Infection Control Basics: Healthcare-Associated Infections (HAI) in Long Term Care Facilities

Infectious Disease Epidemiology Section
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Louisiana Dept of Health 800-256-2748
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Objectives of IC in LTCF
The goal of infection control is to prevent transmission of infection:

- Explain why infection prevention and control is important in assisted living facilities and nursing homes
- Describe transmission and chain of infection
- Differentiate infection, colonization and contamination
- Understand precautions and isolation
- List infections and risk factors in the elderly
- Explain why surveillance is important
- Explain how to identify and report an outbreak

Principle Functions of Infection Prevention Programs

1. To obtain and manage critical data and information, including surveillance for infections
2. To develop and recommend policies and procedures
3. To intervene directly to prevent infections and interrupt the transmission of infectious diseases
4. To educate and train healthcare professionals (HCP), patients, and nonmedical caregivers
Infection Prevention Team

• The core of the infection prevention and control program is the infection preventionist
• Occupational health can also participate on the team
• Team is responsible for carrying out all aspects of the infection prevention and control program
• Facility may have an infection prevention committee (IPC) that functions at the central decision-making and policy-making body for infection prevention
• IPC advocates for prevention and control of infections at the facility
• IPC must be multidisciplinary
• Dissemination of information is a crucial component of the IPC

Role of Infection Prevention Professionals
1. Collection and analysis of infection data
2. Evaluation of products and procedures
3. Development and review of policies and procedures
4. Consultation on infection risk assessment
5. Education efforts directed at interventions to reduce infection risks
6. Education of patients and families
7. Implementing changes mandated by regulatory, accrediting and licensing agencies
8. Application of epidemiological principles directed at improving patient outcomes
9. Antimicrobial management
10. Provision of high-quality services in a cost-efficient manner

Being a Successful Infection Preventionist

• Improve leadership strategies and pursue opportunities for self-development
• Work with the IPC to create policy changes that are data-driven and patient-centered
• Possess multiple skills necessary to meet the demands of the evolving healthcare environment

Organizational Support

• Use basic healthcare epidemiology and other quality improvement tools to improve patient outcomes
• Useful for transitioning evidence-based practices into work routine
• Administrative Support
  • Schedule regular meetings with administrators to whom you are responsible
  • Maintain liaison between the program and administration
  • Increase awareness of the institution's leaders of infection prevention and control program activities
Quality of an Infection Prevention and Control Program

1. Establishing a reliable, focused surveillance program based on the annual risk assessment
2. Streamlining data management activities
3. Analyzing HAI rates
4. Aiming for zero HAI rates
5. Educating staff regarding prevention strategies
6. Identifying opportunities for performance improvement
7. Taking a leadership role on performance improvement teams
8. Developing and implementing action plans that outline the steps needed to accomplish each objective
9. Evaluating the success of action plans in accomplishing the goals and objectives of the infection prevention plan

Long-term Care

- Long-term care (LTC) is an umbrella term that encompasses several different types of facilities to provide care for individuals
- Generally referred to as long-term care facilities (LTCF)
- Spans the spectrum of care from providing short-term, episodic skilled nursing and residential support to chronic care management
- The number of adults in the United States over the age of 60 will rise by nearly 25% by 2030

Long Term Care Facilities

- LTCF: Facilities that provide health care to people that are unable to manage independently in the community
- Nursing Homes: Facilities with in-patient beds providing nursing and other services to patient not in acute phase of illness
  - Some residents for years
  - Few temporary post-acute care residents
- Other LTCF:
  - Long Term Acute Care facilities (LTAC)
  - Psychiatric Hospitals
  - Other Mental Health facilities
  - Rehabilitation hospitals
  - Pediatric LTCF

LTCF v. Hospital Surveillance of Healthcare-Associated Infections
Key Differences: LTC v. Acute

- Key difference and challenge is the concept of residence
- LTCF offers socialization through common activities
- LTCFs generally have common air circulation, which may contribute to infection transmission of pathogens that are airborne
- Emerging, significant risk factor in LTCFs involves enhanced infection risks for colonization or infection with multidrug-resistant organisms (MDRO)

LTACH Risk Assessment

- Annual risk assessment determines goals and objectives for infection prevention and control program
- Important to identify the highest risk concerns and target efforts to specifically address those areas
- Ongoing review throughout the year allows the IP to determine if the strategies are effective
- Communication is vital for an infection prevention program
- IPCC members should meet on a regular basis to review surveillance data, identify areas of concern, plan interventions, define outcome measures, and review/develop policies

Infection Prevention and Control in the LTACH

- LTACH: Long-term acute care hospital
- Early identification of MDRO or Clostridium difficile infection and colonization is imperative to limit the risk of transmission
- One study showed that 64% of patients in LTACHs were colonized with MRSA, VRE, or both

The HAI Problems in LTCF and Hospitals are different

<table>
<thead>
<tr>
<th>Resource/Clientele</th>
<th>Hospitals</th>
<th>LTCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence</td>
<td>Short, few days</td>
<td>Lengthy, years</td>
</tr>
<tr>
<td>Patients</td>
<td>All ages</td>
<td>Elderly mostly</td>
</tr>
<tr>
<td>Illness</td>
<td>Acute</td>
<td>Chronic</td>
</tr>
<tr>
<td>Recovery</td>
<td>Expected</td>
<td>Not expected</td>
</tr>
<tr>
<td>Access to lab, imaging</td>
<td>Easy</td>
<td>More difficult</td>
</tr>
<tr>
<td>Ration Nurse to Patient</td>
<td>High</td>
<td>Lower</td>
</tr>
<tr>
<td>Socialization</td>
<td>Low importance</td>
<td>High importance</td>
</tr>
</tbody>
</table>

1-LTCF provide care in resident-centric environment, Provide a home-like environment with limited medical care support.

2-LTCF provide care for patients coming from acute care hospital for short-term of more "hospital-like" environment, critical for positive resident outcomes.

3-Many are combinations of both

Therefore Infection Control Guidelines must be adapted to LTCF conditions. Guidelines for specific procedures may remain identical.
HAI in Louisiana

<table>
<thead>
<tr>
<th>Variable</th>
<th>Hospitals</th>
<th>Nursing Homes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>250 (120 Acute)</td>
<td>280</td>
</tr>
<tr>
<td>Beds</td>
<td>35,000</td>
<td></td>
</tr>
<tr>
<td>Admissions</td>
<td>500,000</td>
<td></td>
</tr>
<tr>
<td>Patient days</td>
<td>2,200,000</td>
<td>9,000,000</td>
</tr>
<tr>
<td>HAI rates / 1,000 patient days</td>
<td>3 to 14</td>
<td>2 to 14</td>
</tr>
<tr>
<td>UTI rates / 1,000 patient days</td>
<td>0.2 to 3.5</td>
<td></td>
</tr>
<tr>
<td>Pneumonia rates / 1,000 patient days</td>
<td>0.20 to 3.3</td>
<td>0.3 to 2.5</td>
</tr>
<tr>
<td>BSI rates / 1,000 patient days</td>
<td>0.8 to 3.0</td>
<td></td>
</tr>
<tr>
<td>SSI rates / 1,000 patient days</td>
<td>0.03 to 8.0</td>
<td>---</td>
</tr>
<tr>
<td>Total infections</td>
<td>16,000</td>
<td>23,000 to 54,000</td>
</tr>
<tr>
<td>Death rate / 1,000 patient days</td>
<td>0.60</td>
<td>0.04 to 0.70</td>
</tr>
<tr>
<td>Deaths</td>
<td>1,300</td>
<td>360 to 6,300</td>
</tr>
</tbody>
</table>

Device Utilization in Nursing Homes

Utilization rates for:
- Urinary Catheters 5% of patients

Proportion of nursing homes offering:
- Infusion therapy 42%
- Peripherally inserted central lines 22%
- Parenteral nutrition 46%

Infection Control in LTCF

SHEA/APIC Guidelines

Requirements /Recommendations for Infection Control Program

- Skilled Nursing: 1987 Omnibus Reconciliation Budget Act (OBRA)

Scope of Infection Control
Prevention of Hospital Acquired (Nosocomial) Infections

STANDARD PRECAUTIONS
- Handwashing
- Barrier precautions
- Sharps disposal

IC COMMITTEE IC POLICIES

ISOLATION PRECAUTIONS
- Environmental control
  - Physical facility
  - Patient care equipment
  - Water, Air, Food
  - Solid waste, Liquid waste

SURVEILLANCE
- Nosocomial infection surveillance system
- Antibiotic sensitivity

COMMUNICABLE DISEASE CONTROL IN HOSPITAL
- Reporting of disease
- MRSA...
- Preventive treatment of exposed

SPECIAL PROCEDURES
- Cardiovascular access lines
- Wound care
- Urinary catheter
- Artificial ventilation...

STERILIZATION
- IC supports CSS
- (Central Sterilization & Supply)

HOUSEKEEPING LINEN
- Cleaning, Disinfecting, Sterilizing

EMPLOYEE HEALTH
- CDI Reporting
- HIV screening & immunization
- BBIE
- TB
- MR, Varicella
- Work restriction
- Prophylactic Rx Mrg, Pert, TB, HAV, HBV, HIV

Infection Preventionist & IC Committee

- Responsible for directing infection control
- Familiar with LTCF & resident care problems
- Written job description of IC duties
- With sufficient time and administrative support
- Sufficient IC knowledge base to carry out responsibilities
- Canada’s recommends 1 IP /150 to 250 long term beds

Definitions
What is a Nosocomial Infection?

• An infection which is acquired during hospitalization and which was not present or incubating at the time of admission

• An infection which is acquired in the hospital and becomes evident after discharge from the hospital

• A newborn infection which is the result of passage through the birth canal

To establish a nosocomial infection, meeting the definition criteria is sufficient. There is no need to have proof *beyond the shadow of a doubt*

What is a Nosocomial Infection?

Practically - to establish that an infection is hospital acquired, SHOW THAT the patient:

1. HAS AN INFECTION, not a simple colonization
2. WAS NOT infected at the time of admission
3. HAD SUFFICIENT TIME to develop infection

Case Definitions

CDC/NHSN surveillance definition of health care-associated infection and criteria for specific types of infections in the acute care setting

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Outbreak Investigations

• Three elements required for transmission: source → susceptible host → mode of transmission
• Outbreaks are prevented by the elements basic to an infection prevention and control program in all healthcare settings
  • Hand hygiene programs
  • Standard and Transmission-Based Precautions
  • Identification and isolation measures
• Communicate with the health department *early* in an outbreak

General Principles of Epidemiology

Education

• Education can promote compliance when employees comprehend the impact an HAI or MDRO transmission will have on the patient
• HCP, ancillary department staff, medical staff, and visitors must also be educated

Epidemiology

• Study of the distribution and determinants of disease and other conditions in human populations
• Population-based and is useful for describing health-related phenomena
• Epi methods are used in the measurement of a disease, its determinants, and its distribution in a particular population in question
• Primary purpose of epidemiology is to aid in the understanding of the cause of a disease by knowing its distribution
Use of Epidemiology in Healthcare

- The goal is to complete prevention of a disease before any manifestation of that disease occurs.
- Early diagnosis and treatment.
- Prevention strategies to reduce the risk of transmission, including barrier precautions, immunizations of HCP, and cleaning, sterilizing, and disinfecting.
- Applications of disease prevention using information gathered.

Portals of Entry and Exit

<table>
<thead>
<tr>
<th>Portals of Exit</th>
<th>Portals of Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory tract</td>
<td>Respiratory tract</td>
</tr>
<tr>
<td>Genitourinary tract</td>
<td>Genitourinary tract</td>
</tr>
<tr>
<td>Gastrointestinal tract</td>
<td>Gastrointestinal tract</td>
</tr>
<tr>
<td>Skin/mucous membrane</td>
<td>Skin/mucous membrane</td>
</tr>
<tr>
<td>Transplacental (mother to fetus)</td>
<td>Transplacental (mother to fetus)</td>
</tr>
<tr>
<td>Blood</td>
<td>Parenteral (percutaneous via blood)</td>
</tr>
</tbody>
</table>

The Chain of Infection

Resources

- Friedman C. Chapter 1 – Infection Prevention and Control Programs. Association for Professionals in Infection Control and Epidemiology Text. 2015.
- Tweeten S. Chapter 10 – General Principles of Epidemiology. Association for Professionals in Infection Control and Epidemiology Text. 2015.
Questions?

Thank you!