

Reduction in Urinary Tract Infections (UTIs) and Inappropriately Prescribed Antibiotics

Michael Wasserman, MD, Executive Director, Care Continuum, Health Services Advisory Group

Looking at a nursing home population on a really good day, when the nursing home (NH) residents are all feeling great, having no behavior issues, and no complaints, and having tested the urine of all of the residents, we would find that a significant number have abnormal urine results. In 1996, Ouslander published a study on the prevalence of pyuria and bacteriuria in asymptomatic chronically incontinent NH residents (J Am Geriatr Soc 1996; 44:420-423). Forty-five percent of residents had pyuria, defined as >10 wbc/hpf and 43 percent had bacteriuria, defined as $>100K$ CFU's of a pathogen. These findings were in asymptomatic NH residents! Lesson learned: When we order urine tests, half the time we may find residents with either pyuria or bacteriuria. These findings are meaningless without other corroborating clinical findings. Otherwise, the possibility of inappropriately ordering antibiotics can occur, which can then create problems such as *Clostridium difficile* infections (CDIs).

One indication that something is wrong in a NH resident is a change in condition. Bacterial infection should be considered as an etiology, but urinary tract infections (UTIs) should not become the default diagnosis. There are specific criteria for diagnosing infections and specifically UTIs in NH residents. Suspect an infection when there is new or increasing confusion, incontinence, falls, deteriorating mobility, reduced food intake, or failure to cooperate with staff. Of course, changes such as these can be caused by other factors, such as anemia, electrolyte imbalance, adverse reaction to a medication, etc.

Fever is an obvious finding to suspect an infection. Lack of fever doesn't rule out an infection, as demonstrated in the Gleckman and Esposito afebrile bacteremia study. (JAMA 1982; 248:1478-1481).

How do we define fever in a nursing home resident? There are three criteria:

1. A single oral temperature $> 100^{\circ}$ F
2. Repeated oral temperatures $> 99.5^{\circ}$ F
3. An increase of $>2^{\circ}$ F over baseline temperature

The most useful laboratory test is a complete blood count (CBC), preferably with a manual differential, an elevated WBC count of $>14K$, or a left shift >6 percent is indicative of a bacterial infection (J Am Geriatr Soc 1989; 37(6):537-43). The higher the WBC count and /or the higher the bandemia, the greater the likelihood of a bacterial infection. The higher the fever, the greater the likelihood of a serious infection.

Remember, a urinalysis and culture are not sufficient for diagnosing a UTI. One needs at least one of the following:

1. Acute dysuria or acute pain or tenderness of epididymis or prostate.
2. Fever or leukocytosis with one of the following, or two of the following if afebrile with no leukocytosis:
 - CVAT.
 - Suprapubic pain.
 - Hematuria.
 - New or increased incontinence.
 - New or increased urgency.
 - New or increased frequency.

One must also have $>10^5$ CFU of one or two organisms from voided urine, or $>10^2$ CFU of organism from catheterized urine.

We perform a disservice and risk creating more problems when we do not thoroughly evaluate changes in condition in our NH residents. It is not always a UTI.