

MANAGING DRUG RESISTANCE IN LONG-TERM-CARE FACILITIES

ANTIMICROBIAL resistance presents an increasing challenge to health care institutions. Guidelines for reducing transmission of antimicrobial-resistant microorganisms (ARM) in hospitals exist but are not easily translatable to other care venues, viz., long-term-care facilities (LTCFs). In 1997, a task force was organized to develop recommendations for ARM management in Oregon LTCFs. The goal was to propose practical transmission strategies to prevent ARM within LTCFs. To start, five assumptions were agreed upon: 1) LTCFs may have sporadic or endemic ARM infections, including those caused by methicillin-resistant *Staphylococcus aureus* (MRSA), antimicrobial-resistant Gram⁻ bacilli, vancomycin-resistant enterococci (VRE), and vancomycin-intermediately susceptible *Staphylococcus aureus* (VISA); 2) in the next few years ARM colonization and infection will become more widespread and problematic for LTCFs; 3) with few private rooms, isolating residents in private rooms may not be possible; 4) if LTCF staff routinely adhere to standard precautions, few ARM infection outbreaks will occur; and 5) residents, even those with ARM, must be able to move from one level of care to another without restrictions.

The task force included lots of very smart people, including representatives from the Oregon Healthcare Association, the Oregon Alliance of Senior and Health Services, the Oregon Association of Hospitals and Health Systems, the Senior and Disabled Services Division, the Association for Professionals in Infection Control and Epidemiology, the Oregon Health Division, an infectious disease physician specialist, and a long-term-care nurse administrator. This group met quarterly over an 18-month period to discuss recommendations already in existence, and, by consensus, to formulate a practical application of these for Oregon LTCFs. The following is a summary of this non-regulatory document.

ROUTINE MEASURES

Hand Washing

Hand washing remains the single most important procedure for infection prevention. Microbes are cleansed from the care provider and resident alike. Hand washing must be convenient, with sinks, soap, and disposable towels easily available.

Communication

Communication between facilities caring for persons with ARM is essential. The transferring facility should designate a responsible individual, such as a discharge planner or social worker, to coordinate transfers, including notification to the receiving facility that a resident is either colonized and/or infected with ARM. This would include care plans and ARM transmission control measures, e.g., isolation, antimicrobials, or education provided to the resident and family. The receiving facility should contact the transferring facility's Infection Control Department or Infection Control Practitioner (ICP) for additional questions on ARM management.

Education

ARM control education is essential for LTCF staff, residents, and families. Topics include: hand washing; possible routes and transmission methods; colonization versus infection; use of standard precautions for all care provided; using barriers appropriately, e.g., gloves, aprons, gowns, face protection; equipment cleaning, sanitizing and/or disinfecting; and home care of the discharged resident.

Definitions

Although we quibble about the precise meanings of the terms, for the purposes of this report, we will define "colonization" as the presence of a microorganism without any clinical disease or detected host immune response. [Symptomatic] "infection," on the other hand, is used to refer to microbial multiplication in tissues or bodily fluids with attendant disease. Elderly residents with diminished host defenses are predis-

posed to infection by colonizing microorganisms. Routine culture of potentially colonized roommates of infected residents, new admits, employees, or the environment is not recommended.

Room Placement

Room placement should be based on the risk of ARM spread from a specific individual. Private rooms are preferable for incontinent patients. *The lack or unavailability of private rooms is neither an indication to refuse admission nor to transfer residents with ARM from a LTCF to an acute-care facility.* Socializing with other residents should be allowed. Prior to group activities, resident hands should be washed, wounds effectively covered, and incontinence pad or diaper placed as needed.

Cleaning and Equipment

Soiled linen should be handled to prevent contaminating furniture, the floor and the care provider's own clothing. Gloves may limit hand contamination. Note that certain items (generally *not* including gloves) may need to be disposed as infectious waste (see OAR 333-18-0040 *et seq.*).¹

Electronic thermometers used for rectal temperatures have been implicated in VRE and *Clostridium difficile* outbreaks. Otherwise, the role of the environment in ARM transmission in LTCFs has not been well established.

Environmental Protection Agency (EPA)-registered disinfectants should be used for housekeeping. All equipment that must be shared should be thoroughly cleaned and disinfected with an EPA-registered disinfectant/germicide between residents. Personal protective equipment, e.g., face shields, masks, or eyewear, should be used to prevent body-fluid splashes to the eyes, nose and mouth of the care provider—an OR-OSHA requirement.

Surveillance

Surveillance establishes endemic infection rates and provides guidance to plan control activities and educational



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programs. Transmission among residents can be minimized and outbreaks potentially prevented. A single verified case of an infection by ARM should prompt notification of the administrator, medical director, or ICP, and a search for additional cases. In the absence of an outbreak, however, a focus on culturing roommates, new admits, employees, or the environment is unwarranted and not recommended. To be timely, patient information should be reviewed at least weekly. LTCF-specific definitions are available,² based on the unique limitations in physician visitations, and in laboratory and radiology services within LTCFs.

Analysis of ARM infection rates provides the most meaningful information. Data should be reviewed routinely, with variations explained, and recommendations made for the prevention and control of additional cases. Infection surveillance data should be presented during a quality assurance committee meeting, with recommendations documented at least quarterly. LTCFs should consider distributing the information to appropriate committees and personnel, including administration, to support the planning of infection control efforts.

OUTBREAKS

The Long-Term Care Committee of the Society for Healthcare Epidemiology of America suggests that an outbreak be defined as >3 infections in a week or twice the number of infections in a month than had been observed in each of the three preceding months. Through regular reviews of surveillance data, the ICP identifies an outbreak and gets an idea of its magnitude, location, and time course.

During an outbreak, selection of expanded control measures must be individualized based upon the pathogens involved, the size and seriousness of the outbreak, and resources available to the facility. These include, but are not limited to, use of private rooms when available, segregating new admissions, and cohorting colonized or infected residents. An isolation unit may be established and staff cohorting to provide consistent resident care assignments. Hand soaps may be changed, as counts of skin bacteria such as *S. aureus* are significantly lower after washing with antimicrobial soap or an alcohol-based rinse, compared to washing with soap and water alone. Dedication of resident-care equipment to a single resident and identification of potential reservoirs should be on the checklist.

Antimicrobial use restriction, an approach made only in cooperation with the facility's medical staff, could interrupt the selective pressure for ARM generated by antibiotic overuse. Decolonization of residents and staff is only rarely indicated to control MRSA outbreaks and is not warranted for VRE control. Microorganisms isolated may need to be saved for molecular typing at a later date. Integral to outbreak control is an ongoing assessment to determine the efficacy of control measures and, importantly, to know when the outbreak is over.

CONCLUSIONS

What is feasible in a hospital is not necessarily feasible in a LTCF. A hospitalized patient with ARM may be isolated for the duration of stay. In LTCFs, that might translate to life. A resident with ARM colonization or infection warrants common-sense infection control

practices based upon available LTCF resources. Communication between care facilities is crucial, and identification of ARM in a potential resident is not an indication to deny LTCF admission. Emphasis should remain on the basics: hand washing, adequate cleaning and house-keeping, basic surveillance that provides background infection information, and rapid, appropriate investigation and implementation of additional control measures when additional ARM infections are identified. The complete task force document, including suggested reading, is available on-line as a pdf file at (<http://www.ohd.hr.state.or.us/acd>) or can be obtained from the Health Division (503/731-4024). Since this document became available, additional articles that would have made the report's reading list have been published.³⁻⁷

REFERENCES

1. <http://www.ohd.hr.state.or.us/acd/docs/infectw.htm>.
2. McGeer A, Campbell B, Emori TG, et al. Definitions of infection for surveillance in long-term care facilities. *Am J Infect Control* 1991;19:1-7.

SUPPLEMENTAL READING

This list is in addition to material cited in the report.

3. Bradley SF. Issues in the management of resistant bacteria in long-term-care facilities. *Infect Control Hosp Epidemiol* 1999;20:362-6.
4. Armstrong-Evans M, Litt M, McArthur MA, et al. Control of transmission of vancomycin-resistant *Enterococcus faecium* in a long-term-care facility. *Infect Control Hosp Epidemiol* 1999;20:312-7.
5. Greenaway CA, Miller MA. Lack of transmission of vancomycin-resistant enterococci in three long-term-care facilities. *Infect Control Hosp Epidemiol* 1999;20:341-3.
6. Bonomo RA, Rice LB. Emerging issues in antibiotic resistant infections in long-term care facilities. *J Gerontol A Biol Sci Med Sci* 1999;54:B260-7.
7. Bryce EA, Tiffin SM, Isaac-Renton JL, Wright CJ. Evidence of delays in transferring patients with methicillin-resistant *Staphylococcus aureus* or vancomycin-resistant *Enterococcus* to long-term-care facilities [In Process Citation]. *Infect Control Hosp Epidemiol* 2000;21:270-1.