Antibiotic Use

Antibiotic resistance is a growing problem in the US and across the world. The main driving factors are overuse and misuse. The CDC publishes an annual Antibiotic Resistance Threat Report. Highlights from 2019 include that >2.8 million antibiotic-resistant infections occur in the US annually with >35,000 deaths as a result at a cost of >$5 billion. There are almost no new antibiotics in the pipeline and the very real possibility of a post-antibiotic world where many infections simply cannot be treated is becoming a reality, not a theory.

## Is anything being done about it from a regulatory or oversight perspective?

There is ongoing discussion about treating antibiotic prescribing in a manner similar to opiates with certification, active overview and removing a prescriber’s ability to prescribe if they are frequently ordered inappropriately. Vivage has started doing this on a small scale by identifying those who routinely order antibiotics for conditions that do not meet infection criteria established by the CDC and others, based primarily on McGeer Criteria (see attachments). These are guidelines for identifying common infections in nursing homes. When providers are identified who routinely misuse (dose too high or duration too long) or overuse (use for non-bacterial conditions) antibiotics, they are educated as a first step. If that does not work, provisions are put in place that require either a medical director or consulting pharmacist to approve antibiotics before those providers can order them. Though acceptance by providers, patients, nurses and families is a slow, difficult process, luckily, most eventually respond to education. While there are always exceptions to these guidelines, they are not the rule.

## What is Clostridioides Difficile?

The CDC and World Health Organization have labeled an infection called ‘Clostridioides Difficile’ as the largest infectious threat in the world outside of Covid. This infection can really only be contracted after being on antibiotics! In simple terms, Clostridioides Difficile, or C Diff, is an intestinal infection occurring after antibiotics have killed the normal bacteria colonizing intestines, allowing this very hearty bacteria to invade. Once established, it releases toxins (poisons) that cause diarrhea, dehydration and abnormalities of salts in the blood. It can’t be treated with most antibiotics and is more and more resistant to the few that have worked in the past. It leads to death in many inflicted individuals, primarily older persons and those with other chronic diseases. There were about 500,000 cases and 30,000 deaths in the US alone from this infection in 2019.

## How can we avoid the spread of C Diff?

Simple – drastically decrease antibiotic use – save them for only well-documented bacterial infections that meet the conditions detailed in the attached McGeer criteria. This takes a whole new mindset to do consistently.

Do antibiotics pose other risks?

Of course. Other potential ways antibiotics can cause harm, include:

* Persons taking antibiotics are at increased risk of getting a resistant infection later
* They may cause many side effects, from allergic responses (hives, anaphylaxis, itching) to diarrhea, nausea, vomiting, seizures, anxiety, tendon rupture, headache and kidney and liver damage – just to mention a few
* They may interact with other medications in ways that can cause other problems or death

## When should we use antibiotics?

Whenever a bacterial infection is documented and confirmed. The CDC publishes and distributes very specific guidelines on how to appropriately diagnose bacterial infections which typically cause local symptoms like warmth, redness and tenderness, and systemic reactions such as fever, swollen nodes and an increase in the specific White Blood Cells that fight bacteria (neutrophils). It is usually only when enough of these factors are present that cultures should be considered to identify a likely specific organism causing it.

## What if the hospital ordered antibiotics and the patient does not appear to have an infection?

Just like community-based and nursing home providers, hospital providers frequently diagnose infections based on outdated or inappropriate reasons. Unless there is good documentation and reasoning to support a bacterial diagnosis, the LTC provider should make an appropriate determination, which often means discontinuing an inappropriate antibiotic when these patients return from the ER or hospital.

# Here are some common misuses of antibiotics.

### URINARY TRACT INFECTIONS (UTIs)

Diagnosing a UTI requires a combination of symptoms like new onset of pain with urination, urinating more often, new blood in the urine, or new pain / tenderness of the urinary tract along with fever and/or an increase in the specific type of WBCs that attack bacteria. Research has shown convincingly that things like confusion, falls, agitation, bad smelling or cloudy urine and nonspecific symptoms we once felt were signs of a UTI do not have any correlation at all. Multiple large, double-blinded trials of antibiotics vs. placebo to treat presumed UTIs based on criteria like these consistently show that the antibiotic group does worse because there really was not an infection, yet they are put at risk by side effects of the antibiotics. This is difficult to share with patients and families who want a quick, treatable, understandable reason for any change of condition. Finding or even culturing >100,000 bacteria in the urine without the other appropriate criteria / symptoms is called asymptomatic bacteriuria and is best treated by increasing fluid intake, not with antibiotics.

### COLDS, FLU, SORE THROATS, BRONCHITIS and SINUS and EAR INFECTIONS

The vast majority of these are viral infections. Antibiotics do not kill viruses. For the overwhelming majority of common respiratory infections (>99%), antibiotics are not helpful and may add unnecessary costs and cause the harms previously listed. If a patient, nurse or family member has questions about what criteria are associated with a bacterial infection – encourage them to ask you, and then educate them!

Finally, thank you for all of the valuable, hard work that you do. Your efforts are not unappreciated by your patients, and certainly not by me.

Respectfully,

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