Development of an Infection Control Program for Nursing Homes

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Statewide Program for Infection Control and Epidemiology (SPICE)

http://www.unc.edu/depts/spice/
919-966-3242

Objective of Lecture

1. Describe the regulatory factors impacting on Nursing Homes
2. Describe the components of a Nursing Home Infection Control Program
3. List the factors contributing to infections in the elderly

The geriatric population are not just people in wrinkled skin; they have many unique factors contributing to the severity and frequency of infectious diseases in the elderly.

Infections occur an average of 2 to 4 times per year. And account for up to 50% of all nursing home transfers to hospitals.

Epidemiology of Infections in the Elderly

Factors contributing to severity of infectious diseases
- Limited physiologic reserve
- Defects in host defenses
- Co-existent chronic diseases
- Nosocomial pathogen exposure
- Delays in diagnosis and therapy
- Complications from invasive diagnostic procedures
- Poorer response to therapy
- Increased frequency of therapeutic toxicity

Factors Contributing to Altered Presentations of Infectious Diseases

- Under-reporting of symptoms
- Impaired communication
  - Confusion due to infection
  - Changes in CNS
- Coexisting diseases
  - Obscure diagnosis (septic joint vs. arthritis, COPD vs. pneumonia)
- Atypical presentations
  - Fever response is blunted or absent in small but significant number

Clinically significant Alterations in Host Defenses of the Elderly

- Reduced numbers of helper T lymphocytes - reactivation of latent infections herpes, zoster, MTB
- Decreased interleukin II production
- Reduced killing ability of leukocytes/neutrophils
- Reduce response to antigens - tetanus toxoid or pneumococcal vaccine

Regulatory Responsibilities

- **OSHA** is responsible for employees/ healthcare workers
  NOT patients
- **CMS** is responsible for residents/patients
  NOT healthcare workers
- **The Joint Commission** is responsible for healthcare workers, residents/patients, community

Regulatory Focus - OSHA

- Occupational Exposure to Bloodborne Pathogens: Final Rule, December 6, 1991
- Occupational Injury and Illness Recording and Reporting Requirements; Final Rule, January 19, 2001
- CPL 2-2.69 Subject: Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens, Nov 27, 2001
- TB Compliance Directive - reflects 1994 CDC Guidelines for Control and Prevention of TB in Health Care Facilities, February 9, 1996

Federal Regulations Governing Nursing Homes Statute 483.65

- Federal regulations specific to all Nursing Homes. The Federal Omnibus Budget Reconciliation Act of 1987 (OBRA): Subtitle C - Nursing Home Reform includes changes in LTCF management and provision of services which include or impact infection control including

Requirement for sanitation, infection control, and physical environment

State Regulations

Sanitation Rules

Communicable Disease Rules

Reporting, Post-Exposure, TB

Licensure Rules

Nurse Practice Act

HCFA Federal Amendments That Apply to Programs Title XVIII Medicare and XIX Medicaid (Interpretive Guidelines)

- F440-A - Facility must establish and maintain an **IC program** designed to provide a **safe, sanitary**, and **comfortable environment** in which residents reside and **to help prevent** the **development** and **transmission** of **disease** and **infection.**

HCFA Regulations for Nursing Homes – F441 Infection Control

2009 TAGS collapsed- F441, 442, 443, 444, and 445 into F441 but regulatory language the same.

1) Investigates, controls, and prevents infection in the facility
2) Decides what procedures, such as isolation, should be applied to an individual resident
3) Maintains a record of incidents and corrective actions related to infections
4) When resident determined to need isolation to prevent spread, facility must isolate

HCFA Regulations Impacting LTCFs – F441

5) Facility must prohibit employees with communicable disease or infected skin lesions from direct contact with residents or their food if direct contact will transmit disease
6) The facility must require staff to wash their hands after direct resident contact for which handwashing is indicated by accepted professional practice
7) Linens handled, stored, processed, and transported to prevent spread of infection

Nursing Home Infection Control Elements

"Oversight Committee," which directs the "Infection Preventionist (IP)," who directs the infection control functions.

- Infection Control Committee regulatory requirement was dropped by OBRA at the federal level but some states still require it.
- Oversight committee - working group of IP, administrator, and medical director, may be merged with quality management committee. Activities: Review infection data (respond to errors or problems), review policies, establish goals and priorities, monitor implementation

Infection Preventionist (IP)

- usually a staff nurse, familiar with LTCF resident-care problems
- responsibilities may often be combined other jobs (occupational health, quality management, staff education)
- responsible for implementing, monitoring and evaluating the infection control program
- requires specific training
- well-defined support from administration (education and resources)
- ability to interact tactfully with personnel, physician, and residents

Infection Control Hours

- Is the time given to the IP adequate for the size of the facility, acuity of the residents, and types of procedures and treatment?
- No specific amount of time has been researched to be ideal; the following guideline has been developed based on experience

Infection Control Functions

- Surveillance
- Outbreak control
- Isolation and precautions
- Policies and procedures
- Education
- Resident health program
- Occupational health program
- Antibiotic review
- Communicable disease reporting to health departments
- Other functions (safety program)

Infection Control Surveillance in Nursing Homes

- Surveillance process consists of
  - collecting data on individual cases
  - analyzing those nosocomial (facility-acquired)
  - developing a plan of action to reduce problems
- Data collection may consists of
  - outcome measures (i.e., number of UTI's)
  - process measures (i.e., was correct catheter procedure used?)

Outbreak Control

- Most LTCF nosocomial infections are sporadic but clustering of infectious diseases can occur
- An epidemic, or outbreak (cluster) implies the occurrence in excess of the expected number
- This may be a single case of unusual disease for the setting (i.e., TB)
- Outbreaks in LTCF account for a substantial portion of reported epidemics
- Policies and protocols for prevention and investigation of outbreaks need to be in place

Isolation and Precautions for Nursing Homes

- Isolation and precautions systems are an important means for preventing cross-infection
- The use of barrier precautions in LTCFs has been handicapped by lack of adequate handwashing facilities, private rooms, and appropriate ventilation systems
- The newest CDC Isolation Precautions Guideline was developed primarily for acute care, but includes recommendations that are applicable to LTCF.

Isolation Precautions for Nursing Homes (cont)

- Each LTCF needs to adapt the aspects of CDC isolation system that apply to its needs
- Incorporate individual state guidelines (when appropriate) (i.e. medical waste rules)
- Isolation and precaution policies need to define authority
- The nurse should have the authority to initiate precautions in an emergency without a physician's order, and a policy should be developed

Policies and Procedures in Nursing Homes - Interpretive Guidance

- Policies establish programs expectations and parameters.
- Procedures guide implementation of policies
- Develop for each department and service in the facility (housekeeping, PT, RT, dietary, laundry, wound care, pet therapy)
- Need to reflect current and actual practice (reviewed every 3 years)
- Use published guidelines from governmental agencies (i.e., CDC, OSHA, FDA, EPA, USP)

New CDC Guidelines

Healthcare Infection Control Practices Advisory Committee (HICPAC)

- Guideline for Hand Hygiene in Healthcare Settings, 2002
- Guideline for Prevention of Intravascular Catheter-Related Infections, 2002
- Guideline for Environmental Infection Control in Healthcare Facilities, 2003
- Guideline for Prevention of Healthcare-Associated Pneumonia, 2003

AND…

New CDC HICPAC Guidelines

- Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, 2007
- Guideline for Disinfection and Sterilization in Health-Care Facilities, 2008
- Guideline for the Prevention of CAUTIs, 2009

Coming . . .

- Guideline for Norovirus
- Revision of IV Therapy Guidelines

Education in Nursing Homes

- The importance of education of the LTCF IP has been demonstrated
- Study of participants in 2 day basic training course demonstrated increase in post course knowledge
- Study of participants at 3 and 12 month follow-up showed statistically significant increase in implementation of key infection control practices (performance of surveillance, using infection definitions, calculating infection rates, giving employees and residents TB skin tests and influenza vaccines

Education in Nursing Homes - HCWs- Interpretive Guidance

- One of the most important roles is education of LTCF personnel in basic infection control principles
- Education should focus on new personnel and nursing aids
- Surveillance data are good starting points
- Walking rounds are opportunities for timely inservice
- Subject content includes disease transmission, handwashing, barrier precautions, and basic hygiene
- Teaching methods should be sensitive to the language, cultural background, and educational level.
- **Initial and ongoing IC education provided**

Resident Health Program in Nursing Homes

- One major function is the immunization of the elderly resident (tetanus, diphtheria, pneumococcal and influenza vaccines)
- Required all new residents receive (2-step) TB skin test on admission and x-ray if skin test positive or symptomatic
- Other resident care practices that should be addressed include prevention of aspiration, skin care, prevention of UTIs and oral hygiene

Resident Health- Immunizations

Updated ACIP recommendations 2010

- All residents should be vaccinated with Pneumococcal vaccine (PPSV23) at:
- Age 65years;
- All 19-64 year olds with chronic or immune suppressing condition including asthma or smokers;
- One time, second dose 5 years after first dose if administered before 65 years old, and >or = 65 years.

Occupational Health in Nursing Homes

- Published information from governmental organization (i.e., CDC) are available.

cdc.gov/ncidod/dhqp/pdf/guidelines/InfectControl98.pdf

- LTCF are required to prohibit employees with skin lesions or communicable diseases from direct contact with residents and to prohibit employees with potentially infectious skin lesions from contact with residents food.

Occupational Health in Nursing Homes

- Initial assessment of employees and a reasonable sick leave policy
- Policy and procedures for post-exposure follow-up (to HIV, HBV, HCV, TB, and scabies)
- Employee vaccinations should include tetanus, diphtheria, influenza, HBV
- In certain circumstances hepatitis A vaccine may be appropriate (psychiatric and facilities for mentally impaired)

New edition published in October 2008

Control of Communicable Diseases Manual, 19th Edition

Edited by: David L. Heymann, MD

The 19th edition is a timely update to a milestone reference work that ensures the relevance and usefulness to every public health professional around the world.

http://www.apha.org/publications/bookstore

Antibiotic Use and Resistance in Nursing Homes

- Antibiotic resistance develops largely as a consequence of antibiotic use
- Antibiotics are given to approximately 7 to 10% of residents
- Several studies have questioned this practice
- Common problem is confusion of infection with colonization (positive culture from wound or bacteria in a urine culture) and the treatment of the colonization
- Recent position paper by SHEA encourages inclusion of antimicrobial review in LTCF infection control program
- **Because of increases in MDROs review antibiotic use (include prescribed ATB with susceptibility reports**

Communicable Disease Reporting

- State health departments provide a list of reportable diseases
- **Reportable *Diseases* in New York**

  This page contains a listing of reportable diseases in **...** *Communicable Disease Reporting* in New York.

http://www.nyhealth.gov/professionals/diseases/reporting/communicable/physicians_and_providers/docs/c

CMS Interpretive Guidance Handling Linens

- Standard Precautions for handling all linen then no additional separating or labeling.
- Laundry items in hot water > 160 F (71C) for 25 minutes.
- Alternatively, low temperature washing at 71 to 77 F (22 to 25C) plus a 125 ppm chlorine bleach rinse comparable.
- Keep linen covered to prevent contamination during storage and transport.

Other Issues of Infection Control Concern in Nursing Homes

- Medical waste (disparity between OSHA and state rules)
- Product selection (i.e., urinary catheters, gloves, disposable diapers, selection of disinfectants and antiseptics). Quality, efficacy and cost issues have to be weighed.

In Conclusion

- One person, the IP, should be assigned the responsibility of directing, infection control activities in the Nursing Home.
- The IP should have a written job description of infection control activities
- The IP requires the support of administration in order to function effectively
- The IP needs to be guaranteed sufficient time to direct the infection control program
- The IP should have written authority to institute infection control measures.

In Conclusion

The trained competent Nursing Home IP shall be able to establish an active, effective, facility-wide infection control program in the Nursing Home to help prevent the development and spread of infections and infectious diseases.

References

- Pritchard V. Joint Commission standards for long-term care infection control: Putting together the process elements. Am J Infect Control 1999;27:27-34.
- Rosenbaum P, et al.. Long term care. In APIC Text of Infection Control and Epidemiology. Washington, DC: APIC, 2005.
- Smith PW, et al. Infection Prevention and Control in the Long-Term Care Facility. Infect Control Hosp Epidemiol 2008;29:785-814.
- Common Infections in the Long Term Care Setting. AMDA Clinical Practice Guideline, 2004.

BREAK TIME 10 Minutes

CMS Investigative Protocol Infection Control

- PROCEDURES
- Observations
- Interviews
- Record Reviews
- Review of Facility Practices

New CMS Investigative Protocol

- IC Program in place that collects and analyzes data
- Review policy and procedure manuals training documents and monitoring tools
- Surveyors to determine if staff practices are consistent with IC policies
- Staff with communicable diseases prohibited from direct patient contact

Investigative protocol-observation of staff

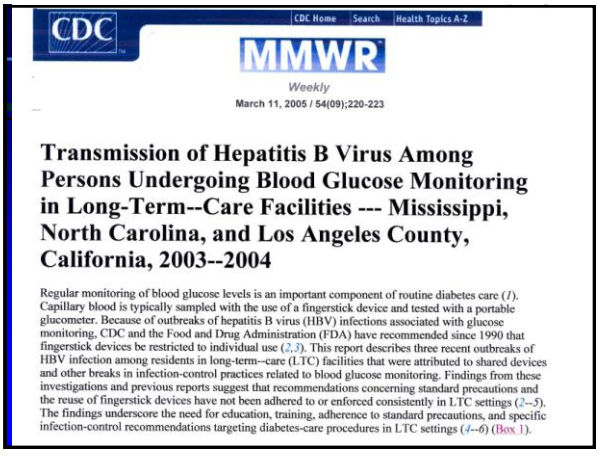
- Observe if staff and visitors adhere to isolation precautions.
- Observe how linens are stored, handled, processed , transported, and stored
- Observe staff care of urinary catheters, wound care, and respiratory treatments

Investigative protocol-Observe cleaning and disinfection

- Surveyors will observe equipment to determine if:
- Equipment in precaution rooms is appropriately cleaned;
- That high touch surfaces are clean; and
- Small non-disposable equipment are cleaned and disinfected after each use.

CMS Level 3 Severity Example

- The facility failed to clean and disinfect the glucometer before and after use on each residents who required blood sugar monitoring. This practice of reusing glucometers created an Immediate Jeopardy to residents health by potentially exposing to BBP. (Clarification later made to reduce to Level 3)



CDC Home Search Health Topics A-Z

MMWR

Weekly

March 11, 2005 / 54(09);220-223

Transmission of Hepatitis B Virus Among Persons Undergoing Blood Glucose Monitoring in Long-Term--Care Facilities --- Mississippi, North Carolina, and Los Angeles County, California, 2003--2004

Regular monitoring of blood glucose levels is an important component of routine diabetes care (*1*). Capillary blood is typically sampled with the use of a fingerstick device and tested with a portable glucometer. Because of outbreaks of hepatitis B virus (HBV) infections associated with glucose monitoring, CDC and the Food and Drug Administration (FDA) have recommended since 1990 that fingerstick devices be restricted to individual use (*2,3*). This report describes three recent outbreaks of HBV infection among residents in long-term--care (LTC) facilities that were attributed to shared devices and other breaks in infection-control practices related to blood glucose monitoring. Findings from these investigations and previous reports suggest that recommendations concerning standard precautions and the reuse of fingerstick devices have not been adhered to or enforced consistently in LTC settings (*2--5*). The findings underscore the need for education, training, adherence to standard precautions, and specific infection-control recommendations targeting diabetes-care procedures in LTC settings (*4--6*) (Box 1).

Recommended practices for preventing patient-to-patient transmission of hepatitis viruses from diabetes care procedures in long-term-care settings

From the CDC, MMWR Weekly March 11, 2005

- Prepare medications such as insulin in a centralized medication area; multidose insulin vials should be assigned to individual patients and labeled appropriately.

CDC Recommended Practices (cont)

- Wear gloves during fingerstick blood glucose monitoring, administration of insulin.
- Change gloves between patient contacts and after every procedure that involves potential exposure to blood or body fluids, including fingerstick blood sampling.

CDC Recommended Practices (cont)

- Store individual patient supplies and equipment, such as fingerstick devices and glucometers, within patient rooms when possible.
- Keep trays or carts used to deliver medications or supplies to individual patients outside patient rooms. Do not carry supplies and medications in pockets.

CDC Recommended Practices (cont)

- Consider using single-use lancets that permanently retract upon puncture.
- Assign separate glucometers to individual patients. If a glucometer used for one patient must be reused for another patient, the device must be cleaned and disinfected.

Recommendations for Cleaning and Disinfection of Glucometers (SPICE)

- Clean glucometer surface when visible blood or bloody fluids are present by wiping with a cloth dampened with soap and water to remove any visible organic material.

Recommendations for Cleaning and Disinfection of Glucometers (SPICE)

- If no visible organic material is present, disinfect after each use the exterior surfaces following the manufacturer's directions using a cloth/wipe with either an EPA-registered detergent/germicide with a tuberculocidal or HBV/HIV label claim, or a dilute bleach solution of 1:10 (one part bleach to 9 parts water) to 1:100 concentration.

Recommendations for Cleaning and Disinfection of Glucometers (SPICE).

- There is at least one manufacturer (Alcavis) that makes a both a 1:50 and a 1:100 concentration of **bleach-only** disinfecting wipe for environmental surface disinfection.

Recommendations for Cleaning and Disinfection of Glucometers (SPICE)

- Directions for glucometer disinfection vary between manufacturers and models within brands. Alcohol should never be used because it can damage the light emitting diodes (LED) readout, causing "fogging" of the plastic screens. Alcohol is also not an EPA-registered detergent/disinfectant.

Recommendations for Cleaning and Disinfection of Glucometers (SPICE)

- Many manufacturers do not recommend the use of quaternary ammonium compounds because of the corroding effects on metal parts. This includes products that combine bleach with detergents or disinfectants.

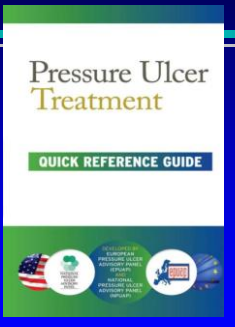
Recommendations for Cleaning and Disinfection of Glucometers-SPICE

- All manufacturers caution that having the cloth too saturated could allow liquid to get inside the glucometer and cause damage. Screens and ports currently are not sealed on these devices. Therefore, using a bleach-only disinfecting wipe is less likely to cause damage.

CMS Investigative Protocol

- Observe hand hygiene and use of gloves during:
  - resident care that requires use of gloves;
  - medication administration;
  - dressing changes and al resident care that requires use of gloves;
- Assisting residents with meals.

Treatment of Pressure Ulcers



European Pressure Ulcer Advisory Panel:
http://www.epuap.org/guidelines/Final_Quick_Treatment.pdf

CMS Level 2 Severity Example

- The facility failed to ensure that their staff demonstrated proper hand hygiene between residents to prevent the spread of infection.
- The staff administered medications to a resident via a gastric tube and while wearing the same gloves proceeded to administer oral medications to another resident . Staff did not remove gloves and wash hands between residents.

Hand Hygiene

- Perform HH immediately after removing PPE
- If hands are visibly contaminated wash hands with soap and water
- HH may be performed with soap and water or ABHRs except for residents on Enteric Precautions (then only soap and water)
- Ensure that HH facilities are available at point of use needed.

CMS Interpretive Guidance Considerations

It can be difficult to promote the individual resident's rights and well-being while trying to prevent and control the spread of infections.

Standard Precautions

- Based on principle that all people are potentially infected with a BBP.
- Applied in the care of all residents regardless of suspected or known BBP
- Presumes all blood and body fluids except tears may be infectious
- HCWS use PPE to prevent exposures to skin and mucous membranes, or parenteral via safe inject practices

Preventing the Spread of Infection- Interpretive Guidance

- Individual and institutional factors contribute to the increased frequency and severity of infections in the nursing home.
- Modes of transmission:
  - Contact
  - Droplet
  - Airborne

Interpretive Guidance Institutional factors

- Pathogen exposure in shared communal living space (handrails and equipment)
- Common air circulation
- Direct and indirect contact with HCWS, visitors, and other residents
- Transfer of residents to and from hospitals or other settings

Interpretive Guidance Transmission based Precautions

- Used for residents who are known to be or suspected of being infected or colonized with infectious agents.
- CDC recommends taking each resident on a case by case basis to determine level of precautions following the known risk of transmission.
- Use precautions only as long as necessary to prevent transmission.

Interpretive Guidance Contact Transmission

Direct (Person to Person) transmission

Direct transmission occurs when organisms are transferred from one infected/colonized person to another via the hands generally of a HCW

Indirect Transmission transfer of an organism via a contaminated intermediate object Examples: BP cuffs, thermometers, scales, glucometers,

Interpretive Guidance Airborne Isolation Precautions

- Diseases that infectious agents remain suspended in the air for long periods of time.
- Examples: varicella zoster, Mtb, Novel H1N1 Only for high aerosol generating procedures.
- PPE: fit tested N95 by HCWs on entry to room.
- Private room, cohorting, Negative air pressure, 6 AER/hour, not recirculated air

Interpretive Guidance Contact Precautions

- Organisms that are spread via direct or indirect contamination of the environment.
- Generally have prolonged environmental survival.
- Examples: MDROs, MRSA, VRE, ESBLEs, C diff, scabies, lice, wound infections
- PPE: gowns and gloves on entry to room or cubicle.
- Private room, cohorting, or room sharing with limited risk factors

Limited risk factors

- Roommate selection for Contact Precautions
- Intact skin
- No invasive devices
- Not severely immune compromised

Interpretive Guidance Droplet Precautions

- Respiratory (large) droplets transmit directly from the respiratory tract of an infected person to a susceptible mucous membranes. Short distance 3-10 feet
- Examples : Neisseria meningitis, mycoplasma, seasonal influenza
- PPE: masks, facial protection may also be needed
- Private room preferred, cohort, roommate with limited risk factors.

Criteria to remove from precautions

- CDC does not have official recommendations:
- Consider individual situation and prevalence
- For relatively healthy independent follow standard precautions:

5 C's 1.colonized,
2.compliant,
3.catheter (no),
4.continent
5. cognizant

Criteria for Additional Precautions

- Ill residents (those totally dependent for ADL) and receiving health care procedures. ventilator care, wound care, devices present. Drainage cannot be contained or incontinent.
- Use Contact Precautions in addition to Standard

CMS Interpretive Guidance Isolation Precautions Signage

Still a controversy?

- Precautions Signage are not against:
  - HIPPA Rules
  - Privacy
  - Resident rights
  - Culture change

Public health protection always supersedes individual rights

Interpretive Guidance Outbreaks

- Opportunity for improvements
- Must demonstrate monitoring by analyzing data from infection reports.
- Must show a plan for outbreak situation.

- ThankYou..Questions???