The CDC's Report on Antibiotic Resistant Threats in the US

By David Shlaes — November 21, 2019

This is Antibiotic Awareness Week. The US Centers for Disease Control just released its new report [1], Antibiotic Resistant Threats in the United States, 2019. They used “new” methodologies to both retrospectively reconstruct their 2013 report and to carry out the studies used for the 2019 report. In that way, the numbers are directly comparable. This report is extremely valuable and I recommend it as required reading for everyone interested in infectious diseases and antibiotics.

While this new report is very welcome and while I (and everyone else) appreciate(s) all the efforts by the CDC to address resistance, there are still limits to the report and areas that I would have liked them to address differently. First, the numbers cited by the CDC must be considered an underestimate since they are derived almost exclusively from hospital data. There are probably many infections arising in the community that do not present to acute care hospitals including those in long term care facilities. Second, I would have preferred that the CDC emphasize more that in spite of all of our efforts, no matter how successful, at antimicrobial stewardship and infection control, resistance will still emerge and we will still need to rely on new antibiotics to control these resistant infections. As such, additional discussion as to the factors combining to deprive us of these needed new antibiotics and suggested approaches to resolving this dilemma would have been helpful.

If you add the numbers for C. difficile infections to those for other resistant infections together, the CDC reports that there are ~ 3 million such infections per year in the US. These are associated with almost 48,000 deaths every year. These deaths approach that endured by the US military for the entire Vietnam war (58,000) and are greater than the numbers of Americans killed in traffic accidents every year (37,000). The CDC provides data for certain resistant infections (see report).
showing that they place an important economic burden on US healthcare. The CDC appropriately notes that antibiotic resistance threatens our ability to provide adequate care for surgery, chronic conditions like diabetes, organ transplant recipients, kidney dialysis patients and those with cancer.

In its report, the CDC emphasizes that they are leading the fight against resistance and, in some cases, we are making progress. For example, infections caused by carbapenem-resistant Acinetobacter have decreased since 2013. But infections caused by carbapenem-resistant and ESBL Enterobacteriaceae have increased. In long term care, C. difficile infections may be decreasing, but we have not yet seen that in US hospitals.

While the CDC emphasizes approaches like vaccination, infection control, antibiotic stewardship in hospitals, in the community and on our farms, and while they note that antibiotic resistance is a one health problem, they shy away from the economics of antibiotics. They do not deal with the important role that expert societies can play in guidance on all of these issues, but, importantly, a discussion of their role in assuring appropriate therapy is not really explored.

The report outlines some of the difficulties in the development of antibiotics and diagnostics and it also decries the poor pipeline for many of the resistant infections considered as threats in the report. They believe that there is not enough “innovation” in the pipeline.

In terms of innovation, I note that the WHO and others also see this as a problem in the antibiotic pipeline. I strongly disagree with the concept that innovation is the most important criterion by which to judge the pipeline. The most important criterion should be clinical utility. Does the compound address resistant infections? Is it safe? Does it offer dosing or other advantages over other available therapies? (This will be the subject of a subsequent blog).

One area that CDC ignores is the economic barriers to the study and marketing of new antibiotics. The report sticks with the steps that we should all be taking to preserve the antibiotics that we have as long as possible. And I agree that this is an important effort that we all should support. But, if the CDC leads the fight against resistance, they can hardly step back from dealing with the single major impediment to providing the robust pipeline they so clearly desire. To me, this is a singular omission in this otherwise complete and important document.

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