

Antibiotic Awareness Week - Talk vs. Action?



By *David Shlaes* — November 12, 2018



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This is antibiotic awareness week. To mark this week, there has been a great deal of talk and the publication of several important papers and workshops on antibiotics and resistance. At the same time, just after having achieved approval for their new antibiotic, plazomicin, [Achaogen](#) [1] has downsized once again essentially jettisoning their R&D effort to focus on commercializing their new product. Why? Because they do not have enough money because investors do not believe their product will be very successful. And why is that? Just look at the antibiotic marketplace.



In the US, our National Academies of Sciences, Engineering and Medicine just published a [report](#) [3] of their workshop, Understanding the Economics of Microbial Threats. The workshop was held by the Forum on Emerging Infections first established by Josh Lederberg and on which I was honored to serve for seven years. For those of you who have followed this topic or this blog, the workshop report offers little new in terms of the economics of antibiotics and antibiotic resistance.

It does provide an analysis by the workshop group of the National Academies, perhaps our most prestigious scientific body, which reports and supports what many have been saying for many years now. The antibiotic market is broken and it will take government action on a global scale to fix it. If we do not act, antibiotic resistance will continue to rise without a sufficient influx of new antibiotics to combat this threat.

Specifically, the workshop report quotes a RAND study estimating the global cost of resistance by the year 2050 to be anywhere from \$13-120 trillion dollars in reduced global GDP depending on various assumptions and discounting variables. This is similar to the \$100 trillion dollar estimate from the O'Neill commission in the UK.

The report acknowledges that pull incentives are essential to providing a means for companies to achieve a return on their R&D investment in new antibiotics. It notes that there is some debate as to which pull incentives would be best. There seems to be an emerging consensus that pricing adjustments will not be successful (since they have not worked as yet). The preferred incentive may be a transferable exclusivity voucher – but the report does not provide details. The report suggests that industry and government work together to better define what an appropriate pull incentive would be. My own view is that industry input is important, but must be taken at arm's length.



Around the same time the NAS report appeared, the European Centers for Disease Control published a [report](#) ^[5] estimating the disease burden of antibiotic resistance in Europe. They estimate that resistance is responsible for 33,000 deaths annually in Europe based on modeling. This is not so different (given our population differences) with the 23,000 deaths in the US according to our CDC. The ECDC paper also estimates the increase in disability-adjusted life years attributable to resistance showing very impressive increases associated with resistant infection. My own guess is that both US and European estimates are low. It is extremely difficult to gather reliable data in this regard simply because death certificates are rarely granular enough to provide insight into the importance of an antibiotic-resistant infection in the demise of any given patient. So these estimates are all based on varying mathematical models.

In the NAS workshop report, Ramanan Laxminarayan was quoted. He *“also pointed out that the way to think about AMR’s consequences on human health needs to go beyond only focusing on the death tolls from drug-resistant pathogens. He highlighted that AMR deeply affects care-*

seeking behaviors. He described a scenario in which an elderly patient might forgo a hip replacement surgery because of the higher associated risk of a postoperative infection and has to live with a bad hip for several more years. He reiterated that behavioral adaptations in response to not having access to effective antibiotics or any antibiotics at all are likely to be significant, and he urged the audience to think about these often overlooked ramifications.”

This provides much for us to consider during this antibiotic awareness week. My own takeaway from all this is – blah blah blah!! At this point, we need action. We need to invest in our future and that of our children now – not 10 years or 30 years from now. To those of you in responsible positions of government – you have no excuse to refrain from acting. This threat is too important for us to ignore.

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- [3] <https://www.nap.edu/catalog/25224/understanding-the-economics-of-microbial-threats-proceedings-of-a-workshop>
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- [5] [https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(18\)30605-4/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(18)30605-4/fulltext)
- [6] <http://antibiotics-theperfectstorm.blogspot.com/2018/11/antibiotic-awareness-week-talk-vs-action.html>