHAPTER X

DISCUSSION

The study dealt with control behaviours for reduction of urinary catheter associated infections. The emphasis was put on the nursing personnel behaviors. The main reason was that the nursing personnel were mostly responsible for giving catheterization service to the patients and for caring the catheter throughout the period of catheter indwelling. The introduction of the CDC guidelines category I for control of urinary catheter associated infections was timely. In contrast to previous studies, a group of several control measures were integrally introduced and monitored during the study period. Most previous studies tested the efficacy of a single control measure in controlling urinary tract associated infections (Desautels, 1960; Kunin and McCormack, 1966; Viant, Linton, Gillespie, and Midwinter, 1971; Garibaldi, Burke, Dickman, and Smith, 1974; Kunin, 1984.).

Analysis of the infection data of this study was different from previous studies. In almost all previous studies, infection rates were calculated by using numbers of infected cases as the numerators and numbers of patients discharges or admissions at a certain time period as the denominators. The duration of patient stay which is one of the infection risk factors was not considered (Pinyowiat, et al., 1988; Danchaivijitr and Waitayapiches, 1988; Nosocomial Infection Control Group of

Thailand, 1988; Srisupan, Senarat, Pichiansathien, and Tongswat, 1988; Danchaivijitr and Chokloikeaw, 1988; Sithikesorn, 1988; Jamulitrat, Ngo, Thongpiyapoom, and Varindsathien, 1989).

Survival analysis was applied in this study, taking into consideration the duration of hospital stay. The criteria for survival analysis are applicable to most of our study infection data. These are: clear starting points of including subjects in the study, clear onsets of events, subjects being included in the study at different points of time, many subjects being censored at the end of the study, many subjects being withdrawn from the study before occurrence of events. In this study, the starting point were the dates of catheter indwelling. Events were assessed at dates of removal of the catheters. In culture positive patients, the actual onset of events (i.e. the urinary catheter associated infections) possibly occurred before catheter removal. However, without investing much more resources for daily urine culture, it was not possible to detect an infection before the time of catheter removal. Nevertheless, most cases in our study had catheter indwelled for only one to three days and only a few cases had catheter indwelling for longer than seven days, the biases resulting from the inability to do daily urine culture should not be too great. This is because biases could occur only in positive culture cases which had a small proportion during the early days of catheter indwelling.

We should suggest for further study to obtain the data of more accurate onsets of events without investing too much money. If refrigerators which have good control of temperature are

available, daily urine specimens from every urinary catheterized patient can be collected and kept in the refrigerator at the temperature of 4 c. When any positive culture is detected at the time of catheter removal then the lot of those urine specimens can be taken to culture for every single day of the specimen, as a result the actual date of onset of bacteriuria can be detected. If the culture turns out to be negative, the remained specimen, therefore, can be discarded. By this method, we should be able to save a lot of money and time. Moreover, the accuracy of event onset will also be obtained.

Our study has shown the statistical significance in improvement of the nursing personnel control behaviors. Nevertheless, we were not able to show a statistical significance in reduction of the infection rates. This does not mean there is no need for improvement of practising the control measures for the urinary catheter associated infections. Being unable to show significant reduction of the infection rates in this study may result from many factors. First, the quality of catheter care of health care personnel is not the only factor contributing to the infections. Host susceptibility, causative agents themselves and the environment are also the other factors contributing to the infections. In our study, we were not able to control all these factors. Second, the infections observed and collected in this study were together both asymptomatic and symptomatic urinary tract infections. We were not able to show a separate analysis of the two infections in accordance with the change of nursing personnel behaviors. Third, the analysis might not be accurate

enough to show the significance since the onsets of events there were not exact. If we had been able to do daily urine cultures for detecting event onset, some how, it might have been possible to show the significance. Fourth, our study settings were the general medical wards. Most patients were not severely ill and did not have the catheter indwelled for long time period (majority duration was only 1-3 days). The proportion of the infection occurrence was small. Therefore, if similar studies were carried out in the wards of more critically ill patients such as the intensive care units and that situation the urinary catheter has to be indwelled for a longer period of time and patients having greater proportions of the infections, the control behaviors of health personnel may result in significant reduction of the infection rates. This is suggested for further study.

The study has shown the statistical significance in control behavioral change of the nursing personnels after the three month period of intervention of introducing the CDC control guidelines and combination with educating the nursing personnel who dealt with catheterization. However, when the education was withdrawn after the experimental period some control measures were neglected by the personnels. The result has indicated that there was not much longer sustainability of favourable behaviors after the intervention. This indicated that this method of intervention was not yet effective enough for durable practice for controlling of the infections. In order to maintain the personnel control practice, other methods should be taken into

considerations such as continuation of education schedule if the organization has enough resources, periodic incentives giving for the satisfactory level of practising and setting as the hospital policy or regulations for employees to follow.

CONCLUSION

The study dealt with the implementation of the use of guidelines and education for reduction of urinary catheter associated infections. The intervention was the introduction of the CDC control guidelines category I for control of urinary catheter associated infections combined with educating the nursing personnel who were responsible for patient urinary catheterization. The study has shown a statistical significance in the nursing personnel control behavioral change after three month period of intervention. The study showed no longer sustainability of some control behaviors after withdrawal of the intervention. We were not able to show a statistical significant reduction in the urinary catheter associated infection rates. However, suggestions are made for further study to clarify the following points; separation of analysis of asymptomatic and symptomatic urinary tract infections according with personnel behavioral change, method for obtaining more precise onset of bacteriuria without too much investment of time and money, studying in different settings for detection of infection rate reduction, and other strategies for maintenance of the favorable control practice of the nursing personnels.