Preface

Infectious Disease Threats: What Are We to Do?

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Editor

Over the past fifty years there has been a dramatic change in many of the infectious diseases that we diagnose and treat. A half century ago, we were just beginning to be armed with therapies that were effective for such common diseases as tuberculosis, *Staphylococcus aureus* infection, community-acquired pneumonia, and urinary tract infections. Therapies became widely available and it appeared that we had conquered many of the infectious disease problems that had plagued patients for centuries. Expectations arose that physicians should be able to treat and cure all infectious diseases. Antibiotics were the new miracle, and the public began to believe that all you needed was an antibiotic to feel better when you got sick.

The example of *S aureus* is a good one for us to learn from. In the 1940s, penicillin was discovered and became an extremely effective treatment for *S aureus*. Within a few years, resistance to penicillin began to arise, but by the late 1950s the antibiotic methicillin was developed that effectively treated penicillin-resistant *S aureus* infections. It didn’t take long for resistance to form to methicillin, occurring within a few years. By the late 1960s, MRSA was present in the United States, but was found only rarely as a hospital-acquired infection, and then over the next decade, as an infection seen in injection drug users. By the late 1990s MRSA began appearing as an infection in the community, not confined to patients with hospital exposure or injection drug use. Now community-acquired MRSA is common, and the assumption is that all *S aureus* infections are MRSA until proven otherwise. Vancomycin has been the gold-standard drug for the treatment of MRSA but now a strain of vancomycin-resistant *S aureus* has emerged.

Another example of the times we live in is the emergence and dominance of *Clostridium difficile* infection. Clinical infection with *C difficile* was first recognized in the late 1970s. It was almost always seen in the setting of antibiotic use and was considered a hospital-acquired organism. We have learned over the past 2 decades that there are many more risk factors for *C difficile* beyond antibiotics, including advanced age,
proton pump inhibitors, inflammatory bowel disease, chemotherapy, and tube feedings. In the early 2000s a new strain that was more severe, leading to worse disease and more frequent recurrences, was described. One major risk factor for this strain was past florquinolone use. In addition, more patients without risk factors began developing \textit{C difficile}. Since 2005, the incidence of \textit{C difficile} infections has more than doubled.

Antibiotics are needed and crucial to the treatment of some infectious diseases. Unfortunately, the use of antibiotics is a double-edged sword, with the risk of development of resistance and the increase in antibiotic-related disease such as \textit{C difficile}. Antibiotics also have direct side effects that can be severe and dangerous. The expectation of the public is that we can treat all infectious diseases with antibiotics. This public pressure in the form of patient expectations pushes the inappropriate use of antibiotics. It is only through our careful antibiotic stewardship and increased public education that we can move forward in the treatment of our patients safely and wisely.

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