Session 12. Infection Control

Participants’ Guide
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<td>antimicrobial resistance</td>
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<td>BCG</td>
<td>bacillus Calmette-Guérin</td>
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<td>Drug and Therapeutics Committee</td>
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</tbody>
</table>
CONTENTS

Session 12. Infection Control ........................................................................................................... 1

Purpose and Content ..................................................................................................................... 1
Objectives .................................................................................................................................. 1
Outline ....................................................................................................................................... 1
Preparation and Materials ......................................................................................................... 1
Key Readings ............................................................................................................................ 2

Key Definitions .......................................................................................................................... 2

Activity 1. Describing Infection Control Practices at Your Facilities or Institutions ................. 3

Introduction ................................................................................................................................. 4

Epidemiology of Nosocomial Infections .................................................................................... 4
  Common Antimicrobial Resistant Bacteria ............................................................................ 5
  Root Causes ............................................................................................................................ 6

Control and Prevention of Nosocomial Infections—Infection Control Committees .............. 6

Core Strategies for Reducing the Risk of Nosocomial Infections ........................................... 8
  Hand Hygiene and the Use of Gloves ..................................................................................... 8
  Isolation and Standard Precautions ...................................................................................... 9
  Cleaning Strategies (Housekeeping) ...................................................................................... 10
  Cleaning, Disinfecting and Sterilizing Instruments and Supplies ....................................... 11
  Careful Use of Intravascular Catheters, Intravenous Fluids, and Medications ................. 11
  Proper Use of Urinary Catheters and Urine Drainage Systems ......................................... 12
  Proper Use of Mechanical Ventilation and Respiratory Equipment .................................. 12
  Attention to Surgery and Surgical Site Care ....................................................................... 13
  Education of Hospital Personnel .......................................................................................... 13
  Attention to Employee Health .............................................................................................. 14
  Proper Handling of Food and Water .................................................................................... 14
  Careful Antimicrobial Use Monitoring and Evaluation ....................................................... 14

Implications for the DTC .......................................................................................................... 15

Infection Control Assessment Tool (ICAT) and Quality Improvement Program, RPM Plus/MSH .......................................................................................................................... 16

Activity 2. Developing Recommendations for Your Facilities or Institutions ......................... 17

Summary ..................................................................................................................................... 17

Annex 1. Internet and CD-ROM Resources: Infection Control Information, Guidelines, and
  Protocols ................................................................................................................................ 18
SESSION 12. INFECTION CONTROL

Purpose and Content

Session 12 introduces basic infection control (IC) practices for members of Drug and Therapeutics Committees (DTCs). An IC program, working in conjunction with an active DTC, is an essential tool in hospitals for preventing and controlling nosocomial infections and the morbidity, mortality, and cost associated with them.

As with many of the sessions in this DTC training course, participants are encouraged to review the articles in the “Further Readings” section for more information. Session 12 is brief, providing basic information primarily for DTC members, and cannot provide all the information and skills necessary for implementing a comprehensive IC program.

Objectives

After attending this session, participants will be able to—

- Understand basic infection control concepts
- Understand the causes of nosocomial infections
- Understand the components of an infection control program
- Understand how the Infection Control Committee and the DTC can decrease the incidence of nosocomial infections and antimicrobial resistance (AMR)

Outline

- Key Definitions
- Activity 1
- Introduction
- Epidemiology of Nosocomial Infections
- Control and Prevention of Nosocomial Infections
- Core Strategies for Reducing the Risk of Nosocomial Infections
- Implications for the DTC
- Activity 2
- Summary

Preparation and Materials

Read the Participants’ Guide.
Key Readings


Websites for infection control information, guidelines, training materials, and articles are available from the U.S. Centers for Disease Control and Prevention, the World Health Organization, EngenderHealth, and American International Health Alliance (see annex 1 for website addresses).

Key Definitions

**Infection control**—The process by which health care facilities develop and implement specific policies and procedures to prevent the spread of infections among health care staff and patients.

**Nosocomial infections**—Infections contracted by a patient or staff member while in a hospital or health care facility (and not present or incubating on admission)

**Disinfection**—A process of microbial inactivation that eliminates virtually all recognized pathogenic microorganisms, but not necessarily all microbial forms (e.g., spores)

**Sterilization**—The use of physical or chemical procedure to destroy all microbial life, including large numbers of highly resistant bacterial endospores. Procedures include steam, heat, and chemical sterilization.
Activity 1. Describing Infection Control Practices at Your Facilities or Institutions

Describe your hospital IC program or current practices at your hospital or clinic (or at the ministry level). Include the following—

- Committee membership
- Written or updated policies and procedures
- Surveillance of nosocomial infections
- Hand hygiene and use of gloves
- Isolation and universal precautions
- Cleaning strategies (housekeeping), including waste disposal
- Cleaning, disinfection, and sterilization of instruments and supplies
- Intravenous (IV) catheter and IV fluids and medication
- Urinary catheters and urine drainage systems
- Mechanical ventilation and respiratory equipment
- Surgical site care
- Food and water monitoring
- Training
- Employee health and immunization for staff
- Antimicrobial use monitoring

As a part of this exercise, please answer the following questions concerning your IC program or practices—

- Are you satisfied with the infection control procedures and activities?
- Is infection control maintained throughout your health care system?
- Are there complaints of inadequate infection control and resultant nosocomial infections that infect patients or health care staff?
- Is there a formal mechanism for reporting and investigating nosocomial infections?
- Are outbreaks of infectious diseases in the hospital a common problem? What is the usual source of the outbreak?
- Is the DTC involved in any infection control activities? Please describe these activities.

In your groups, discuss each individual IC program, select one, and be prepared to present a summary of the program.
Introduction

The spread of infectious diseases in hospitals between patients and staff is a serious problem worldwide. These hospital-acquired infections (called *nosocomial infections*) contribute to morbidity and mortality in hospitals and health care facilities and increase costs significantly. Using a conservative nosocomial infection rate of 15 percent for developing countries (based on rates in South Africa) and a 5 percent mortality rate, it can be concluded that hospital-acquired infections rank as one of the most important causes of death in the developing world.¹ The liberal and inappropriate use of antimicrobial agents in health care facilities has resulted in the emergence of AMR bacteria. Ineffective IC practices at hospitals have also facilitated the spread of these resistant bacteria. The overuse of wide-spectrum antimicrobials further contributes to the problem.

The goal of IC programs is to decrease and minimize the spread of infections between patients and providers in health care facilities. Evidence is clear that IC programs are effective in decreasing the rates of infection, morbidity, and mortality, as well as in decreasing costs associated with infections. The magnitude of the nosocomial infection problem is significant, because many hospitals will have infection rates that exceed 10 percent, although most of these infections are preventable.

Who is responsible for infection control? Ideally, an Infection Control Committee (ICC)—but the entire health care community is responsible for developing and following procedures to prevent infections. Because it can play a pivotal role in assisting the ICC and in leading the hospital in IC activities, the DTC bears much of the responsibility. Some authorities believe that effective ICCs and DTCs will provide the basis for developing more comprehensive quality assurance programs throughout the health care organization.

Epidemiology of Nosocomial Infections

Simply stated, patients and health care staff can spread infectious diseases directly to each other, and then these diseases can be transmitted to family and community members. These infections are more prevalent in hospitals, where health care staff and patients are at risk. Primary health care clinics also have significant problems with nosocomial infections, although not to the extent found at the larger, overcrowded hospital centers.

Hospital personnel most at risk for contracting and spreading infections include those involved with (a) invasive procedures; (b) direct exposure to patients during examinations; (c) exposure to blood, sputum, and other body fluids; and (d) exposure to environmental pathogens (air, food, water, or inanimate objects). Physicians and nurses are most at risk, but housekeeping personnel,

who come in contact with infectious waste, needles, and other sharps and with contaminated disinfectants and supplies, also face a high risk.

The most likely sites for nosocomial infections include surgical incisions, the urinary tract, the lower respiratory tract, and the bloodstream. Skin and soft tissue infections and gastrointestinal infections are also common.

**Common Antimicrobial Resistant Bacteria**

Nosocomial infections continue to increase in the developed world with most infections being caused by methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococcus and gram negative-bacteria (*Escherichia coli*, *P. aeruginosa*, *Enterobacter* spp., and *Klebsiella pneumoniae*). These gram negative-bacteria are resistant to penicillin derivatives through the production of beta-lactamases, but also are becoming resistant to aminoglycosides and carbapenems. These resistant pathogens are also increasingly documented in developing countries. Infections with MRSA are common and resistance to methicillin continues to grow. Forty to sixty percent of all *S. aureus* acquired in the hospital are methicillin-resistant and typically multidaneg drug resistant. The disease is a common complication of wounds, lower respiratory tract infections, septicemia, invasive devices, pressure sores, burns, and ulcers.

In recent years, nosocomial transmission of community-acquired, multidrug-resistant organisms including *pneumococcus*, *Mycobacterium tuberculosis*, *salmonella* spp, *shigella* spp, and *V. cholerae* has been documented in developing countries. Extensively drug-resistant (XDR) tuberculosis has spread among hospitalized patients in South Africa. According to a recent study, about 1,300 cases of XDR tuberculosis are predicted to occur in a single region of South Africa by the end of 2012 (if no new interventions are introduced), more than half of which are likely to be nosocomially transmitted. The prevalence of active TB and the presence of susceptible HIV-infected patients in the hospital, combined with inadequate IC practices and procedures, increase the likelihood that *M. tuberculosis* will be transmitted in hospital settings.

The spread of bloodborne viruses and bacteria also represent significant threats to health care staff and patients. HIV, as well as hepatitis B and C, can be transmitted through needle sticks and blood transfusions. Transmissible pathogens may also put patients and staff at risk for fungal infections (candida), protozoal infections, scabies, giardiasis, amebiasis, and some vector-borne diseases.

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2 http://www.cdc.gov/ncidod/dhqp/hai.html; 2008
Root Causes

Root causes of nosocomial infections and AMR problems in hospitals include the following—

- Lack of training in basic IC
- Lack of an IC infrastructure and poor IC practices (procedures)
- Inadequate facilities and techniques for hand hygiene
- Lack of isolation precautions and procedures. Large medical and surgical wards promote the transfer of infections to other patients and health care personnel
- Use of advanced, complex treatments without adequate supporting training and infrastructure, including—
  - Invasive devices and procedures
  - Complex surgical procedures
  - Interventional obstetric procedures
  - Intravenous catheters, fluids, and medications
  - Intravenous catheters
  - Urinary catheters
  - Mechanical ventilators
- Inadequate sterilization, disinfection, and hospital cleaning procedures and practices

Control and Prevention of Nosocomial Infections—Infection Control Committees

The ICC oversees the control and prevention of nosocomial infections in hospitals and clinics. This committee acts much like a DTC and cooperates with a DTC to control these infections. An ICC typically will have a physician, nurse, laboratory microbiologist or technologist, and other members, all of whom review surveillance data and institute policy and procedures. Other members may include hospital administration, medical staff (such as an infectious disease specialist, surgeon, or an obstetrician/gynecologist), laboratory, central sterile supply, housekeeping, and pharmacy staff. The ICC membership may be similar to that of the DTC, and the two committees may, in fact, share some of the same members. All individuals on the committee must have the formal training to effectively carry out the committee’s functions.

To be effective and productive, the committee must also have the necessary authority and scope of activity. A direct line of authority from the hospital administration and Ministry of Health officials is required. The committee authority of should include the right to examine patients, take cultures if necessary, isolate patients, and close wards in outbreaks. The recommendations and actions of the committee should be disseminated throughout the hospital and enforced.
The goal of the ICC is to prevent the spread of infections within the health care facility. Primary functions include the following—

- Addressing food handling, laundry handling, cleaning procedures, visitation policies, and direct patient care practices, including hand washing and immunizations.
- Obtaining and managing critical bacteriological data and information, including surveillance data.
- Developing and recommending policies and procedures pertaining to IC.
- Recognizing and investigating outbreaks of infections in the hospital and community.
- Intervening directly to prevent infections.
- Educating and training health care workers, patients, and nonmedical caregivers.

An important part of an ICC or program is the establishment of policies and procedures. These procedures must be comprehensive and written to ensure stepwise control of all issues involving IC. As with the DTC, policies and procedures provide the infrastructure for developing a comprehensive program that is both effective and enforceable. At a minimum, policies and procedures should be in place for hand hygiene and the use of gloves, isolation and universal precautions, insertion of invasive devices, use of urinary catheters, housekeeping, disinfection and sterilization, mechanical ventilators and respiratory equipment, and surgical site care. Policies should focus on (a) making clinical staff aware of all required procedures to control and prevent infections, and (b) monitoring compliance with policies and procedures.

Surveillance activities are an important part of IC, but they must be prioritized. The collection of information that is infrequently evaluated or of little importance should be discouraged in favor of concentration on priority areas. Surveillance should include the following—

- Daily visits to medical wards by the IC nurse (especially high-risk wards such as intensive care units and surgical wards) to observe for infections, and record keeping to document the results of these visits.
- Review of results of the microbiological laboratory, including sensitivity patterns to antibiotics (if available) and reporting these findings to appropriate medical staff.
- Attention to spontaneous reports from different wards concerning possible occurrence of nosocomial infections.

ICC's also oversee a number of important functions in their effort to control nosocomial infections. These functions are discussed in the following sections.
Core Strategies for Reducing the Risk of Nosocomial Infections

**Hand Hygiene and the Use of Gloves**

Hand hygiene is considered to be the most important procedure for preventing nosocomial infections. With the appropriate facilities and supplies, this simple method of infection control will decrease nosocomial infections significantly. Sinks with running clean water and soap are typically necessary, but not essential. Where they are unavailable, waterless hand antiseptics can be used, with comparable results. Commercial preparations are available or can be manufactured locally by using isopropyl alcohol 70 percent with glycerin.

The use of disposable towels or single-use washable towels is encouraged in all hospitals. Reusable cloth towels are a source of contamination, and procedures must regulate how they will be used and laundered.

Absolute indications for hand hygiene are generally not known because of a lack of well-controlled studies. Touching or significant contact with possibly infected materials (e.g., blood, sputum, wounds, skin) necessitates thorough hand hygiene before after each contact.

**Specific Recommendations for Hand Hygiene**

Hand washing is recommended—

- Before performing invasive procedures
- Before taking care of susceptible patients (e.g., immunocompromised patients, newborns)
- Before and after touching wounds
- After situations during which microbial contamination may occur (e.g., contact with blood, mucus, feces, urine, sputum)
- After touching inanimate sources that may have contaminants
- Before and after contact with patients

Generally, superficial contact with sources not known to contain pathogens does not necessitate any hand hygiene.

**Hand Hygiene Technique**

Vigorous rubbing together of all surfaces of lathered hands for at least 20 seconds, followed by a thorough rinse using clean, uncontaminated water. Antiseptic-containing products should be used before caring for high-risk patients (such as newborns or immunocompromised patients) and before surgical procedures.
Specific Recommendations for the Use of Gloves

Use of gloves is encouraged for all surgical procedures and for patient examinations where contamination may be a risk. There are two important reasons for using gloves—

- To provide a protective barrier to prevent gross contamination from blood, body fluids, secretions, and wounds
- To prevent the transmission of pathogens from hands to patients

Wearing gloves does not eliminate the need for hand hygiene, because the gloves may have small defects or become torn during use. Failure to change gloves between patient contacts is an IC hazard.

Policies and procedures describing proper hand hygiene and the use of gloves should be established and made available to hospital staff. A system to monitor compliance with these policies is necessary. Observation checklists are useful to determine if hospital staff are applying appropriate hand hygiene practices.

Isolation and Standard Precautions

Patient overcrowding in hospital wards commonly leads to the spread of infectious diseases between patients and to hospital staff. This spread can be remedied by following procedures to isolate and protect individuals with communicable diseases.

Isolation and the use of standard precautions are necessary when patients present with communicable diseases such as acute respiratory infection, diarrhea, active tuberculosis, measles, chicken pox, and other common communicable diseases. Ideally, each of these patients should be placed in a single room, with appropriate isolation procedures. If a private room is not available, placement with other patients with the same infectious disease is necessary, along with appropriate barrier protection.

Standard precautions and isolation techniques include—

- Comprehensive written policies and procedures
- Patient placement and transport—private rooms when possible to limit the transmission of microorganisms to staff, visitors and other patients; use cohort rooming when patients are infected with the same pathogen.
- Visitation policy
- Hand hygiene and use of gloves as discussed above
- Masks, eye protection, face shields—for patient care activities that may generate splashes or sprays of blood or body fluids and for use of aerosolized contaminants
• Gowns and protective apparel—for significant splashes or exposure to bloodborne pathogens

• Sharp instruments and needles must be handled with care. DO NOT remove, bend, break, or manipulate needles from syringes by hand. Used needles, scalpel blades, and other sharps should be placed in puncture-resistant containers.

• Cleaning—rooms, cubicles, and bedside equipment should be cleaned appropriately as discussed in the next section

Cleaning Strategies (Housekeeping)

Adequate cleaning of the hospital on a regular schedule is one of the most important aspects of an IC program. The hospital’s cleanliness is the first thing a patient sees when entering the doors. A clean hospital not only is less likely to cause the spread of infectious diseases, but also creates a positive image and inspires confidence in its professional staff. The following recommendations will greatly reduce the risk of nosocomial infection related to sanitary conditions—

• Written policies and procedures that explicitly describe tasks and how they are to be done must be developed for the housekeeping staff.

• Cleaning should include a regular schedule of mopping floors with appropriate disinfectants. Toilets must be cleaned on a regular basis, because they may be a source of contamination within the hospital. Cleaning equipment must also be cleaned after each use to minimize the spread of potentially dangerous microorganisms. Cleaning walls and ceilings is not recommended unless they have become visibly soiled. The use of fogging disinfectants is not recommended.

• Waste disposal should include the burning of contaminated supplies, including needles, syringes, blood-contaminated materials, and so forth. Infective waste should either be incinerated or autoclaved before disposal in a local sanitary landfill.

• Disposable syringes with needles, scalpel blades, and other sharp items capable of causing injuries should be stored in a puncture-resistant container until disposition of the container. To prevent accidental needle stick and possible infection with a serious pathogen, do not to recap, bend, or cut needles, because these actions may cause an accidental puncture.

• Soiled linen should be bagged and isolated from the normal hospital traffic. Cleaning procedures should include washing in hot water (at least 71 °C/160 °F). Clean linen should be transported and stored, so that cross-contamination does not occur.
Cleaning, Disinfecting and Sterilizing Instruments and Supplies

The following recommendations will help to greatly reduce the risk of nosocomial infection related to nonsterile supplies—

- Written policies and procedures are necessary.

- All objects to be disinfected or sterilized should first be thoroughly cleaned to remove all organic matter.

- When sterilization is required, a steam sterilizer should be used unless the items being sterilized will be damaged by heat, pressure, or moisture. Sterilizers require appropriate loading and placement of items.

- Quality control in reprocessing is critical and requires specific policies and procedures that are closely followed at all times.
  
  o Monitor and record sterilization parameters (i.e., time, temperature, and pressure)
  o Chemical indicators should be used to ensure sterilization.
  o Biological indicators for steam sterilization should be used at least weekly.

- Sterilized items must be stored in areas that prevent the contamination of sterilized products.

- Items or devices manufactured for a single use should not be reprocessed.

Careful Use of Intravascular Catheters, Intravenous Fluids, and Medications

Invasive IV devices and medications can be lifesaving when used appropriately. When used inappropriately, they may result in life-threatening nosocomial infections. To maximize prevention of these infections, hospitals should have the following practices and policies—

- Comprehensive policies and procedures that address catheter placement, maintenance of catheters, and preparation of IV fluids and medications. Education programs to train and monitor personnel in this area are necessary.

- IV catheters and especially central venous catheters should be used only when absolutely necessary, because these devices are associated with a high rate of infection, especially when inserted with a cut-down procedure.

- The use of high-quality silicon elastomer or polyurethane catheters is recommended, because they are known to cause fewer infections. Avoid polyvinyl chloride materials, because they are known to increase infection rates.

- Manufacture of IV solutions requires strict Good Manufacturing Practices standards, and these solutions must be purchased from reliable suppliers that are known to have good
quality control. Contamination from improperly prepared solutions may be a significant cause of nosocomial infections.

- Medication admixtures to IV solutions should be prepared centrally by qualified pharmacy personnel. If this is not possible, specific policies and procedures should be developed for nurses who should be certified competent before they are allowed to prepare admixtures. Use all lipid and parenteral nutrition solutions promptly.

**Proper Use of Urinary Catheters and Urine Drainage Systems**

Indwelling urinary catheters should be used only when absolutely necessary to relieve an obstruction of urinary flow or to monitor urine output in critically ill patients. They should be discontinued as soon as possible to decrease the risk of nosocomial infections. These devices are responsible for a high percentage of hospital infections. The following recommendations should be followed—

- Written policies and procedures are required for techniques of insertion, use, and maintenance of catheters.

- Only closed drainage systems should be used. Triple-lumen irrigation catheters should be available for patients undergoing urological surgeries for which frequent irrigation is necessary. Breaks in the system of any kind should be discouraged including for irrigation and obtaining urine samples.

- For selected patients, a condom drainage catheter, suprapubic catheterization, and intermittent urethral catherization can be useful alternatives.

**Proper Use of Mechanical Ventilation and Respiratory Equipment**

The use of mechanical ventilation should be used only when absolutely necessary, because these devices can cause high rates of nosocomial infections. Specific policies and procedures are required if these devices are available in the hospital. Suctioning is important, and catheters should be used only once (or reprocessed appropriately). Suction contents should be disposed of properly and soon after collection. All equipment should undergo ethylene oxide sterilization or high-level disinfection before reuse. Other important guidelines include the following—

- Wean from mechanical ventilation as early as possible.

- Use heated humidifiers.

- Ensure proper handling of inhalation medications, nebulizers, and tubing.
**Attention to Surgery and Surgical Site Care**

The following interventions can help reduce the incidence of nosocomial infections related to surgery and surgical site care—

- Implement comprehensive policies and procedures.
- Minimize preoperative stays in the hospital.
- Avoid shaving patients unless absolutely necessary. In these cases, use hair clippers (or disposable razors when clippers are not available). Clipper heads must be disinfected between uses. If shaving is necessary, shave immediately before surgery and not the night before.
- Use antibiotic prophylaxis only when indicated. The appropriate medicine, dose, and interval must be used following established protocols. Usual prophylaxis involves a single dose of an antimicrobial 1–2 hours before procedure. Prescribing practices in this setting must be monitored to ensure correct use. Inappropriate use will contribute to AMR, adverse drug reactions, prolonged hospitalizations, and significantly higher costs.
- Ensure that dressing carts for surgical site cleaning and dressings do not contain instruments that are submerged between uses, because this practice may cause contamination of disinfectants. Sterile instruments should be provided in individually wrapped sterile packages.
- Use only effective antiseptics and disinfectants. Older disinfectants, such as benzalkonium chloride, should not be kept in stock, because of efficacy problems. As with selecting medicines for a formulary, antiseptics and disinfectants must be selected using an evidenced-based approach.
- Ensure that hand and forearm antisepsis for surgical team members includes perioperative scrub with an appropriate antiseptic scrub.

**Education of Hospital Personnel**

Educational programs that emphasize appropriate IC techniques and procedures are necessary for controlling nosocomial infections. Educational activities should focus on basic IC functions, including hand hygiene, housekeeping, aseptic technique, procedures for the preparation of IV fluids and medicines, care of ventilated patients, care of patients with indwelling urinary catheters, wound care and use of antiseptic solutions, isolation and universal precautions, effective use of microbiology laboratory services, and appropriate use of antimicrobials.
Attention to Employee Health

Employee health programs are necessary to monitor the health of all employees within the medical institution and to administer immunizations. The objectives of an employee health program include the following—

- Educating health care staff concerning IC
- Monitoring and investigating potentially harmful infections in employees
- Providing care to employees with work-related illness
- Providing immunizations to staff

As a part of any employee health program, the following vaccinations should be administered to decrease risk of contacting infections and transmitting infections to patients—

- Hepatitis A and B
- Influenza (yearly)
- Measles
- Rubella
- Varicella zoster
- Bacillus Calmette-Guérin (BCG)
- Polio vaccine
- Tetanus/diphtheria

Proper Handling of Food and Water

Food- and water-borne outbreaks in U.S. hospitals have been shown to be caused by contaminated food and water, inadequate cooking, infected food handlers, and contaminated equipment.

Written policies and procedures that describe proper food and water handling within the hospital environment are necessary to reduce the incidence of nosocomial infections.

Careful Antimicrobial Use Monitoring and Evaluation

This program is crucial in controlling the use of antimicrobials in the hospital. Control and restrictions on antimicrobials are essential to ensuring that antimicrobial treatment and prophylaxis are appropriate. Unnecessary and inappropriate use of antimicrobials results in prolonged hospital stays, adverse drug reactions, increased incidence of AMR, and increased costs.

The DTC and ICC should establish antimicrobial therapeutic guidelines, prophylactic guidelines, and specific guidelines for surgical prophylaxis. A monitoring system is essential to ensure appropriate use of these medicines.

The following case study (Donald Goldman, unpublished) illustrates inappropriate antimicrobial use in cesarean section surgical prophylaxis. This kind of antimicrobial use leads to increased infections, antimicrobial resistance, higher health care costs, and increased adverse drug reactions.

The risk of endometritis after cesarean section exceeds 30 percent and antimicrobial prophylaxis reduces the incidence by 66 percent. Two hospitals are compared for antimicrobial use in surgical prophylaxis of cesarean section procedures. Hospital A treats 70 percent of their patients with prophylaxis and 31 percent of patients receive prophylaxis within one hour after delivery. Hospital B treats 32 percent of their patients with prophylaxis and 70 percent of patients receive antimicrobials within one hour after delivery.

How would you describe the use of antimicrobial prophylaxis for these two hospitals?

- Hospital A uses a prophylaxis for too many patients because it should be used only for high-risk procedures. Only 32 percent received the medicine on time, adding to the inappropriate use in this case.

- Hospital B uses prophylaxis more appropriately (i.e., administered to the high-risk population) and gives the medicine at the appropriate time in 70 percent of cases—still too low for administering a single dose. This 70 percent represents an improvement over hospital A, but is still unacceptable because many failures will result from the poor timing of the doses. As antimicrobial administration is given closer to the surgical procedure, there is a corresponding decrease in the incidence of post-operative infections.

Appropriate antimicrobial prophylaxis is one of the most important activities that an IC program can do to reduce the incidence of nosocomial infection in cesarean section procedures. Administering these antimicrobials is within the capacity of staff to improve practices in almost all settings and results can be seen in a relatively short period of time.

Appropriate use of antimicrobials is an important issue for the DTC and the ICC. The committees must work together to achieve rational use.

**Implications for the DTC**

DTCs have the potential to manage formularies, improve the selection of medicines, identify medicine use problems, and implement strategies to improve the use of medicines. IC committees and programs assist in the control of infectious diseases and nosocomial infections within hospitals and primary care clinics. These two organizations can work together to significantly improve health care outcomes by controlling infectious diseases and ensuring appropriate medicine use at all levels. The synergy between the two committees can be dramatic in overall health care benefits, including significant cost savings.
Where a DTC and an ICC exist side by side, the DTC can be expected to provide the following—

- Support of all IC activities
- Training for ICC members on appropriate antimicrobial use
- Selection of appropriate antimicrobials, disinfectants, and antiseptics
- Selection of all antimicrobials to be used in the hospital, in relation to evidenced-based information
- Development and implementation of appropriate antimicrobial treatment guidelines, including surgical prophylaxis guidelines
- Monitoring of IV and injection preparation and administration
- Antimicrobial utilization reviews (i.e., DUE) and monitoring
- In cooperation with the ICC, implement the Infection Control Assessment Tool (ICAT) to understand current infection control practices. (ICAT is discussed in the next section.)

Where an ICC is not functioning, the DTC (through an Infection Control Subcommittee) can provide basic IC programs and advocate for developing a formal IC program within the hospital setting. Because the consequences of not having a committee are many but the benefits are well known, DTCs have every reason to start an IC program within the available resources of the health care setting.

Adequate training in this field is critical, and DTC members are encouraged to obtain comprehensive education. The Internet has a number of websites for obtaining information and online training (see annex 1). For example, the U.S. Centers for Disease Control and Prevention (CDC) website (www.cdc.gov) provides lists of protocols, and the EngenderHealth (www.engenderhealth.org) has an online training program that can serve as instructional materials for basic IC techniques.

**Infection Control Assessment Tool (ICAT) and Quality Improvement Program, RPM Plus/MSH**

Management Sciences for Health (MSH) has recently developed, through its Rational Pharmaceutical Management (RPM) Plus Program, a tool to assess IC practices and implement interventions to advance practices through a quality improvement (QI) mechanism. The ICAT and quality improvement program provides a standardized approach by combining an IC self-assessment tool (ICAT) and rapid cycle quality improvement (RCQI) (or rapid team problem solving) methods to improve hospital IC practices. RCQI is a quality improvement approach in which a multidisciplinary team collaborates on improving an identified situation. The team identifies and prioritizes areas that need improvement, agrees on specific goals for improvement,
and uses QI (or problem solving) tools to analyze available data about existing systems. The team then develops, tests, and implements a series of focused and affordable changes that can be implemented locally in the system to improve the situation and achieve the agreed-upon goals. The strength of RCQI is in synergizing team ideas in learning about systems and developing appropriate solutions to improve them. The methodology has been applied in various health care settings around the world.

This IC tool also provides resources for quality improvement activities and internationally recognized guidelines for infection control practices. For more information, contact MSH’s RPM Plus/SPS programs in Arlington, Virginia (e-mail: rpmplus@msh.org; website: www.msh.org/rpmplus).

Activity 2. Developing Recommendations for Your Facilities or Institutions

Review the current session and make recommendations for your hospital or primary care clinic for starting an ICC, improving the current committee, or forming an Infection Control Subcommittee of the DTC. Consider these questions—

- What would be the benefits to your hospital if an effective infection control program is started?
- How can your DTC contribute to improving infection control practice within your healthcare facility?

Summary

Infection control is a critical component in hospitals and primary health care clinics. Likewise, Infection Control Committees are important for both providing the policies and procedures and monitoring the activities of an active IC and prevention program. Many simple, inexpensive strategies can prevent infections.

Ample evidence shows that Infection Control Committees and practices are cost-effective. Cost savings from a decreased rate of nosocomial infections will more than pay for IC activities. By focusing on IC and DTCs, health care systems can lay the foundation for more comprehensive quality improvement programs that will improve patient outcomes.

DTCs can support many IC activities, such as—

- Hand washing and the use of appropriate antiseptics and disinfectants
- Monitoring IV and injection preparation and administration

DTCs should actively promote better use of antimicrobials through the following—

- Guidelines for treatment and surgical prophylaxis
• Selection of appropriate antimicrobials for the formulary
• Antimicrobial use reviews

ICCs, when functioning effectively, will achieve the following—

• Reduce the spread of infectious diseases
• Decrease morbidity and mortality
• Maintain employee health and morale
• Decrease the incidence of AMR
• Decrease health care cost

Annex 1. Internet and CD-ROM Resources: Infection Control Information, Guidelines, and Protocols

RPM Plus/MSH


Centers for Disease Control and Prevention (CDC) Documents and Guidelines

Centers for Disease Control infection control index:
http://www.cdc.gov/ncidod/dhqp/a_z.html

Hand hygiene:
http://www.cdc.gov/handhygiene/

Guidelines for preventing the spread of TB in hospitals:
http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/00035909.htm

Guidelines for surgical site infections:
http://www.cdc.gov/ncidod/dhqp/gl_surgicalsite.html

Improving compliance with hand hygiene:
http://www.cdc.gov/ncidod/eid/vol7no2/pittet.htm

Infection control guidelines for hospital personnel:
http://www.cdc.gov/ncidod/dhqp/gl_hcpersonnel.html

Intravenous catheters:
http://www.cdc.gov/ncidod/dhqp/gl_intravascular.html

Isolation procedures:
http://www.cdc.gov/ncidod/dhqp/gl_isolation.html

Prevention of needle stick infections:
http://www.cdc.gov/niosh/docs/2000-135

“Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis”:
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5011a1.htm
Urinary catheters:
http://www.cdc.gov/ncidod/dhqp/gl_catheter_assoc.html

Utilizing surveillance data:
http://www.cdc.gov/ncidod/eid/vol7no2-gaynes.htm

**Alliance for Patient Safety (World Health Organization) (Hand Hygiene and Safe Surgery)**

http://who.int/patientsafety
http://who.int/patientsafety/challenge/en

**American International Health Alliance Website**

Website and training manuals:
www.aiha.com

**EngenderHealth Website**

Online infection control training program:
http://www.engenderhealth.org/IP/index.html