

Your Prescription to Clinical Excellence

Infection Control: What Every Facility Needs to Know...



There are approximately **1.5 million infections in long-term care facilities** annually in the United States (1). **Facility acquired infections** result in **30%** of all residents **transferred to hospitals** and are the **most common cause of death for residents** (1). Many of these infections are endemic infections which is an infection that is found in a specific environment without any outside influence (2). The most common endemic infections are: *urinary tract infection, respiratory tract infection* and *skin or soft tissue infection* (2). These **three infections** combined make up **94% of all infections** in long-term care facilities (2). Often the diagnosis of an infection in an elder is delayed due to the resident's inability to verbalize a complaint (5).



Residents in LTC Risks for Infection

1. Decreased immune response as we age

2. Decreased function & communication due to:

- Dementia
- Blindness
- Deafness
- Immobility
- Incontinence

3. Multiple co-morbidities

Clinical markers of infections in elders result in a **"decline in function"** at a frequency of **77%** (5). The resident may experience increased *confusion, incontinence, falling, impaired mobility* and is *unable to cooperate with rehabilitation* (5). Basal body temperature is lower in the elder population therefore, temperature threshold of **100 degrees Fahrenheit predicts infection 70%** of the time (5). In a recent study, approximately 50% of residents that were diagnosed with a bacterial infection thru blood work were "afebrile" (5). Caregivers need to be able to identify changes in resident conditions. There are several clinical tools to evaluate a resident for an infection from the basic assessment of vital signs: heart rate, temperature, blood pressure and respiratory rate to blood work and/or cultures.

In a recent study, residents who experienced **tachypnea** (a respiratory rate of greater than **25 breaths/minute**) were diagnosed with **pneumonia at a 95%** specificity (5). Normal respiratory rate for elders is 16-25 breaths/minute. Pulse oximetry is another clinical tool which should be utilized when assessing a resident for infection. According to the Pneumonia Prognosis Index (PPI), a **SaO2 of <90% combined with a respiratory rate of >25 breaths/minute** indicates eminent **respiratory failure** (5).

In addition, residents should be assessed for dehydration. **Dehydration** causes: hypernatremia, elevated blood urea nitrogen (BUN) and/or creatinine levels (5). A few good indicators of dehydration include: tongue dryness, dry mucus membranes and tongue furrows (5). Low fluid intake will lead to dehydration. **90% of systemic disease is caused by poor oral hygiene** and therefore, it is imperative residents receive proper oral hygiene. Reporting this clinical information to the nursing staff is a vital part of any infection control plan. Physicians must be notified if an infection is suspected in a resident.

Residents who do not have an advanced directive and are suspected of having an infection may have any of the following tests performed: **1. Complete Blood Count (CBC) with differential 2. Urinalysis and Urine Culture 3. Blood Culture 4. Pulse Oximetry 5. Chest X-Ray 6. Sputum culture 7. Stool culture** (5). Physicians should weigh the risk of testing the resident versus the benefit of treatment along with the cost of evaluation (5). Many bacterial infections can be treated effectively with broad-spectrum antibiotic therapy while keeping the resident at their long term care facility (5). Approximately, 70% of LTC residents receive at least one course of antibiotic therapy a year (4).

Transferring a resident to the **hospital** for an endemic infection is associated with an **increased risk** of the resident developing: **pressure ulcers, deconditioning, relocation trauma, and the colonization of highly virulent and/or drug resistant bacteria** (5). Approximately, **70% of health care associated infections are resistant to one or more antibiotics** (4). The overuse of antibiotic therapy has led us to increases in microorganisms like Vancomycin-Resistant Enterococci (VRE), Extended-Spectrum Beta-Lactamases (ESBLs), Clostridium Difficile, Methicillin-resistant Staphylococcus Aureus (MRSA) and Streptococcus pneumonia make nursing facilities prime candidates for an outbreak (1). Some facilities in the United States have a documented MRSA colonization rate of 30% (2). Any delay in diagnosing a resident with an infection, increases the likelihood transmission of the infection will occur throughout the facility (7).



Key Components to an Effective Infection Control Program



The key components to an effective infection control program include: **surveillance, outbreak investigation, policies and procedures, education, environmental controls, antibiotic monitoring, an employee health program** along with **resident health program** and **cost containment** (1). Infection control encompasses all staff members, visitors and residents at the facility. Monitoring and enforcing policies and procedures for each department are essential in preventing the spread of microorganisms. **Environmental controls** need to be implemented for food handling, laundry, pest control, waste disposal, ventilation and visitation (1). Cleaning products must be reviewed to ensure their effectiveness in eliminating pathogens from the facility. Proper education needs to be provided to the staff regarding asepsis, isolation, standard precautions, immunization, personal hygiene, safety, quality control and hand washing (1).

Did You Know

The rate of bacteremia increases 39 fold for residents who have an indwelling catheter for one year .

Pneumonia is the leading cause of morbidity and mortality for residents in long-term care.

Approximately 40% of older adults will enter a long-term care facility before dying.

Surveillance is the collection and evaluation of data (1). Every facility staff member is responsible for the residents at a long-term care facility. Proper communication between departments is essential to identifying an infection or colonization of a microorganism at a facility. The rate of a facility's infections should be established to assist the infection control team in **early detection** of a facility outbreak (1). Identifying areas of weakness provide a baseline for developing staff education programs (1).

Outbreak Investigation identifies the **source of infection** and limits the spread of infection which decreases the physical and financial costs of an outbreak (1).

Policies and Procedures must be continuously updated and readily available to all staff members.

Employee Health Program should include: screening employees for infectious diseases, updating employee immunizations, and annual testing for tuberculosis (TB). Ongoing staff education regarding their roles in transmitting nosocomial infections and blood borne pathogens must also be reviewed (1). The goals of an employee health program are to **prevent employees from spreading infections to the residents** and **prevent the staff from acquiring an infection while they are working** (1).

Resident Health Program should address: resident hygiene, oral hygiene, skin care, Foley catheters, aspiration prevention, immunizations and TB testing (1).

Antibiotic Monitoring must be ongoing to identify patterns of resistance to therapy and trend infection rates at the facility. Increased antibiotic resistance financially impacts all healthcare entities (1).

Cost Effectiveness reviews the number of infections prevented to the number of lives saved. Optimizing resident health while remaining fiscally responsible is a fundamental component of all infection control programs.

Quality Improvement initiatives that review infection control policies and procedures as they relate to clinical outcomes and create benchmarks to evaluate compliance thru targeted goals (5).

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Risk Factors for Pneumonia & Cross-Contamination

- Malnutrition
- Invasive devices
- Prolonged antimicrobial exposure
- Group activities
- Low immunization rates
- Sedative Medications

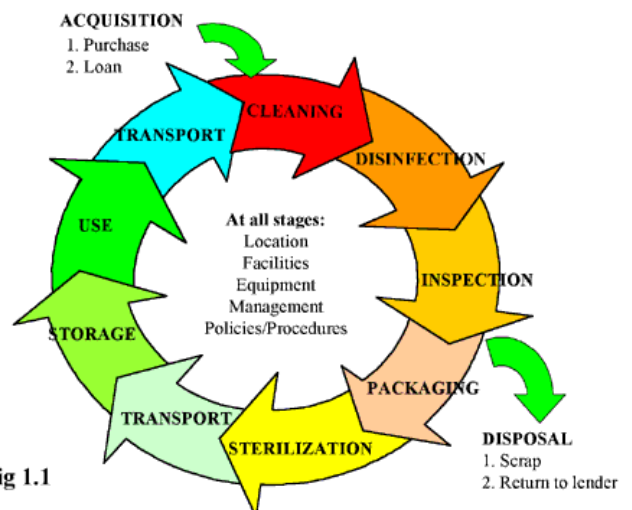


Fig 1.1



In a recent study of 786 nursing-home **residents risk factors for MRSA colonization** included: male greater than 80 years old, steroid therapy, pressure sores, peripheral vascular disease, poor skin condition, hospitalization within the previous six months or antibiotic therapy within the previous three months (8). Residents who have fecal incontinence and/or require g-tubes, urinary catheters are also at high risk for MRSA colonization (2).



“Ten Infection Control Audit Tools”

1. Hand hygiene
2. Environment
3. Kitchen area
4. Disposal of waste
5. Bodily fluid spillage
6. Personal protective gear
7. Sharps handling
8. Specimen handling
9. Vaccine storage, transport
10. Decontamination

(ICNA 2005) (3)



FLU SEASON AND INFECTION CONTROL

Coughing, sneezing, discomfort, poor sleep, aching, feeling spaced out, low energy, time away from work? Infection control should be a vital concern for everyone - at home, at work, and in the community. Since the cold and flu season is HERE, the following guidelines are presented to help you fight back and protect yourself.

DO

- **Get vaccinated.- It's NOT TOO LATE**
- **Wash your hands frequently.**
- Be sure to cover your mouth and nose with a tissue when you sneeze or cough, then wash your hands.
- Make sure all used tissues are placed directly and immediately into a plastic lined trash container.
- Avoid touching your eyes or face as much as possible.
- Drink lots of water.
- Use disposable cups in your bathroom rather than a cup or glass that everyone shares and is rarely washed.
- Rinse your toothbrush thoroughly and be sure to knock the remaining water off your toothbrush before putting it up.
- Invest in a couple of new toothbrushes.
- Wash your dishes in a dishwasher rather than by hand in water which is usually at a cooler temperature.
- Stay healthy by eating a balanced diet and getting plenty of rest and exercise - but not overdoing it!
- Include lots of beta-carotene or foods containing beta-carotene in your diet and get at least, 5,000 IU of the traditional Vitamin A. Take the recommended level of Vitamin C. Include Zinc (a good immune system booster) in your vitamin intake regimen. If you take Zinc, also take 2 or 3 mg of Copper to balance Zinc so that heart disease is not caused by the Zinc. (You may choose to consult your doctor especially if your system has experienced a medical problem relating to Copper.)

DON'T

- Smoke.
- Come to work when you have fever and respiratory infection symptoms⁽¹¹⁾

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