Infection Control and Biosafety

Healthcare-association Infection Control

Current Status

The SARS outbreak highlighted the importance of infection control in hospitals. To improve patient safety and combat nosocomial infections, Taiwan CDC coordinates annual inspection programs, gathers surveillance data on the occurrence of nosocomial infections and antimicrobial resistance, and formulates nosocomial infection control guidelines.

Our goals are:

1. To reduce nosocomial infections through national action plans and compilation of infection control guidelines.

2. To improve the performance of infection control programs in hospitals by boosting the quality of nosocomial infection control inspection programs and sharing nosocomial infection control experiences in on-site audits.

3. To continue promoting hospital participation and strengthening data quality in the Taiwan Nosocomial Infection Surveillance (TNIS) system.

4. To combat antimicrobial resistance through national action plans and compilation of infection control guidelines of multidrug-resistant organisms (MDROs).

5. To monitor variations and evolving trends of the carbapenem-resistant genes in Enterobacteriaceae.

6. To implement the Antimicrobial Stewardship Program for promoting appropriate use of antimicrobials. This will improve patient safety and treatment quality by reducing antimicrobial resistance and healthcare-associated infections.

7. To promote infection control and reduce healthcare-associated infections in nursing facilities by implementing infection control inspections.

Accomplishments

1. Infection Control Guidelines and the Infection Control Journal

   In 2015, Taiwan CDC released the guidelines for infection control for dentistry and in bum unit, as well as for environmental infection control in health care settings. Taiwan CDC also updated the guideline on preventing novel coronavirus (MERS-CoV) in healthcare facilities, revised infection control guidelines of MDROs, and released prevention handbooks of methicillin-resistant *Staphylococcus aureus* (MRSA), and carbapenem-resistant *Acinetobacter baumannii* (CRAB). Formulated infection control...
guidelines for Rotavirus, Adenovirus, Respiratory syncytial virus (RSV) and MDROs in long-term care facilities (LTCFs) were also done by this year.

(2) Taiwan CDC commissioned the Infection Control Society of Taiwan to publish the bimonthly Infection Control Journal, which provides healthcare workers with information on trends and research related to the prevention and control of nosocomial infections.

2. Nosocomial Infection Control Inspections
Starting in 2008, Taiwan CDC commissioned the Taiwan Joint Commission on Hospital Accreditation to implement a quality improvement project for infection control inspections. Experienced infection control practitioners and medical officers joined local health authorities in conducting on-site inspections. In 2015, of 367 hospitals inspected, none of them failed to meet requirements.

3. Implementation of Care Bundle
The Centers of Excellence, established by seven medical centers and another 45 hospitals, participated in the national initiative to implement the care bundles to prevent ventilator-associated pneumonia (VAP) and catheter-associated urinary tract infection (CAUTI). The initiative can reinforce patient safety, improve healthcare quality and reduce medical costs.

4. Nosocomial Infection Surveillance and Reporting
In 2015, about 420 hospitals reported data to the TNIS system. Taiwan CDC produced a nationwide nosocomial infection quarterly report to provide periodic feedback and strengthen communication with hospitals.

5. Surveillance of Carbapenem-resistant Enterobacteriaceae
Taiwan CDC records cases with *Klebsiella pneumoniae* carbapenemase (KPC) and New Delhi metallo-beta-lactamase (NDM)-producing Enterobacteriaceae through two methods: a MDROs monitoring system and a scientific research program. Prevention guidelines were issued to help hospitals to enhance infection control measures, minimize the spread of MDROs and improve healthcare quality.

6. Nationwide Antimicrobial Stewardship Program
Three implementation levels - a program management center, demonstration centers and participating hospitals - operate the Antimicrobial Stewardship Program jointly. The management center was established in 2013 to launch the program. Some seven hospitals were selected to serve as regional demonstration centers assisting in overall
implementation and promotion of the systems, and 71 hospitals were selected to participate the program in 2015. An international congress, antimicrobial stewardship program summit forums, an award/certification ceremony and accomplishment presentation were held for promotional purposes.

7. Infection Control Inspections in Nursing Facilities
In 2015, Taiwan CDC implemented infection control inspections of nursing facilities. Local health authorities and infection control experts inspected 340 facilities and conducted follow-up inspections at 6 audited facilities that failed to meet requirements. The total pass rate was 98.2%.

8. “Taiwan Hand Sanitizing Relays Campaign 5 May 2015”
The campaign attracted 213 organizations, including 98 hospitals, 80 LTCFs and 35 medical student groups, to participate in. It aimed at promoting the practice hand hygiene to reduce healthcare-associated infections.
Future Prospects

1. Draft, implement and revise nosocomial infection control regulations and guidelines based on recommendations announced by the WHO and leading countries. The information Taiwan CDC gathers from around the world on policies, laws, regulations and implementation results will serve as a reference for policymaking.

2. Improve nosocomial infection control inspections. Taiwan CDC will draft the 2016 nosocomial infection control inspection quality improvement project based on implementation experiences from 2008 to 2015 and outside recommendations. It will arrange an inspection schedule based on the Ministry of Health and Welfare’s medical investigation consolidation policy.

3. Continue to promote the care bundles that prevent VAP and CAUTI. By reducing device-associated infections, hospitals are able to improve patient safety and healthcare quality, and reduce medical costs.

4. Promote hospital participation in the TNIS system while strengthening surveillance of nosocomial infections and antimicrobial resistance.

5. Continue to implement a national program of antimicrobial stewardship to combat antimicrobial resistance at hospitals.

6. Extend the infection control inspections to veterans’ homes, psychiatric rehabilitation institutions, and welfare institutions for the disabled in 2016 in order to improve health care quality, reduce healthcare-associated infections and prevent outbreaks.

Laboratory Biosafety Management

Current Status

Legislative and Regulatory Changes

In 2009, Taiwan CDC began revising the Regulations Governing Management of Infectious Biological Materials and Collection of Specimens. It added select RG1 microorganisms, strengthened biosecurity measures among units holding infectious materials, established a laboratory biosafety training system with a time component, and introduced a laboratory biosafety oversight and information system. After completing a related amendment to the Communicable Disease Control Act, it will jointly announce these revisions. In 2015, The “Operation Directions Governing Management of Infectious Biological Materials” has been updated. Directions on the risk group of vaccine strain, the P620 packing and shipping management for specimens with infectious pathogens, and biosafety operating requirements in laboratory for handle biological toxins, etc. were added. Taiwan CDC also completed editing, revision, and announcement of the Laboratory Biosafety Guidance for Conducting Testing for Human Immunodeficiency Virus (HIV), Mycobacterium tuberculosis (TB) and MERS-CoV.
Biosafety Mechanism Registration
By December 2015, 517 organizations registered biosafety mechanisms to Taiwan CDC, of which 391 established biosafety committees and 126 designated an individual. These included 33 government organizations, 171 medical institutions, 55 academic research institutions and 258 other groups.

Biosafety Inspections of High-Containment Laboratories
Since 2006, Taiwan CDC has routinely inspected BSL-3 and above laboratories to monitor operations and ensure safety. In 2009, TB-containment laboratories, which process culture manipulation for identification and drug-susceptibility tests, were added to inspections. In 2015, Taiwan CDC inspected one BSL-4 laboratory, 20 BSL-3 laboratories and 11 TB-containment laboratories.

Laboratory Biosafety Education and Training
In 2015, three e-learning courses on laboratory biosafety were recorded. Taiwan CDC also organized 8 biosafety training course sessions (totaling 46 hours), with a total attendance of 627 people.

Laboratory Bio-risk Management
In 2015, the bio-risk management system using CWA 15793 standard was introduced to 11 high-containment laboratories including BSL-3 and TB-containment laboratories. By focusing on continuous improvement and the Plan-Do-Check-Act (PDCA) cycle, this system will identify and monitor all aspects of laboratory biosafety and biosecurity.

Future Prospects
Taiwan CDC will continually supervise all BSL-3 and biotechnology microbiology laboratories to establish a bio-risk management system over the coming years. To strengthen biosafety and biosecurity for selected agents and biological toxins, and to protect public health and environmental safety, Taiwan CDC will set up a self-management and oversight mechanism to avoid any accidental or deliberate release of selected agents and biological toxins.

An awards ceremony was held to recognize high-containment laboratories for introducing the Lab bio-risk management system, Dec 14, 2015.