Strategies to Address Antibiotic Resistance (STAAR) Act (S 2469, 115th Congress)

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Last Action
Referred to Senate Committee

Date of Last Action
Feb 28 2018

Congressional Session
115th Congress

Date Introduced
Feb 28 2018

Publication Date
Aug 16 2018

Originating Entity
Senate

The Policy

What it does
Modifies the Public Health Service Act to increase governmental efforts focused on antibiotic resistance.

Synopsis

The Strategies to Address Antibiotic Resistance (STAAR) Act, S 2469 [12], amends the Public Health Service Act to increase government efforts to address the growing problem of antibiotic resistance. The STAAR Act codifies certain recommendations of the National Action Plan for Combating Antibiotic-Resistant Bacteria [13], which was developed in response to Executive Order 13676 [14] (79 FR 56931), by amending Section 319E of the Public Health Service Act [15] (42 U.S.C. 247d-5). The bill also specifies the responsibilities of a task force focused on antimicrobial resistance and the Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria [16] in more detail. Among its amendments, the bill:

- Defines the scope of task force meeting agendas, including specific federal activities related to containment, surveillance, diagnostics, and research of antimicrobial resistance as well as international cooperation;
- Defines the duties of the Advisory Council in making recommendations to the federal government regarding programs and policies related to combating antibiotic-resistant bacteria;
- Requires an annual report submitted to Congress on progress toward Action Plan objectives;
- Specifies surveillance data on antibiotic usage and resistance trends to be collected and made public through the National Healthcare Safety Network [17];
- Establishes at least seven Antibiotic Resistance Surveillance and Laboratory Network sites to execute surveillance and outbreak response functions;
- Establishes the Clinical Trials Network on Antibacterial Resistance to study patient outcomes as well as resistance mechanisms, diagnostics, and methods of treatment or control of antibiotic-resistant infections; and
- Requires the Centers for Disease Control and Prevention (CDC) to expand efforts to collaborate with state and local authorities on preventing the spread of antibiotic-resistant pathogens, including academic partnerships through the Prevention Epicenters Program [18] and the dissemination of educational materials to health care facilities.

Context

The first task force on antimicrobial resistance, created in response to Section 319E of the Public Health Service Act, was the Interagency Task Force on Antimicrobial Resistance [19]. This Task Force was created in 1999, and produced reports and action plans through 2012. In response to Executive Order 13676, a new task force (i.e., the Interagency Task Force for Combating Antibiotic-Resistant Bacteria [20]) was created in 2014. This Task Force developed the National Action Plan for Combating Antibiotic-Resistant Bacteria and issued a progress report [21] on its effects and actions since implementation in October 2017.

Policy History

The first version of S 2469 was originally introduced in the House in 2007 (HR 3697 [22], 110th Congress) and then was reintroduced subsequently several times in both the House and the Senate. Changes to the bill reflect the issuing of Executive Order 13676 [14] (79 FR 56931) and the resulting National Action Plan for Combating Antibiotic-Resistant Bacteria [13], which was published in March 2015, in that several specifics of the bill have been adjusted to directly implement recommendations in the Action Plan.
Science Synopsis

**Antibiotics**[25] are medicines taken to combat infections caused by **bacteria**[26], single-celled organisms that can sometimes cause disease. They help the immune system by killing bacteria or stopping their growth. Furthermore, the use of antibiotics to prevent infections enables many other medical procedures, such as cancer chemotherapy, joint replacements, and organ transplants.

Bacteria can develop the ability to resist the effects of antibiotics and survive or continue to grow even when the patient is treated with them, a phenomenon known as antibiotic resistance or **antimicrobial resistance**[27]. Because these infections cannot be easily treated with medication, they can be life-threatening: it is estimated[28] that each year in the United States two million people are infected by antibiotic-resistant bacteria, of which at least 23,000 people die as a result. As resistance spreads, hospitals face an increasing **challenge**[29] in treating infections as second- and third-line antibiotic treatments may also become ineffectual. Resistance has been **observed**[30] to each newly introduced antibiotic class, sometimes within just one year.

Bacteria can **develop**[31] antibiotic resistance in several ways, including by preventing antibiotics from entering the cell, pumping them out after they enter, and inactivating the antibiotics, among others. They gain these abilities through changes (i.e. **mutations**[32]) in the **DNA**[33] which makes up their **genes**[34]. Antibiotic resistance can spread quickly when bacteria are in the presence of antibiotics through the following process.

In most cases, bacteria that encounter an antibiotic die. However, a few of these bacteria have mutations that make them antibiotic-resistant, and consequently they are the only cells which survive. Because bacteria can reproduce within minutes to hours, a group of bacteria that only had a few resistant individuals before encountering antibiotics can soon be made up entirely of resistant cells. Additionally, bacteria may develop resistance through **DNA transfer**[35], which could include genes that make the receiving bacteria antibiotic-resistant.

Since the speed of development and spread of antibiotic resistance increases as bacteria encounter antibiotics, whether inside a person or in the environment, reducing the overuse of antibiotics can help slow the development of antibiotic resistance. For example, antibiotics **cannot treat viruses**[36] like the flu or the common cold, but are sometimes inappropriately prescribed in these cases regardless. In fact, the
CDC estimates [37] that 30% of antibiotics prescribed in outpatient settings, for a total of 47 million prescriptions, are unnecessary. Another source of antibiotics in the environment comes from the meat industry, which sometimes use [38]s antibiotics to make farm animals gain weight faster.

Finally, since there are many different types of antibiotics, they do not all work in the same way. This means that one antibiotic might successfully kill bacteria which are resistant to a different type. Treating an infection can thus depend on the ability to identify a specific infection and its resistance profile. Tracking antibiotic-resistant diseases can promote anticipation of potential resistance and an understanding of how these infections spread.

Relevant Experts

Vance Fowler, MD [39], is Professor of Medicine at Duke University Medical Center, Professor of Molecular Genetics and Microbiology at Duke University, and a member in the Duke Clinical Research Institute. His work focuses on understanding and treating methicillin-resistant Staphylococcus aureus (MRSA) infection.

The Debate

Endorsements & Opposition

- Infectious Diseases Society of America, statement [40], February 28, 2018: “Senator Brown’s important bill builds upon bipartisan investments in addressing AMR [Antimicrobial Resistance] by reinforcing our public health capacity for prevention, detection, and tracking antibiotic resistance threats.”
- The Society of Healthcare Epidemiology of America, press release [41], March 1, 2018: "Currently, health care systems in the United States face significant challenges in addressing antibiotic resistant bacteria, which threaten the lives and well-being of millions of people each year...The legislation introduced today by Sen. Brown addresses this complex public health issue head-on by providing much needed resources support for developing innovative approaches towards infection surveillance, antimicrobial stewardship and research that can have a meaningful impact on prevention of antimicrobial resistance and patient safety."
- 39 organizations in coalition, letter [42], February 28, 2018: “Antimicrobial resistance is a complex problem that requires a multifaceted solution including investments in surveillance and data collection, antimicrobial stewardship and research. The STAAR Act seeks important advancements in these areas.”

Status

S 2469 was introduced in the Senate on February 28, 2018, and referred to the Committee on Health, Education, Labor, and Pensions [43].

Related Policies

S. 629 - Preventing Antibiotic Resistance Act of 2017[44]
This bill requires those using animal drugs that are medically important antimicrobials in humans to demonstrate that there is no harm to human health resulting from antimicrobial resistance developed from the drug’s nontherapeutic use.
H.R. 1587 - Preservation of Antibiotics for Medical Treatment Act of 2017\[45\]
This bill requires those using animal drugs that are medically important antimicrobials in humans to demonstrate that there is no harm to human health resulting from antimicrobial resistance developed from the drug's nontherapeutic use.

H.R. 1840 - Reinvigorating Antibiotic and Diagnostic Innovation Act of 2017\[46\]
This bill was introduced on March 30, 2017 and grants a tax credit for clinical testing expenses for antibiotic and antifungal drugs, as well as for infectious disease diagnostics.

S. 771 - Improving Access To Affordable Prescription Drugs Act\[47\]
This bill was introduced on March 29, 2017. Among other provisions, it establishes a prize fund of $2 billion dollars to be awarded by the NIH over the next ten years for products that are superior to existing therapies for serious bacterial infections as well as for significant open-source contributions to antibiotic research.

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