



## Relationship between Temperature and Humidity on Sterility of Reusable Instruments in Hospital's CSSD

Insan Sunan Kurniawansyah\*, Marlina Abdassah\*, Sharon Gondodiputro\*\*

\* Faculty of Pharmacy Universitas Padjadjaran, Bandung, Indonesia.

\*\* Faculty of Medicine Universitas Padjadjaran, Bandung, Indonesia.

\*Corresponding author's E-mail: insan\_fmunpad@yahoo.com

Accepted on: 25-06-2015; Finalized on: 31-07-2015.

### ABSTRACT

One of the activities for healthcare associated infections control (HAIs) is sterilization of reusable materials and instruments before being distributed is being stored in a storage room. In this storage room, possible contamination can occur. The purpose of this study is to analyze the relationship between the temperature and humidity of the storage space and the sterility of reusable instruments in hospital's CSSD. A sequential explanatory with mixed methods was done. Quantitative research was conducted on the measurement of temperature and humidity of storage space by using a thermo-hygrometer with ten sampling locations, examination of the total number of germs room with settling plate method, sterility testing, identification of bacteria by Gram staining and biochemical tests. The bivariate data was analyzed with Pearson correlation and Eta association. The multivariate analysis used was linear and logistic regressions. The qualitative study was carried out with interviews and observations, which were analyzed by content analysis. The quantitative results showed that there was a significant relationship between temperature and humidity to sterility of the storage space. In the other hand, there was no relationship between the temperature, humidity and the sterility of storage room on reusable instrument. The bacteria isolated from storage space were *Escherichia sp.*, *Klebsiella sp.*, *Salmonella sp.*, *Staphylococcus sp.*, and *Streptococcus sp.* Factors on sterile supply cycle process that could affect to this situation is handling of these factors were not standardized, such as decontamination, packaging, storage and monitoring of the final product processes. There may be other risk factors associated with reduced security of reusable instruments used in hospital, such as hospital staff personnel hygiene, washing water quality, and room air filtration. These could be the possible risk of sterility assurance of reusable instruments in hospital.

**Keywords:** Healthcare Associated Infections, Humidity, Reuseable Instruments, Sterility, Temperature.

### INTRODUCTION

Hospital as one of the health providers, is a place that has risk of harm such as Healthcare Associated Infections (HAIs) formerly known as nosocomial infections.<sup>1</sup> The World Health Organization (WHO) study, quoted from Nasrul and Udin showed that approximately 8.7 % of the 55 hospitals in 14 countries from Europe, the Middle East, Southeast Asia and the Pacific occurred HAIs, with the incidence HAIs in Southeast Asia by 10 %. HAIs cause as many as 88,000 death case every year. The Centers for Disease Control and Prevention (CDC) in America estimates that 1 in every 10-20 patients treated in hospitals in America have estimated that nearly HAIs and 90,000 patients died every year.<sup>2,3</sup>

One of the activities for healthcare associated infections control (HAIs) is sterilization of reusable materials and instruments.<sup>1,2,3</sup> These products must go through a rigorous process to become a sterile product.<sup>4,5</sup> Sterilization process can be said to be successful when seen from the observation of the indicators used and from the microbiological test.<sup>6</sup> Examination by the hospital is not routinely performed, and only limited examination of air quality is carried out without direct examination of the post-sterilization of reusable instrument,<sup>7</sup> therefore, a study was conducted to analyze on the relationship between temperature and humidity of

the sterility of reusable instrument after sterilization and sterility of storage space of Central Sterile Supply Department (CSSD) of the central hospital in Bandung city.

This study is expected to provide information regarding the relationship between temperature and humidity on sterility of storage space, which affects the sterility of reusable instrument in the storage room. As for other uses is to obtain the information about factors in sterile supply cycle that can affect the sterility of reusable instruments.

### MATERIALS AND METHODS

#### Materials of Research

The materials used in this study were divided into two sections based on the type of research, such as for quantitative research in the form of chemicals and microbiology. For qualitative research in the form of a tape recorder, observation and interview guide sheet.

#### Subject of Research

The subjects in this study were the informant/respondent ever and/or working in the CSSD.

#### Object of Research

Objects used in this study are the CSSD of storage space and reusable instrument.

