Asymptomatic bacteriuria in institutionalized elderly people: evidence and practice

Lindsay E. Nicolle

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There is intense use of antimicrobials in long-term care facilities, and about 50% of this use is considered to be inappropriate.[1] This intensity of use promotes the high prevalence of resident colonization with antimicrobial-resistant organisms observed in some facilities.[2] An important contributor to this situation is the dearth of relevant clinical studies to identify optimal therapeutic management.[1] One clinical question that is the exception to this, however, concerns the treatment of asymptomatic bacteriuria. The evidence is compelling that there are no benefits in terms of morbidity or mortality for the treatment of asymptomatic bacteriuria in residents of long-term care facilities and that there are negative outcomes.[3] Despite this, reviews of antimicrobial therapy in long-term care facilities continue to show that urinary tract infection is the main reason for antimicrobial use, and much of this use is for asymptomatic bacteriuria.[4]

This is an important issue because of the exceedingly high prevalence of asymptomatic bacteriuria among institutionalized elderly people.[3] Some 30%–50% of residents in long-term care facilities have positive urine cultures at any time. This high prevalence occurs among both men and women and increases with greater functional impairment. Positive urine cultures are virtually always associated with pyuria, and neither a positive culture nor pyuria is sufficient for the diagnosis of symptomatic urinary tract infection, or as an indicator for antimicrobial therapy.[5,6]

The paper by Susan Walker and colleagues[7] in this issue (page 273) addresses the question of why, in the face of consistent and compelling clinical trials, antimicrobial therapy is still frequently prescribed in long-term care facilities for the treatment of asymptomatic bacteriuria. They have taken a qualitative approach, using focus groups of physicians and nurses who provide care in such facilities in Hamilton, Ont., to explore issues relevant to this practice. Their observations have the limitations inherent in any qualitative research study, namely, it is hypothesis generating, not evaluative. In addition, the practitioners who participated in the focus groups had special expertise and interest in long-term care facilities and were, to some extent, self-selected. The generalizability of the authors' observations to other practitioners without this expertise or commitment is unclear.

Having acknowledged these limitations, the observations from this study are informative. The lack of specificity of clinical presentations in residents of long-term care facilities is a major contributor to inappropriate antimicrobial use. Practitioners interpret any clinical decline without a clear alternative source as potentially caused by urinary tract infection. Although urine specimen collection is occasionally problematic,[3] it is still a more accessible and interpretable diagnostic test in this population than, say, sputum specimens, serological studies or access to chest radiographs or other diagnostic imaging. Whenever a urine specimen is obtained, regardless of the symptom complex, the culture will be positive in at least 30%–50% of patients.[3] For residents without chronic indwelling catheters, with fever, no localizing findings and a positive urine culture, only 10% of episodes are attributable to urinary tract infection.[5] Although antimicrobial treatment is inappropriate 9 times out of 10, the 10% of cases in which it is appropriate cannot currently be identified by any clinical criteria or accessible diagnostic studies.[5] In the absence of an alternative diagnosis, the attribution of nonspecific symptoms to urinary tract infection and the urge to treat them as such are understandable.

The majority of antimicrobial orders to treat urinary tract infection are initiated by nursing staff.[1] The request may be because of a change in clinical status or an unpleasant urinary odour, or because a report of pyuria on urinalysis or a positive urine culture is returned from the laboratory. The nurse initiates the request, and the physician will frequently prescribe antimicrobial therapy over the phone without assessing the patient directly.[1] The pivotal role of the nurse in initiating antimicrobial decisions must be appreciated if we are to optimize antimicrobial therapy.

There would seem to be several opportunities to move from evidence to practice in the nontreatment of asymptomatic bacteriuria in these facilities:

- Acute changes in clinical status without genitourinary tract localization, such as fever, lassitude and confusion, should not be attributed to urinary tract infection. Urine specimens should not be obtained from patients with these presentations.
- If urine specimens are obtained, a positive culture and the presence of pyuria are common and cannot support a diagnosis of symptomatic urinary tract infection in the absence of genitourinary tract symptoms.[3]
- Symptomatic urinary tract infection does occur in residents of long-term care facilities and may cause serious

illness.[2] It is an appropriate diagnosis if there is bacteremia with the same organism as the urinary isolate, the presentation is that of acute pyelonephritis with costovertebral angle pain and tenderness, there are acute lower urinary tract symptoms, or catheter trauma or obstruction occurs in a resident with a long-term indwelling catheter.

- There is no definitive way to identify the small proportion of patients with symptomatic urinary tract infection who do not have localizing genitourinary signs or symptoms. In the face of this diagnostic uncertainty, the recommended therapeutic approach in mildly or moderately ill patients would be nontreatment, with close monitoring and continual reassessment of clinical status.

Current medical remuneration for physician attendance in long-term care facilities does not, however, support an observational approach; physicians are restricted in their ability to bill for frequent visits. There are no nurse practitioners trained to assist in monitoring and assessment who might also limit the need for physician monitoring. In addition, if antimicrobial therapy is not initiated, what is the natural history of nontreated patients? Is there a poorer outcome? Without the clinical expertise to support close observation and reassessment, how do we promote a therapeutic approach of withholding antibiotics? In the face of diagnostic and outcome uncertainty, is a trial of antimicrobial therapy always inappropriate, especially in the febrile patient?

A better description of the natural history of "clinical decline" in nontreated residents would certainly be helpful in extracting ourselves from this quandary. This requires prospective observational or randomized trials of diagnosis and treatment with evaluation of outcomes relevant to the long-term care setting. Such studies are complex and will require appropriate resources. Funding has not been available, to date, for this type of assessment either through provincial health budgets or national funding bodies. In the absence of such information, optimizing antimicrobial therapy will remain problematic.

The main conclusion reached by Walker and coworkers[7] concerns the need for education of health care workers, physicians, families and, when possible, patients themselves with respect to the nontreatment of asymptomatic bacteriuria. Education is certainly desirable; however, studies of antimicrobial use have consistently shown that education alone does not improve the appropriateness of antimicrobial use beyond the short term. Only restriction and concurrent review lead to sustained improvement.[1] Achieving optimal antimicrobial use in long-term care facilities will require not only education but also a clearer description of outcomes if antimicrobial therapy is withheld, more targeted use of diagnostic testing, and highly restrictive antimicrobial use programs. Increasing the appropriate use of antimicrobials in this population may require us to accept that some residents who may benefit from antimicrobial treatment will not receive it in a timely fashion. Are we really ready to accept nontreatment? Perhaps not, but the study by Walker and colleagues moves us forward in exploring the complexity of antimicrobial therapy in the long-term care facility and some of the barriers to optimizing patient care in this setting.

Dr. Nicolle is Professor and Head of the Department of Internal Medicine, University of Manitoba, Winnipeg, Man.

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Correspondence to: *Dr. Lindsay E. Nicolle, Professor and Head, Department of Internal Medicine, University of Manitoba, Health Sciences Centre, GC430–820 Sherbrook St., Winnipeg MB R3A 1R9; fax 204 787-3159; lnicolle@exchange.hsc.mb.ca*