

by hepatitis B carriers under no antibodies of hepatitis B protection, the rate of infection is 6~30%. If they were pricked by carriers of hepatitis C, the infection rate is 2.7%. If we were pricked by HIV carriers, the infection rate is 0.3~0.4%. It is very important to protect from needle pricks to get free from these diseases. The rate of needle pricks in our hospital is 0.22% in 2012. The top three causes are: 1. inappropriate force when needles pulled out accounted for 23%, 2. Pricked by sharp instruments during surgeries accounted for 23%, 3. Pricked by the other hand under unstable position accounted for 15%. The top three personnel subject to needle pricks are nurses (0.12%), physicians (0.05%), cleaning personnel (0.02%).

**Methods:** The pricks protection measures before enforcing safety needles which included 1. Developed needle pricks protection manual which contains the disposing process of needles and syringes after drawing blood 2. Trained employees and sanitation personnel with needle pricks prevention included in in-service and pre-service education 3. Set needle container and threw needles into containers directly without re-capping. We launched the use of safety needles since January 2013 and conducted education. We audited and consulted personnel by infection control nurse and retrieved the unsafe needles.

**Results:** By the implementation of safety needles, the rate of use is 100% in special units and in high-risk patients, 60% in whole hospital. The ratio of needle pricks dropped from 0.22% in 2012 to 0.15% in 2013.

**Conclusion:** There is a significant reduction in the ratio of needle pricks. We conducted 11 types of safety needles so far and will continue to promote. We hoped to give our employees more secure working environment by the policy.

#### PS 1-150

##### EFFECTIVENESS OF THE IMPLEMENTATION OF SAFETY DEVICE

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According to hospital medical staff needlestick main reason because of which there are seven cases of catheter, Port-A has nine cases, there are eight pumping arterial blood

Example, in the beginning of 2013 years in January comprehensive use of safety Device (retracting safety intravenous catheter, Arterial blood collection Syringe, security Port-A), the field of education and clinical staff exercises after no new cases occur.

#### PS 1-151

##### ASSESSMENT OF KNOWLEDGE, ATTITUDE, FACTORS RELATED TO HAND HYGIENE AMONG HEALTHCARE WORKERS AT HUNG VUONG HOSPITAL

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**Purpose:** Since 2010, the hand hygiene compliance (HHC) rates of health care workers (HCWs) increased from 9% to 54% during the first 3 years of hand hygiene surveillance at Hung Vuong hospital, and remained stable at 54% in the following year. There was a need of assessment of knowledge, attitude, factors related to hand hygiene among HCWs that aimed to provide information for establish interventions to improve HHC.

**Methods:** A cross-sectional study uses modified validated questionnaires, which had given for 420 HCWs of clinical wards at beginning of working day in October 2013. The questionnaire consists of four parts: demographic information, assessment of knowledge, attitudes, practices and equipment available for hand hygiene. Knowledge, attitudes and current practice behaviours will be measured. HCWs need to fill the questionnaire and submit to infection control nurses at the end of the day.

**Results:** The survey showed that 63% HCWs had false knowledge of reducing infection through their hands. Only 9% HCWs fully understood the advantages of alcohol-based hand rub, 42% HCWs felt reluctant to ask others to engage in HH, 11% HCWs didn't feel embarrassed if they omitted HH. Some factors related to HH are: lacking of facilities, insufficient time,

forgetfulness, high patient-nurses ratio, frequent requirements of HH. There are some positive influences: 90% HCWs know that HH is an important task. 90.2% of HCWs agreed HH's posters remind them of HH, 74.8% founded that infection control department have a positive impact on HH.

**Conclusion:** Lack of right knowledge of hand hygiene from HCWs, especially knowledge of alcohol-based hand rub advantages and lack of facilities to perform hand hygiene are the most important findings. There is the need for HH knowledge training and providing hand hygiene facilities to improve HHC of HCWs.

#### PS 1-152

##### THE EFFICACY OF CHLORINE DIOXIDE IN ERADICATING *LEGIONELLA*, NON-TUBERCULOSIS MYCOBACTERIUM, AND HETEROTROPHIC BACTERIA FROM A HOSPITAL WATER SYSTEM

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**Purpose:** Disinfection of hospital water supplies has been an effective method for prevention of waterborne-associated nosocomial infections. Chlorine dioxide (ClO<sub>2</sub>) has been applied to hospital water treatment for eradication of *Legionella*. However, due to the difficulty of controlling ClO<sub>2</sub> concentration in water, long-term efficacy varies from literature. Furthermore, ClO<sub>2</sub> against other waterborne pathogens is not documented in literature. The objective of this study is to determine the efficacy of ClO<sub>2</sub> against *Legionella*, Non-Tuberculosis Mycobacterium (NTM), and Heterotrophic Bacteria (HB).

**Methods:** The study hospital had history of *Legionella* colonization in the water system, and *L. pneumophila* (sg1, sg2, sg6), *L. longbeachae*, and *L. micdadei* were isolated from various locations. A ClO<sub>2</sub> generator (@66g/h by ProMinent Fluid Controls (Taiwan) Co., Ltd.) was installed at the cold water supply in test building. The target ClO<sub>2</sub> concentration was 0.3 ~ 0.5 mg/L with a high alarm set at 700mv ORP. Water samples were collected for *Legionella* by a standardized culture method (ISO 11731-2:2004).

**Results:** *Legionella* positivity was reduced from 50%(6/12) to 0%(0/13) with 2 weeks. *Legionella* positivity was able to maintain at ≤ 15% with lower concentration of ClO<sub>2</sub> to minimize the odor. During the same period, NTM positivity was reduced from 29% (4/14) to 0% (0/38), and average HB counts were reduced from >300 cfu/L to below 30cfu/mL.

**Conclusion:** ClO<sub>2</sub> treatment of cold water supply could control *Legionella* colonization in the test building, and no more nosocomial LD case was detected even *Legionella* positivity was not reduced to zero at a lower concentration of ClO<sub>2</sub>. Furthermore, ClO<sub>2</sub> also reduce the colonization of NTM and HB in the same water system. ClO<sub>2</sub> treatment provides a cost effective alternative compared to superheat-and-flush and hyperchlorination for *Legionella*, and may have potential to eradicate NTM and HB in hospital water systems.

#### PS 1-153

##### EVALUATION OF USING DISPOSABLE WIPES AND REAL TIME ADENOSINE TRIPHOSPHATE BIOLUMINESCENCE MONITORING: A NEW INTENSIVE CARE UNIT CLEANING PROGRAM

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##### Purpose

To assess the efficacy of a new program for cleaning high-touch surfaces in a cardiologic intensive care unit (ICU) and a medical ICU (MICU) by use of a real-time adenosine triphosphate (ATP) bioluminescence assay and by determination of healthcare-associated infections.