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Assisted Living Column

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Keeping your house clean and safe: Facility-based infection control and prevention

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Keeping our homes nice and clean is an effort that we all take great pride in. This same effort is becoming a responsibility being applied to LTC providers. Through new infection control and prevention initiatives focus from CMS and the CDC which started in the hospital today they have migrated this focus to skilled nursing facilities (SNF). It is likely that this migration won't stop at the nursing home door but rather will continue to assisted living communities. Of course, older LTC adult communities are not limited to SNFs or ALCs – there are CCRC (continuing care retirement communities), NORCs (naturally occurring retirement communities) and other settings where nursing leadership is needed to assure optimum infection control and prevention.

A major part of the focus on infection control and prevention is rooted in super bugs – the growing types and incidents of antibiotic resistance organisms. To better control this explosion CMS and CDC have focused on SNFs with 4.1M particularly vulnerable older adults being admitted to or residing in an SNF each year. The use of antibiotics in SNFs is so very prevalence that some 70% of SNF residents received an antibiotic during the year. And worse than the high number of residents receiving antibiotics is the fact 75% of these antibiotics were incorrectly prescribed.

To address this problem it is expected that over the next five years that inappropriate antibiotic use be reduced by 50%. This will come from new regulations to assure robust antibiotic stewardship programs in all hospitals with expansion to LTC facilities.

How we came to this point of antimicrobial resistance is no surprise. History tells us that the emergence of resistance organisms started almost as soon as the first antibiotics were consumed. Penicillin was discovered in 1928 and was first prescribed for use more than a decade later in 1942. During those 14 years, another class of antibiotics, sulfa drugs, was discovered. During the initial 5 years that penicillin was used we saw the marketing of aminoglycosides as an antibiotic capable of curing tuberculosis and we saw the development of tetracycline. We also saw another thing during that time that was not expected. Certain infections, specifically those caused by *Staphylococcus aureus*, were no longer responding as well to penicillin. The era of antimicrobial resistance had begun only three short years after the first antibiotic was prescribed. Initial thoughts were that the best way to overcome the problem of resistance was to develop an increasing number of new and more powerful antibiotics. The 10-year period between 1945 and 1955 saw the introduction of several antibiotics, including Vancomycin, but by 1955 there were reports erythromycin resistant staphylococci in numerous parts of the world, including Japan, England, France, and the United States. By the mid-1960s there were reports of resistant gonorrhea soon followed by the discovery of VRE in the 1980s. Linezolid was approved for use in the 1990s just as reports of drug-resistant pseudomonas were made. Soon, we would see multi-drug resistant TB and community acquired MRSA as threatening pathogens to mark the beginning of the 21st century. Large numbers of serious infections caused by antibiotic-resistant bacteria are seen each year leading to an alarming number of deaths. As outlined above, when new antibiotics are introduced there is a swift response by bacteria to develop resistance. It is becoming increasingly difficult for new antibiotic development to

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meet the demand of keeping pace with evolving bacterial resistance.

Infection Prevention and Control Officer

To assure that there is an individual responsible to assure that the necessary steps are taken to address all the infectious issues that CMS and CDC have identified, CMS will likely require SNFs to have an Infection Prevention and Control Officer (IPCO). The IPCO will be responsible for not only antibiotic stewardship but also for the prevention, identification, surveillance, investigation and controlling of infections and communicable disease for not only residents but also for staff, visitors and volunteers – groups not often considered in initiatives. Given the significant number of activities in the hands of the IPCO, CMS has said that these tacks must be the major responsibility of this individual making it impossible to fit under a director of nursing or other staff member already with a significant workload; instead this is likely to be a new position in many LTC facilities. To strengthen the power of the IPCO, CMS has said that the IPCO must severe as a member of the facility's quality assessment and assurance committee. Of course there will be monitoring, this will be done by CMS revising its guidelines and training of LTC surveyors in antibiotic utilization monitoring.

CDC has recommended the following seven core elements for successful infection prevention and control programs which start with leadership commitment of the IPCO. From this leadership comes accountability to the quality assurance committee and need for drug expertise and then the processes needed for success: Action, Tracking, Reporting and Education.

Clostridium difficile (CDI)

To illustrate the IPCO in action take the issue of *Clostridium difficile* (CDI). CDI is the most common cause of acute infectious diarrhea in SNFs, running the course of severity from a nuisance to life threatening pseudomembranous colitis. Not only has the severity and mortality been increasing but also has the number of cases which has seen a tripling over the last several years. Within SNFs CDI accounts for over a quarter of a million cases costing over two billion dollars and worst resulting in 16,500 deaths a year. Much of these are the result of recurrent cases of CDI with rates of recurrence of 20% after first episode, 45% after the first recurrence and 65% after two or more recurrences.

For the elderly, in general, 50% of those infected had received an antimicrobial agent prior to infection. Some of those exposed (3.9%) to antibiotic prior to infection had received their antibiotic between 61 and 90 days of the onset of their CDI episode, indicating the long lasting risk that each course of antibiotic therapy has on the risk for subsequent CDI. The hospital mortality rate for this group was 10.8% and 20% of survivors were re-admitted with CDI within one year of hospital discharge.

While several of the risk factors for CDI common to LTC residents are not modifiable such as advanced age, underlying illness, tube feeding, and gastric acid suppression, there are several risk factors that are able to be positively impacted. One of the risks of CDI well in facility's control is prevention of cases through contact precautions starting with hand hygiene. Antimicrobial exposure is another modifiable risk factor that through concerted efforts of the LTC team can be improved. The foundation of this is a more appropriate use of all antibiotics which includes many of the more commonly used in LTC such as ampicillin, amoxicillin, cephalosporins, clindamycin and fluoroquinolones.

Beyond prevention of CDI the quick, timely diagnosis of CDI is critical to stop the progression of CDI throughout a facility. While most diagnosis is still made utilizing a stool culture, this testing can take between 2 and 4 days. In addition, to the long time required to make a diagnosis using a stool culture many are done incorrectly. Testing for CDI by stool culture requires an unformed, liquid stool. Once the diagnosis is made no additional testing is needed as checking for toxins once the diarrhea has stopped is considered unnecessary. As the CDC has stated, after treatment, repeat CDI testing is not recommended if the patient's symptoms have resolved, as patients may remain colonized and thus result in inappropriate furthering of treatments.

The initial workup for CDI should always include tests that help classify CDI as a mild, moderate, or severe infection. To that point a CBC and monitoring and documentation of the number of unformed bowel movements per day are key. Often we see reports of the number of loose bowel movements per day as the only quantifiable information in the medical record. Unformed stool should be described in more detail with each bowel movement using a validated tool such as the Bristol Stool Scale. The type and number of bowel movements per day should be combined with assessment of the White Blood Cell Count form the CBC result. Residents should, with this information, be categorized as having mild, moderate, or severe cases with the most severe being those with a high white blood cell count and high number of unformed bowel movements per day.

Once the diagnosis is made of CDI treatment begins with discontinuation of the offending antibiotic if possible. Also since many CDI patients will likely become dehydrated from the diarrhea replacement of fluid and electrolytes. Despite the desire to immediately stop a CDI patients should not be given antimotility agents but rather treatment should be focused on the use of metronidazole 250 mg four times a day, vancomycin 125 mg four times a day or fidaxomicin 200 mg twice per day. For patients refractory to these treatments there are other options such as fecal transplants through enemas.

Where to care for a CDI patient in an LTC facility can at times be difficult as the preferred placement in a private room is not always possible as such cohorting with another resident with CDI or rooming with a low risk roommate may be an option. A low risk roommate is one who is able to maintain a clean environment is cooperative and cognitive to follow direction. When having a shared room with a CDI patient in a semi-private room, keeping the cubicle curtain drawn to limit movement and provide a reminder of precautions can prevent transmission. In all situations patient care equipment must be dedicated to a single patient to avoid further exposure.

Though a private room may not be available, it is especially important to consider use of a private room for residents who have fecal incontinence or who are not able to practice good hand washing procedures. For all residents who are symptomatic with CDI, it is crucial that contact precautions be maintained until the diarrhea is resolved. For staff, it must be stressed that they have to wash their hands frequently with soap and water. Staff often forget that when dealing with CDI, alcohol-based hand gels and lotions are not effective. Finally, and EPA-approved disinfectant detergent should be used to frequently clean environmental surfaces. Usually this will be a solution of 10% sodium hypochlorite that has been mixed no more than 24 h prior to use.

Antibiotic misuse

The Centers for Disease Control (CDC) and others are increasingly sensitive to the overuse of antibiotics. This over use has led to dangerous drug resistant organisms. As a result both the AGS and AMDA made recommendations to not use antimicrobials to treat bacteriuria in older adults unless specific urinary tract symptoms are present. Cohort studies have found no adverse outcomes for