

# Antimicrobial Stewardship in Long-Term Care Facilities

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## ABSTRACT

Antimicrobial stewardship (AMS) has become a major component of patient safety across all healthcare settings. The risk of *Clostridium difficile*, increasing antibiotic-resistant organisms, and potential adverse events from antibiotic misuse have led to the demand for AMS programs in long-term care facilities (LTCFs). LTCFs face several unique barriers in implementing antibiotic stewardship; however, with a change in culture through leadership, education, and accountability to the whole team these barriers can be overcome.

**KEYWORDS:** Antimicrobial stewardship, long-term care, nursing homes, asymptomatic bacteriuria

## INTRODUCTION

A substantial proportion of our older population reside in long-term care facilities (LTCF) with around ~1.5 million residents in the US; when adding in those who are admitted to LTCF for post-acute care and short term rehabilitation, it is closer to 4 million (Centers for Disease Control and Prevention (CDC)).<sup>1</sup> This is a population with more comorbidities and risk for infections than the general population. Antibiotics are one of the most commonly prescribed medication classes, and up to 70% of residents receive at least one course of antibiotics each year.<sup>2</sup> Studies estimate that 40-75% of the time these antibiotics are inappropriate or unnecessary.<sup>3</sup> Furthermore, the long-term care (LTC) population is at an increased risk for harm from antibiotics including: *clostridium difficile* infection, adverse drug events, and increased risk of antibiotic resistance. For these reasons, LTCFs are one of the most important health-care settings for antimicrobial stewardship programs. The Centers for Medicare and Medicaid Services (CMS) recently released the “mega-rule” requiring antimicrobial stewardship programs and an infection control officer be in place for all LTCFs by November 28, 2017.<sup>4</sup>

Though the need for antimicrobial stewardship in a LTCF is well understood, this setting faces barriers that are unique, making it more difficult to develop and implement. In this article, we will review some of these unique barriers, as well as highlight some solutions.

## BARRIERS IN LTCF

The barriers faced in LTCFs for antimicrobial stewardship include patient characteristics, resource limitations, structure of on-site vs. off-site care, family engagement and the home aspect of the facility (Table 1). As mentioned above, residents may have multiple comorbidities that increase the risk of infection (ie: diabetes, vascular disease, COPD, chronic wounds, indwelling devices), as well as immunosenescence.<sup>5</sup> It can be difficult to recognize infections due to the lack of typical signs (fever, leukocytosis) and the high prevalence of cognitive deficits that make it difficult to confirm symptoms.<sup>6</sup> Furthermore, they are at increased risk of resistant bacteria (both colonization and infection) given prior antibiotic exposure and increased healthcare exposure, particularly hospitalizations. Given the “home” aspect of LTCFs, residents travel back and forth from common areas to their private or semi-private rooms. This makes it difficult to fully isolate those who are colonized with or have a history of resistant organisms, leading to an unintentional spread of antibiotic resistance among residents.<sup>7,8</sup> Further complicating this situation is the concern for missing an infection, leading to the initiation of unnecessary antibiotics.

Most facilities, both acute and long-term care, report

**Table 1. Barriers to Antimicrobial Stewardship in Long Term Care Facilities**

Medically complex patients with multiple comorbidities
Many residents colonized with resistant organisms
Inability of LTCF to completely isolate patients
Delay in return of diagnostic information needed for decision making
Medial provider attitude and limited on-site coverage
Limited infectious disease consultation or pharmacy availability
Cost factor with Medicare Part A and the use of expensive broad spectrum antibiotics
Back and forth hospital transfers
Heavily engaged families with their own misconceptions about antibiotic use
Many residents are end of life and goals of care not consistent with aggressive testing/treatment

limited funding for dedicated antimicrobial stewardship programs. Salary support for pharmacists, physicians, nursing champions or IT remains a challenge for many institutions. In a 2014 survey of RI LTCFs, only 23 of 87 (26%) reported one dedicated AMS-specific FTE for the infection preventionist and even less support for physician or pharmacy FTE. These findings were similar to other state surveys in Nebraska and Michigan.<sup>9</sup>

LTCFs face additional resource limitations as most diagnostics are off-site, including routine labs, microbiology, and imaging. This leads to a delay in results that could help guide the clinician in diagnosis and treatment. Couple these challenges with the limited on-site provider coverage in the LTC setting. In a 2009 report, less than 20% of LTCFs employed full-time staff physicians. Most LTCFs have physicians that are covering at multiple facilities, splitting time between office-based practices and LTCFs.<sup>10</sup> Though in some areas on-site coverage is provided by mid-level providers, many facilities are relying on off-site phone coverage by the physician with nursing assessment of the patient.<sup>11</sup> The communication by nursing of the patient's status has significant influence on treatment decision by the provider. This can be difficult for nursing to provide detailed status change in residents as they face high nurse-resident ratios and at times family pressure for an antibiotic order.

Family (or patient) pressure is a barrier to antimicrobial stewardship across healthcare facilities, but in LTCFs it can be more significant. With geriatric patients who may not have the cognitive faculties to speak for themselves, as in severe dementia, the family may feel obligated to advocate for antibiotics based on their own assessment of their loved one.<sup>6,12</sup> Their demand for action/treatment in the absence of face-to-face discussion with a physician (as in an office visit) can lead to unnecessary antibiotic use that can cause more harm than good.<sup>13</sup> Along with this is the notion that the facility is, in fact, their home. To keep them at home, and not transfer to a hospital, providers are more likely to start antibiotics before confirmation of bacterial infection, continue for longer than recommended guidelines, and to not de-escalate even if indicated.<sup>14,15</sup>

These are some of the barriers that are unique to LTCFs in antimicrobial stewardship development and implementation. Additional barriers include limited access to infectious disease consultation or an infectious disease-trained pharmacist, medical cost limitations with expensive broad-spectrum antibiotics, as well as the goals of care for patients at the end of life.<sup>6,7</sup>

## SOLUTIONS FOR LTCF ANTIMICROBIAL STEWARDSHIP

Though LTCFs face multiple barriers to antimicrobial stewardship (AMS) implementation, success has been shown with several different approaches that involves changing the

culture and expectations of providers, nurses, and families. The CDC's *7 Core Elements for Nursing Homes* include: 1. Leadership commitment; 2. Accountability; 3. Drug expertise; 4. Action; 5. Tracking; 6. Reporting, and 7. Education.<sup>3</sup> In LTCFs, the importance of leadership commitment and accountability cannot be overstated given the staffing and resource limitations described above. Without an on-site pharmacist or on-site physician available, the task for AMS (as well as infection control) is usually given to senior nursing leads who already juggle multiple roles. Instead, a team approach including representation from the medical director, director of nursing, infection preventionist, and pharmacist leads to better outcomes with increased support and accountability.<sup>5</sup>

In addition to identifying champions and leadership commitment, putting into place routine protocols that address the decision to start, continue, or stop an antibiotic has been successful in different studies.<sup>5,12</sup> This is most useful in the decision to treat for suspected urinary tract infections, the most common reason antibiotics are prescribed in LTCFs. However, a significant proportion of the time (~33%), it is asymptomatic bacteriuria rather than a true infection.<sup>16,17,18</sup> Some LTCFs have developed a urinary tract protocol where a resident is placed on a 24–48 hour symptom watch when concern of UTI is raised rather than ordering urine analysis and culture at the start. In the older population, pyuria and bacteriuria are common even in absence of infection, and it is the result of a positive culture that often triggers initiation of antibiotics.<sup>16</sup> By having a protocol to assess for objective signs of UTI (using recommended guideline criteria in the literature), staff can assure the resident/family that action is being taken without misuse of antibiotics and unnecessary harm. Several facilities in RI have urinary tract protocols in place with success in decreasing treatment of asymptomatic bacteriuria.

Another protocol that is used more frequently in acute care hospitals, but being encouraged as well in long-term care, is the antibiotic "time-out." In hospitals with electronic medical records (EMR), ordering of antibiotics can be structured to allow only for a certain number of days before the clinician must renew the order, and thus decide if it is still warranted. This can work well given the daily rounds by providers in the hospital. In LTCFs, this can be more difficult with many orders provided off-site and not reassessed daily by the provider.

One solution is a protocol where, at the initiation of treatment, the clinician must provide the diagnosis, dose, and duration of the antibiotic for the nurse to document. Then at 24-48 hrs., a "time-out" is held to determine if antibiotics should be continued, de-escalated based on sensitivities, or discontinued if there are no findings of infection.<sup>19</sup> The antibiotic "time-out" is a protocol that could be initiated by either nursing or pharmacy with the support of the clinicians in the facility.

Finally, a vital part of the solution to implementing antimicrobial stewardship programs is the education and engagement of residents and their families.<sup>12,20</sup> In LTCFs, the families of many residents are interested in not only the care of their loved one, but also in the activities and programs of the facility. If they are educated on the commitment to antimicrobial stewardship and how the facility plans to reduce misuse of antibiotics, they will likely become partners in it. For example, as part of a UTI protocol, a family member could help monitor for subtle symptom changes. By engaging family in the process, it can help to reduce the pressure for starting antibiotics that are unnecessary and potentially harmful.

These are examples of ways to overcome some of the barriers to antimicrobial stewardship in LTCFs. This does not address how to access drug expertise, i.e., ID-trained pharmacist, or the difficulties in tracking and reporting that facilities experience with fewer staff, limited IT capability, and lack of training. However, as the landscape changes with increased focus on antimicrobial stewardship and infection prevention across all healthcare settings, LTCFs will need to ensure that they have AMS champions who are supported, educated, and trained in implementing a full antimicrobial stewardship program.<sup>20</sup>

## CONCLUSION

Long-term care facilities are a key player in the fight against increasing antibiotic resistance and adverse events such as *Clostridium difficile*. The culture of antibiotic use must change, not only because of increasing pressure from federal guidance and potential penalties, but more importantly for the safety and health of our current and future residents in LTCFs.

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