

Review of: "Determining Appropriateness of Antibiotic Therapy in Nursing Home Residents: A Review"

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Potential competing interests: No potential competing interests to declare.

Article review:

This is a relevant study addressing an important issue of antibiotic use in nursing homes in the context of rising antimicrobial resistance. The authors have conducted a good review of prior studies. Though this has not been classified as a systematic review, using some of the elements of PRISMA guidelines may be helpful.

Methods Section:

In the methods section, would be helpful to include how many total studies were identified based on the literature search, what inclusion/exclusion criteria was used for selecting these studies.

Were studies limited to geographic regions? Antimicrobial prescription practices and stewardship guidance may vary widely across different countries & regions which would make it harder to compare.

Results section:

It may be helpful to include subheadings under the results section for each of the categories, for example: Study selection, study characteristics, results of individual studies, quality of studies etc. Since a lot of data is included, it will improve readability.

For studies using Loeb criteria - It would be helpful to know if the Loeb criteria for fever with unknown focus of infection was also used in addition to the criteria for UTI, pneumonia or SSTI before considering the antibiotic use as inappropriate. Consider changing formatting of some of the tables especially Table 5. The consolidated Table 6 is helpful.

Discussion section:

The authors clearly list the drawbacks of using different criteria based on widely variable estimates of appropriateness. Inappropriate antibiotic use includes not only unnecessary prescribing of antibiotics but also use of wrong antibiotics, wrong dose and wrong duration. It would be helpful to include this definition earlier in the discussion^[1]. For future studies, it would be helpful to address all the categories which are classified as inappropriate to have a comprehensive understanding.

The authors have mentioned that appropriateness of antibiotic therapy may be influenced by non-clinical factors. Would suggest rephrasing to "use of antibiotic therapy" may be influenced by non-clinical factors. Increased use in certain

nursing home settings may still constitute inappropriate use and may provide opportunity for targeted stewardship initiatives.

Agree with a prior reviewer about adding limitations of the study.

Discussion section outlines the limitations of the studies reviewed and implications for future research. It also underscores the difficulty of including complex clinical decision making in any criteria. Including non-localizing manifestations of infectious conditions in diagnostic criteria is important to more accurately assess appropriateness. The author has discussed in detail studies on UTI and delirium. It would be helpful to include available literature on other conditions like pneumonia and non-localizing symptoms.

General comments:

Understanding appropriateness of antibiotics based on these study data is clearly challenging due to variability in study methods, conditions for which antibiotics are prescribed. Studies using chart review could detect more inappropriateness. One of the limitations of studies which use database is that physicians may insert codes which would justify antibiotic use, hence underestimating inappropriateness.

As mentioned above, inappropriateness is judged by 4 different parameters and most studies have evaluated only initiation of antibiotics. Stewardship initiatives may be less successful when the goal is to avoid antibiotic use due to provider concerns about untreated infection and consequences of sepsis. Other targeted stewardship initiatives should include correct antibiotic dosing, short antibiotic courses and discontinuing antibiotics earlier if alternate diagnosis is established.

References

1. [^] <https://www.cdc.gov/antibiotic-use/data/outpatient-prescribing/index.html#:~:text=Inappropriate%20antibiotic%20prescribing%20includes%20unnecessary,the%20wrong%20length%20of%20time.>