

# **The 4<sup>th</sup> International Congress of the Asia Pacific Society of Infection Control 5 – 8 July 2009**

## **Introduction**

The 4<sup>th</sup> International Congress of the Asia Pacific Society of Infection Control was attended by more than 1500 delegates from 28 countries. Infection Control Association, Singapore (ICAS) sponsored 9 members to represent Singapore in this conference at Venetian Macao-Resort-Hotel, Macau SAR, China.

The theme for the congress was “Controlling Infection for Safer Hospital and Safer Community” focusing on connection between hospital and community. Infectious diseases were described as unpredictable by Dr Kong Chan, the Organizing Chairman. The emergence of infectious diseases in the community, increase of mobile population, changes in healthcare delivery and shorten length of hospital stay explicate for infection control in the community.

Health care personnel were expected to be knowledgeable and professional. The aims of this congress were to enable professional in infection control to update and share new challenges and knowledge in infection control practices. It was also an opportunity for professionals to build strong regional and global network.

## **Opening Ceremony – Inauguration Lecture**

Dennis G Maki  
MD, University of Wisconsin School of Medicine and Public Health, U.S.A.

At the opening ceremony, Dennis G Maki delivered the inaugurate lecture on “The imperative for a new paradigm for control of healthcare-associated infections.

He stressed that most of the healthcare associated infections are related to surgery and life saving technology. This is complicated by the emergence of MDR infection due to the overuse of antibiotics in hospitals.

The standard measures of infection control such as hand hygiene, isolation of patients and good aseptic techniques may not be adequate to reduce the rate of multidrug-resistant infections. Therefore we need to approach infection control differently.

The new paradigm described by Dr Maki includes the followings:

1. Implementation of quality improvement program with evidence-based control measures to attain compliance.
2. Barrier isolation of high risk patients to prevent the spread of MRSA instead of routinely screening all newly patients
3. To contain the spread of Clostridium Difficile more studies are needed to ascertain the effectiveness of alcohol hand rub versus conventional handwashing with Chlorhexidine.
4. Use of medical technologies such as HEPA-filter to prevent the spread of fungal infection and CHG impregnated IV site dressing to reduce peripheral line infections.
5. Use of technologies to disinfect inanimate hospital environment.
6. Effective antibiotics stewardship programs
7. Extending infection control strategies to community and home care.

### **Keynote 1: Patient Safety and infection control: The basis of partnership**

Didier Pittet

Director, Infection Control Programme, University of Geneva, Hospitals, Geneva, Switzerland

Infection control is the entrance door to safer patient care. A complex system-wide effort involving a wide range of actions are required to improve patient safety. These actions include:

- Performance improvement
- Environmental safety and risk management
- Infection control
- Safe use of medicine
- Equipment safety

- Safe clinical practice
- Safe care environment

He emphasized that patient participation is increasingly recognized as a key component in the redesign of health care processes. The new patient's role is to participate in ensuring safer care such as reminding health care workers to wash their hands. However, there are obstacles to patient participation e.g. examples age and lack of knowledge.

*Hand hygiene omission = latent medical error*

WHO considers Infection Control as the first priority in patient safety, and hand hygiene promotion as the entrance door to infection control and patient safety concept.

- Hand hygiene omission does not result an immediate harm. It can transmit micro-organisms that may eventually cause a healthcare-associated infection.
- Hand hygiene is the standard of care. This is the most efficient way to prevent healthcare-associated infections and the spread of multidrug resistant bacteria
- Patient participation program would improve Healthcare workers hand hygiene compliance

Can health care workers be educated to support patient participation?

## **Keynote 2: Pushing forward to reach the goal of zero**

William R Jarvis  
M.D., President, Jason and Jarvis Associates, Hilton Head Island, South Carolina,  
U.S.A.

Many recent studies have shown that a large proportion of hospital acquired infection may be prevented. In addition, many studies also showed that the use of Active Detection and Isolation (ADI) can lead to 60%-90% reduction in MRSA infection rate. A group of preventive interventions called "bundle" has been formulated for easy implementation. These interventions are not costly and do not involved expensive, advanced medical technology. These are developed as there has been movement away from benchmarking and aggressively trying to prevent all the HAIs and establishing a culture of zero tolerance. Infection control professionals are working

on “bundle” to prevent central-line associated blood stream infections, ventilated associated pneumonias, surgical site infections etc.

### **Keynote 3: Core elements for building infection control infrastructure**

Carmem Lucia Pessoa da Silva

Department of Epidemic and Pandemic Alert and Response

World Health Organization (WHO), Geneva

The effectiveness in prevention of endemic infections and management of outbreak in health-care facilities would depend on the establishment of the infection prevention programme. Being prepared and having a culture of safe health care practices are the keys to coping with outbreak situation.

There is a huge gap between the knowledge accumulated over the past decades and the implementation of infection control practices. This gap is even deeper in poor-resource settings. Since health care-associated infections are important public health problems as it occurs frequently, therefore establishing infection control programmes are the main elements in prevention. It has been proven that effective interventions are not necessary costly.

### **Plenary lecture 1: Infection prevention – the way forward**

Michael L Tapper

Director of the Division of Infectious Diseases and Hospital Epidemiologist

Lenox Hill Hospital New York, NY, U.S.A.

*Tempora mutantur, nos et mutamur in illis*

*The times are changed, and we change with them – Owen's epigrammata, 1615*

#### The Challenges Ahead

- Multi-resistant pathogens and lack of new antibiotics
- Deficits in understanding how to motivate change in a variety of institutions and in a variety of cultures – the human factors

- The outsourcing of health care and the dearth of surveillance and IC personnel in alternate care settings such as long-term care, home care, and non-traditional care
- The gaps between developed and developing countries in application of the scientific basis of infection control

### The Way Forward

- There is a need to expand infection control efforts into alternative care settings beyond the acute care hospital. This includes ambulatory care, non-traditional care sites, home care, and long-term care. There is a need to find ways to do this that are simple, reproducible, and cost-effective across variety of settings’.
- There is a need to better understand how to change human behaviour – the single great variable in infection control. Education and commitment by senior leadership remain critical, but greater progress is likely to come from technology by engineering human behaviour to improve adherence to the most fundamental aspects of infection control such as hand hygiene.

### Actions for ALL

- Get involved! Be active not only in your facilities but also in your communities. Don’t hesitate to insist that the voice of the infection control specialist be heard in public policy decisions at every level of government.
- Communicate!- share information with your colleagues openly across facilities and across borders.
- Collaborate across disciplines! – both with other medical specialties and with critical partners such as information technologists and behavioral scientists
- Never get discouraged. You are the guardians of our patients. Keep the faith!

## **Plenary lecture 2: Infection prevention and control – the need for new partnerships to ensure success**

Barry David Cookson  
Director of the Laboratory of Healthcare Associated Infection, UK

Besides clinical, microbiological and infection control, Infection prevention and control can be better achieved with behavioural change. There is a need for new partnerships to ensure success in infection control. The good in establishing new partnerships has resulted in health care workers now owning infection control.

Establishing new partnerships with other “players” such politicians, policy makers, lawyers, the media, the insurance agencies etc. would help us in better our skills in the work on organizational and behavioural change.

### **Plenary lecture 3: Disinfection and sterilization – current issues and new technologies**

William A Rutala

Professor, Division of Infectious Diseases, Department of Medicine,  
Director, Statewide Program for Infection Control and Epidemiology  
University of North Carolina School of Medicine (Chapel Hill)

Director, Hospital Epidemiology, Occupational Health, and Safety Program at UNC Health Care System.

1. When properly used, disinfection and sterilization can ensure the safe use of invasive and non invasive medical devices.
2. EH Spaulding believed that how a device will be disinfected depended on the device’s use.
  - Critical – devices which enter normally sterile tissue or the vascular system, or through which blood should be sterile ( sterilization )
  - Semi-critical – devices which touch mucous membrane or skin that is no intact, requires disinfection process. ( High level disinfection that kills all microorganism but not high number of bacterial spores )
  - Non-critical – devices that touch only intact skin ( requires low level disinfection )
  - The most important process which precedes any form of disinfection or sterilization is cleaning.

#### New research and methods of disinfection/sterilization

1. Ozone and vaporized hydrogen peroxide

- A new class 6 chemical indicator in a low temperature sterilization.
- 2. Washers and disinfectors
  - Used to decontaminate instruments in the central processing department
- 3. Automated endoscope reprocessor
  - A new high level disinfection reprocessor, inactivating C.Difficile. Used in Endoscopy centres
- 4. U-V ( HPV) room decontamination units
  - Effective in eliminating the environmental mode of transmission
- 5. Hydrogen Peroxide
  - Used in cleaning of environmental surfaces

#### Sterilization process for instruments contaminated with Prions

CJD – potential for 2° spread through contaminated surgical instruments. CJD contaminated devices require special prion reprocessing.

- Pre vacuum steam sterilization - 134° for 18 minutes
- Gravity steam sterilization - 132° for 60minutes
- Sodium Hydroxide (NaOH) for 1 hour & steam sterilization 121° for 1hr

No low temperature sterilization technology is considered effective against the CJD contaminated devices.

For non critical devices, use hypochlorite 5000ppm for wipe down.

#### Opportunities for Improvement

- Standardize steam sterilization
- Cleaning standards and monitoring tools – some technologies measuring protein, test the efficacy of the washer disinfectant.
- Improve consistency of steam load release requirements ( eg. BI )
- Leverage information management technologies – significant opportunity for improved efficiency.

## **Plenary lecture 4: Infection prevention and control – Functioning in scarce resource**

Victor D. Rosenthal

Head, Infection Control and Infectious Disease Dept, Bernal Medical Centre, U.S.A.  
Professor, Infection Control and Hospital Epidemiology Course, Medical College, Buenos Aires, Argentina  
Founder and Chairman, the International Nosocomial Infection Control Consortium (INICC) U.S.A.

ICU in developing countries appeared to have higher rates of Device-associated infections. The explanations for these higher rates are:

1. Developing countries lack legal framework or laws governing the establishment of infection control.
2. Hand hygiene compliance in most healthcare facilities is also highly variable.
3. Limited funds for infection control as the hospitals in the developing countries receive limited financial or administrative support.
4. Hospitals in the developing countries are typically very low in nurse-to-patient staffing ratio as compared with hospitals in the developed countries.

Adding to the above problems, the hospitals have to deal with overcrowding, not enough experienced nurses and pressing shortages of other healthcare personnel and supplies.

## **Plenary lecture 5: The critical role of infection control in the new influenza A H1N1 Pandemic**

Wing Hong Seto

Chief Infection Control Officer, Hospital Authority, Hong Kong  
Professor of Microbiology, Director of Quality and Risk Management,  
Hong Kong West Cluster, Hong Kong SAR

The New Influenza A H1N1 Pandemic



WHO stated that the pandemic could be characterized globally as being moderate in severity. This is further clarified in stating that most will recover without hospitalization or medical care, with an overall similarity to seasonal influenza. Symptoms of the 642 US cases with confirmed H1N1 April 15 to May 5 2000 were fever (94%), cough (92%), sore throat (66%), diarrhea (25%) and vomiting (25%). Majority of the 30 hospitalized Californian patients with H1N1 between 15 April to 17 May 2009 recovered without complications. However 64% had underlying condition such as chronic lung disease (asthma & COPD), immunosuppression, chronic cardiac disease, diabetes and obesity.

Mode of Transmission: SHEA endorses implementing the same practices recommended to prevent the transmission of seasonal influenza for the novel H1N1.

Precautionary Measures: Individual with respiratory symptoms should practice respiratory hygiene and cough etiquette. Contact precautions include wear gloves when touching respiratory secretions, wear gown when splashing is likely and hand hygiene after gloves removal

Isolation Measures: Negative pressure rooms are not needed for routine care and N95 is not recommended as part of the standard precautions. However N95 respirator / disposable gown/gloves/eye protection should be used during aerosol generating procedures for examples intubation, bronchoscopy, autopsy etc. PPE need to be changed promptly if heavily contaminated during procedure.

General preventive measures are by practicing good health habits such as:

1. Avoid close contact with ill person
2. Stay home when you care sick
3. Cover your mouth and nose when coughing
4. Practice hand hygiene
5. Avoid touching your eyes, nose or mouth
6. Practice other good health habits
7. Fix person to care for ill person at home.

## **Hand Hygiene**

## **Worldwide implementation – an update on the first challenge**

Didier Pittet

Director, Infection Control Program, University of Geneva Hospitals, Geneva

Healthcare associated infection has been a major and global issue for patient safety. WHO launched its First Global Patient Safety Challenge “Clean Care is Safer Care” in April 2006. This challenge aimed to raise global awareness of the importance of healthcare associated infection as a priority issue for patient safety. 120 Ministries of Health signed a formal statement to pledge their support to implement strategies to reduce healthcare associated infections. Hand hygiene promotion is implemented as a standard of care and is the most effective way to reduce healthcare associated infections. The WHO guidelines on Hand Hygiene in Healthcare (Advance Draft) and its multimodal improvement strategies were piloted at 8 sites from 7 countries and were used in more than 350 hospitals worldwide with very promising results. 40 countries used the tool developed by WHO to implement the hand hygiene campaign. In order to sustain the momentum, WHO launched SAVE LIVES: Clean Your hands on 5 May 2009. The final draft of WHO guidelines on Hand Hygiene in Healthcare is published during the same time. It aims to encourage all healthcare workers to be part of a global movement to improve hand hygiene.

## **Encountering difficulties on hand hygiene implementation**

Josepha Tai

Senior Nursing Officer, Infection Control Unit,

Queen Mary Hospital

Hong Kong SAR

Ms Tai is a Senior Nursing Officer in Queen Mary Hospital, Hong Kong Sar. She was a hand hygiene project coordinator of the first pilot hospital in Hong Kong. She shared on the great challenges and difficulties that she encountered during the implementation of hand hygiene campaign to enhance and sustain compliance of healthcare workers.

The difficulties encountered included:

- Convincing healthcare workers of using alcohol-based handrub is more effective to reduce bacterial counts on hands than hands washing.

- Fear of potential skin irritation and dryness when using alcohol-based handrub for their hands.
- Concerns that patient may accidentally ingest the bottle of alcohol-based handrub when it is placed at point of care.
- Lack of support and role modeling, particular physician to support hand hygiene campaign and encouraging others in the workplace.

Nevertheless, Ms Tai and her team will continue to achieve the goal of reducing healthcare associated infection through “Clean Care is Safer Care” that is launched by WHO on its First Global Patient Safety Challenge.

### **Hand hygiene compliance: patient participations**

Michael Whitby  
 Director, Infection Management Services, Princess Alexandra Hospital,  
 Medical Director, Centre for Healthcare Related Infection Surveillance and  
 Prevention (CHRISP), Brisbane, Australia

One of the strategies to motivate healthcare workers to have high compliance to hand hygiene is to institute patient participation by requesting patients to ask healthcare workers to wash their hands before caring for patients.

Patients are engaged by giving them a script to understand the important of hand hygiene and their participation in the hospital program, such as “Partners in your care”. They are informed that hand washing and hand sanitizer usage is the number one to break the chain of infection. This is to drive hand washing by perceiving it as self-protection. Patients are expected to remind care givers to wash or sanitize their hands before they come in contact with patients.

Survey is conducted to understand patients’ response whether they have or feel comfortable asking healthcare workers to perform hand hygiene before coming in contact with them, and whether did they receive any positive response from healthcare workers.

Barrier to success of patient participation in the hand hygiene program are those patients who cannot cooperate particularly patients who are in ICU and are critically ill. Other obstacles include the hierarchical structure of hospitals and the

anthropomorphic basis of hand hygiene behaviour both in the community and healthcare setting. Therefore hospital hand washing behaviour may reflect community hand washing behaviour. The achievement of successful hand hygiene program should not avoid the critical elements of WHO program that include recognition of hand hygiene as an institutional priority, support for the program by clinical opinion leaders such as physicians, education of healthcare workers and reducing the effort to hand hygiene by providing adequate alcohol-based handrub and at point of care.

Patient participation in hand hygiene program is yet to be proven whether it could be widely applied and whether will lead to sustain improvement of hand hygiene compliance in healthcare workers. Certain socio-cultural characteristics may need to consider when assessing the potential of patient empowerment to improve healthcare workers' compliance to hand hygiene.

### **Standards and performance indicators in healthcare associated infection**

Michael L TAPPER

Director of the Division of Infectious Diseases and Hospital Epidemiologist  
Lenox Hill hospital New York, U.S.A. Surveillance for Infection Control

Infection control program in healthcare institutions should be assessed continuously by using appropriate standards and performance indicators. A concise series of recommendations for "core" infection control activities and guidelines have been published recently. The activities include:

1. Control of device-related blood stream and urinary tract infections.
2. Surgical site infections
3. Healthcare-associated pneumonias
4. Methicillin-resistant staph aureus and clostridium difficile

Both process and outcome indicators for hospital-associated infections should be integrated into the institution's infection control plan.

### **What strategies for surveillance are the most appropriate?**

*The data you have you don't want*

*The data you want you don't need*

*The data you need you can't get - Finagle's Law*

There are two types of surveillance recognized in Europe. These are outcome and process surveillance. The former can be of several kinds e.g. prevalence, incidence, post discharge, unit-based, bug-drug based e.g. MRSA, infection systems (e.g. bacteraemias), alert organism and alert condition. They should be designed to produce information for action, which can address the particular issues identified. Surveillance by objectives should interact with process surveillance.

#### Purposes of Surveillance for Infection Control

- Detect changes in disease patterns and enable early investigation and application of prevention measures
- Direct HCAI control activities
- Evaluate prevention and control activities
- Provide information to help plan services and allocate resources
- To identify at risk patient groups
- Bench Marking being aware of the constraints

The Key Attributes for evaluation of a surveillance system are

- Simplicity
- Flexibility
- Acceptability
- Sensitivity
- Representativeness
- Timeliness

#### Surveillance by Objectives

- Outcome objectives prioritized and agreed
- Processes include allocate time according to the priority and a design to achieve objectives
- Analyse and feed-back data to ICC and healthcare workers
- Agree interventions eg. Audit review policies

- Review programme yearly e.g. re-valuate effects of interventions.

### **Effective Surveillance in practice**

Glenys Harrington  
Infection Control Program Coordinator  
Infection Control & Hospital Epidemiology Unit, Alfred Health  
Australia

An infection control program functions with regular and timely reviews of significant microbiology results and at a minimum, surveillance of high risk, high volume, high cost procedures or areas within their healthcare setting.

Novel strategies such as surveillance grand rounds, regular multidisciplinary surveillance meeting to discuss difficult cases, interactive reporting and feedback strategies, facilitation of multidisciplinary evidence based intervention programs using surveillance data to measure outcomes and professional development opportunities for ICPs to publish and present their surveillance achievements help develop and maintain an effective program that is of high quality, high acceptability and sustainable.

### **Catheter-related bloodstream infection prevention: Combining processes and devices to reach zero – The U.S. experience**

William R Jarvis  
M.D., President, Jason and Jarvis Associates, Hilton Head Island, South Carolina,  
U.S.A.

Prevention and control of healthcare-associated (HAIs) has become a worldwide focus of attention. CR-BSIs are a major cause of morbidity and mortality worldwide. Recent US data shown significantly reduce CR-BSI rates with the implementation of maintenance and insertion bundle. The basic bundle includes:

- Hand Hygiene
- Chlorhexidine (CHG) skin prep
- Correct device and insertion site selection
- Use of maximum barrier precautions and

- Catheter insertion check- list.

Additional measures are required for those seeking Zero tolerance with CR-BSI.

These combine processes and devices implementation such as:

- CHG bathes
- Use of the CHG-impregnated sponge at the insertion site
- Antiseptic/antimicrobial-impregnated catheters /Antibiotic locks
- Maintaining a closed system
- Use of pre-filled syringes for flushing
- Selection of the needleless connectors with the lowest risk of infection
- Education and certification of those inserting/maintaining catheters

The implementation of such measures, greatly enhance the achieve goal of Zero infection.

### **WHO Initiatives: 3<sup>rd</sup> Challenge**

Didier Pittet

Director, Infection Control Programme, University of Geneva, Hospitals, Geneva, Switzerland

#### Antimicrobial Resistance

The emergence of antimicrobial-resistant pathogens threatens to return us to the pre-antibiotic area. Methicillin-resistant *Staphylococcus aureus* (MRSA) has become endemic in healthcare settings in all countries. Increasing both Vancomycin-resistant enterococcus (VRE) and extended-spectrum beta-lactamase (ESBL) have emerged and become endemic in certain part of the world. Strains of *Acinetobacter* spp. resistant to all antibiotics and carbapenem-resistant strains of *Klebsiella pneumoniae* are emerging.

There were a wide variety of interventions to reduce the risk of these resistant pathogens. There is a need to implement aggressively proven interventions in all healthcare settings throughout world. These are:

- Prudent use of antimicrobials (including eliminating over counter access)
- Enhance infection control practices

- Increasing receipt of vaccines that would prevent infections and lead to antimicrobial use
- Appropriate use of the laboratory to culture for patient with signs and symptoms of infection

In 2008, the WHO Patient Safety Programme announced the theme of its 3<sup>rd</sup> Global Patient Safety Challenge as 'Tackling Antibiotic Resistance'. Five expert working groups have been involved to elaborate a WHO Global Work Plan for Antibiotic Resistance. In 2010, WHO will launch the 'Challenge' to concentrate on five key action areas:

- Animal husbandry
- Aquaculture and agriculture
- Infection control including simple and effective interventions to reduce transmission of resistant microbes
- Rational drug use and regulation
- Research and development of efficient and affordable diagnostic methods and new antimicrobial agents and surveillance, including developing laboratory capacity.

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