ISSN: 2634 - 8861

Journal of Infectious Diseases & Case Reports

SCIENTIFIC Research and Community

Review Article

Open Access

The Need for Enhancing the Antimicrobial Stewardship Practices in Long-Term Care

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ABSTRACT

Antimicrobials play a crucial role in various treatments and promoting global health by contributing to and complementing chemotherapy and surgical treatments. However, besides their benefits, antimicrobials also cause consequences for the community due to their side effects/complications and drug resistance. Further, the inappropriate usage of antimicrobials in various healthcare settings in the United States is causing concern and leading federal agencies to develop antimicrobial stewardship initiatives to improve patient safety by optimizing antimicrobial usage and improving clinical outcomes. This article focuses on enhancing antimicrobial stewardship practices in Long-term care settings.

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Received: May 06, 2024; **Accepted:** May 13, 2024; **Published:** May 26, 2024

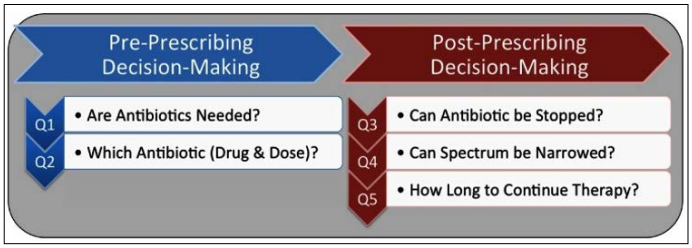
Introduction

Around 1.3 million elderly (over 65 years) live in Nursing homes in the United States. The elderly population is susceptible to infections due to risk factors such as impaired cognition, aging, reduced immunity, poor nutrition intake, dehydration, and decreased mobility. Further, the increased challenges with long-term care settings, shortage of resources, lack of physician onsite availability to assess patients, and lack of effective communication between the direct care staff and physicians increase the risk of inappropriate usage of antibiotics in long-term care [1]. Additionally, up to 47-79% of antibiotics prescribed in nursing homes are inappropriate and lead to the development of antibiotic resistance besides its benefits [2]. Therefore, the Centers for Medicare and Medicaid (CMS) mandated antimicrobial stewardship in Long-term care in 2017 to prevent antimicrobial resistance and improve patient safety [3]. However, the antimicrobial stewardship Program (AMS) in Long-term Care (LTC) has opportunities to improve the compliance of prescribers and the perspective of direct staff, Interprofessional teams, and other ancillary staff to optimize the use of existing antimicrobials. This article will focus on improving the antimicrobial stewardship practices in LTC.

The Need to Enhance Optimal Antimicrobial Usage in Long-Term Care

Residents living in nursing homes use at least a single dose of antibiotics annually. In contrast, studies have noted that 75% of this antibiotic usage is inappropriate due to a lack of appropriate documentation, evidence for antibiotic usage, and inappropriate dosage [4]. Additionally, the increased risk of adverse events is proposed by the excessive usage of antimicrobials such as clostridium difficile and other multi-drug resistant organisms' colonization in the vulnerable population care settings, which keeps the prescribers in the loop of last-line antibiotics usage to treat the patients. Further, antibiotic resistance is noted as a global public health issue and as a national security threat in the executive summary that was signed by the United States president in 2014, which has prompted the United States Centered for Disease Control and Prevention (CDC), World Health Organization (WHO) to initiate programs to find solutions for the antibiotic resistance [5]. Therefore, it is recommended that the entire healthcare system follow a stringent antimicrobial stewardship program, policies, and guidelines when prescribing and treating patients. Although these programs are established in the hospital setting, the LTC settings need to enhance their practices due to resistance to embracing these antimicrobial programs and guidelines compared to hospitals, as LTCs have unique challenges with resources. Antimicrobial stewardship is the program created and initiated by health organizations according to regulatory standards to improve antimicrobial drug dosage, duration, and route. This program aims to enhance clinical outcomes by minimizing the consequences of its usage, therefore improving patient safety [5]. In 2015, the CDC issued guidance for LTCs to create and follow antimicrobial stewardship, which includes leadership accountability, monitoring, prescribing, reporting guidelines, and needed educational materials [3]. The goal of AMS is to enable prescribers to prescribe antimicrobials without harm, taking 5D's into consideration, such as the right Drug, appropriate dose, correct route, suitable duration, and on-time de-escalation according to the pathogens noted in the system and further, preventing the antimicrobial misuse or abuse in health care and agriculture setting, to prevent drug resistance, and to avoid unnecessary healthcare costs [5]. Further, the antimicrobial prescribing process must be viewed in the LTC setting as a process to understand every stage to assess the necessity of prescribing

the Drug and cut down the length and inappropriate drug choice, as referred to in the figure below.



Taken from Crinch, C & et al. Optimizing Antibiotic Stewardship in Nursing Homes (Fig1_HTML JPEG) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4579247/

Additionally, the CDC published a report in 2019 that annually, over 2.8 million antimicrobial-resistant (AMR) infections occur, and over 35000 people die from those infections. Furthermore, the antimicrobials need to be upgraded as they are no longer effective once the resistance has built in the community, unlike other medications to combat the resistance and treat the lethal infections in the patients, leaving the healthcare/ agricultural industry in a vicious cycle [5,6]. Also, antimicrobials have side effects besides their benefits, such as renal and bone marrow toxicity, which is highly harmful for the vulnerable elderly population due to weakened immune systems [5]. Further, the outlined guidance for antimicrobial stewardship entails that the usage of antibiotics must be lower at the end of the life care. However, one-third of the hospice population in nursing homes are still receiving antibiotics, although they are in their last week of life, knowing that the antibiotics are no longer going to serve any benefits for the quality of life.

Similarly, inappropriate usage of antimicrobials is widespread in the dementia population as their immunity is low and susceptible to infections further; the disease contributes to poor communication, challenging physicians to choose the appropriate antimicrobial usage [3]. Therefore, the current increase in healthcare costs is that the total cost of dementia care for Americans in nursing homes is 203 billion annually [7]. Therefore, the LTC must embrace and establish an antimicrobial stewardship program involving the Interdisciplinary team and direct staff, pharmacy, and physicians.

Recommendations

Literature on LTC antimicrobial stewardship program data has shown that physicians with infectious disease prevention leading AMS programs are successful, whereas this concept is completely missing in LTC settings as physicians are not available onsite all the time; also, pharmacist as a leader or a co-leader for the AMS program also drawn excellent outcomes [5]. However, the lack of onsite labs and pharmacies contributes to the lack of support for a robust AMS program as it decreases the physician's ability to decide on utilizing suitable antimicrobials for treating patients, such as in hospitals due to delays in lab and radiology work and results in communication [4]. Therefore, it is recommended that networking among laboratory, pharmacy, and physician offices must be enhanced with reduced turnaround time and compliance with STAT lab and radiology workup time frame. Also, actively involving the physician and pharmacist to lead or enforce the other physicians to follow the guidelines may enable the program to be successful. Also, timeout, prior authorization, and timely antimicrobial tracking allow the staff to run the program successfully such as timeout which verifies whether it is the right choice of Drug or not after 48 hours of treatment after in-hand lab work and radiology reports are available to continue or discontinue antimicrobial medicine [5]. Effective communication, thorough assessment, and observation of early signs and symptoms by the direct staff and Inter-Professional Team (IPT) allow the time to do optimum lab and radiology investigations beforehad to prescribe suitable antimicrobials and follow the evidence-based treatment Also, following pharmacy interventions such as dose adjustment to maintain therapeutic levels in the system and alerting the prescriber about the drug interactions majorly helps antimicrobial stewardship to enhance the safety of patients [5,6].

Additionally, not using antimicrobials for asymptomatic cases (such as bacteriuria cases without any symptoms are not necessarily needed for UTI management) and learning the local susceptibilities in case of required antimicrobial prescription for the right drug choice and length. Further, literature shows that the dementia population in the LTC is aggressively treated with antimicrobials due to the challenge in assessing and understanding the symptoms of dementia residents, which is contributing to the increase in health care costs. Therefore, treatment of suspected infections must include advance directive interventions to avoid unnecessary antimicrobials, while comfort care is the primary goal [7]. Finally, educating the prescribers and disciplinary teams about emerging antimicrobial resistance, infectious disease management, and recommended prescription practices may motivate clinicians and staff to make effective and corresponding decisions on antimicrobial usage [5]. Also, tracking and reporting the infections and antimicrobial usage allows infection prevention personnel to do a gap analysis between policy guidelines and outcomes and staff compliance to understand the policy change and their enforcement [5].

In conclusion, although reducing antimicrobial usage in the LTC setting is challenging, collective efforts of interprofessional teams, antimicrobial stewardship strategies, approach, and constant educational materials from prescribers to direct staff can draw successful outcomes by enhancing staff practices and safety.

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