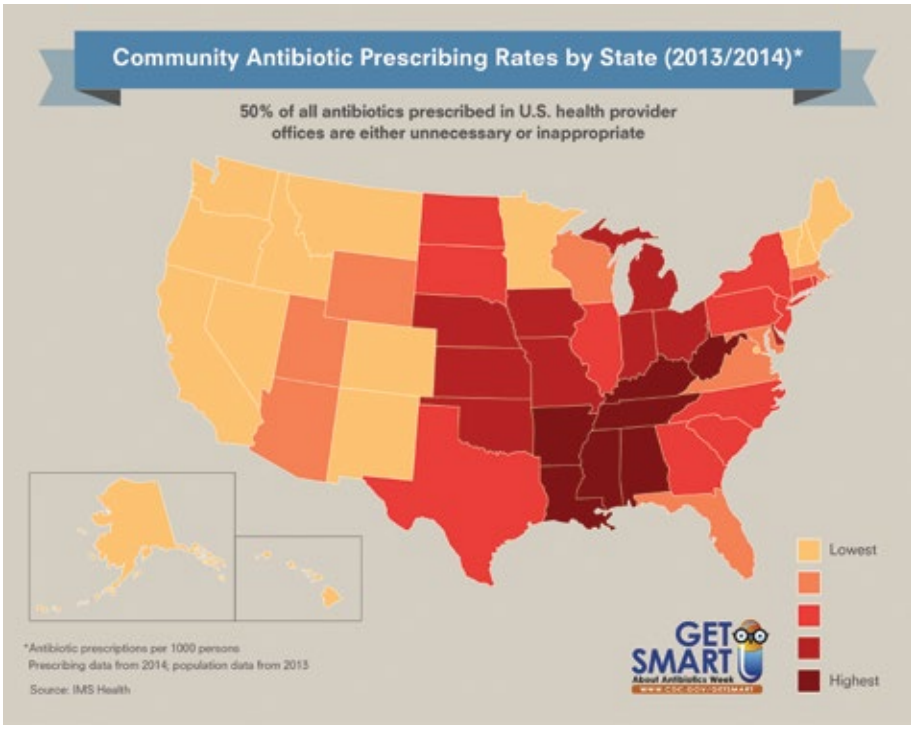
Stopping Superbugs and Antibiotic Resistance

Overuse of antibiotics has contributed to one of the biggest threats to public health: antibiotic resistant pathogens or "superbugs."[706] Superbugs are turning infections that were once easily treated — like E. coli and salmonella — into deadly pathogens. More than 2 million people in the United States are annually infected by superbugs and at least 23,000 die.[707] Superbugs cause $20 billion in annual direct costs and an additional $35 billion in productivity losses.[708]

CDC has warned that superbugs are expected to continue to grow dramatically — and has prioritized 18 organisms that are an urgent, serious or concerning antibiotic resistant threat — ranging from *Methicillin-resistant Staphylococcus aureus* (MRSA) to antibiotic-resistant gonorrhea. Six of those urgent or serious antibiotic-resistant threats, plus *C.difficile*, can cause healthcare-associated infections.[709]



- Experts have found that nearly one-third of the 154 million annual antibiotic prescriptions written in doctor's offices and emergency departments are unnecessary. Many are prescribed for viral respiratory illnesses that inherently will not respond to antibiotics.[710]
- In addition, more than 80 percent of antibiotics sold in the United States are used in agriculture (including ionophores not used in human medicine).[711] Pathogens can develop antibiotic resistance when food animals — such as poultry, cattle or swine — are exposed to antibiotics.[712] They can spread to humans through consumption of food animal products, direct contact with infected animals or contact environmental sources, such as water and soil contaminated by animal waste runoff.[713]

Another factor contributing to the rise is that there are few market incentives for pharmaceutical companies to invest in new antibiotic research and development. As of March 2016, only 37 new antibiotics were in development, 13 of which had reached phase 3 testing.[714] Historically, only 60 percent of phase 3 drugs will be approved by the FDA.[715]

RECOMMENDATIONS

- **Fully fund and implement CDC's Antibiotic Resistance Solutions Initiative.** The initiative is designed to fully implement the priority actions identified in the *National Action Plan for Combating Antibiotic Resistant Bacteria.*

- **Incentivize development of new antibiotics and new diagnostic tests for resistant bacteria.** The FDA should be able to approve drugs for a limited population of patients with serious or life-threatening infections and for drugs that fill an unmet need based upon more limited data (e.g. smaller clinical trials). Limited Population Antibacterial Drug (LPAD) approval provides a mechanism to do so.

- **Reduce overuse of medically-important antibiotics in agriculture.** The FDA should fully implement and strengthen guidance to industry regarding the nontherapeutic use of antibiotics in food animals. Important measures include enforcing requirements for the collection and publishing of species-specific use data, requiring valid veterinary oversight on the farm, promoting antibiotic stewardship programs and tracking the impact of these policies on resistance.

- **Reduce over-prescription of antibiotics through implementation of antibiotic stewardship.** The Centers for Medicare and Medicaid Services should finalize and implement requirements for all CMS-enrolled facilities to have effective antibiotic stewardship programs and work with public health to track progress in prescribing rates and resistance patterns. The U.S. Department of Health and Human Services should help develop quality measures that assure appropriate prescribing of antibiotics. HHS, CMS, accrediting organizations, healthcare facilities, medical schools and others should educate providers and patients about the harm of inappropriate prescribing.

- **Prevent and stop the spread of infections and improve antibiotic use in every state.** CDC should continue expanding implementation of public health-healthcare prevention networks in every state to improve identification and response to all emerging threats and implement proven strategies in healthcare facilities to prevent infections and transmission across healthcare settings.

- **Strengthen surveillance and tracking of resistant bacteria.** Congress and CDC must continue to invest in our public health infrastructure to enable the detection and control of drug resistant outbreaks. National programs to identify emerging patterns of both resistance and antibiotic use will quantify the magnitude of antibiotic use in the U.S. and inform new interventions. Sustained funding and continued support to state and local health departments implementing CDC's Antibiotic Resistance Laboratory Network (AR Lab Network), next generation surveillance in PulseNet laboratories and whole genome sequencing to rapidly uncover foodborne drug-resistant bacteria as well as effective dissemination of data collected will be critical for realizing the impacts of this initial federal investment in antibiotic resistance surveillance.

- **Prevent infection by improving vaccination rates for children and adults.** Despite their effectiveness, vaccination rates remain low in many communities across the U.S. — even among adult populations.[716] In 2014, 80 percent of U.S. adults did not receive recommended tetanus, diphtheria and pertussis (whooping cough) vaccinations.[717] Federal, state and local health officials, in partnership with medical providers and community organizations, should conduct assertive campaigns about the importance of vaccines. Targeted outreach should be made to high-risk groups and to racial and ethnic minority populations where the misperceptions about vaccines are particularly high.[718]

Endnotes

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