

Antibiotic and Antifungal Drug Transferrable Research and Development Tax Credit

Proposed by the Infectious Diseases Society of America

The Infectious Diseases Society of America (IDSA) is an organization of more than 10,000 infectious diseases (ID) physicians, scientists, and other health care professionals dedicated to promoting health through excellence in ID research, education, patient care, prevention, and public health. The Society was founded in 1963 and is based in Arlington, Va. For more information on IDSA, see www.idsociety.org. For more information on the current crisis in antimicrobial development, see www.AntibioticsNow.org or contact Amanda Jezek, IDSA's Director of Government Relations at 703-740-4790 or ajezek@idsociety.org.

Background

- Research on antibiotics (antibacterial) drugs is lagging, and the situation presents significant, immediate, and dire consequences for patient care, public health, and national security.
- In 1990, there were almost 20 pharmaceutical companies with large antibiotic research and development (R&D) programs. Today, there are only three or four large companies with strong and active programs and only a small number of companies have more limited programs. One of the remaining large companies, AstraZeneca, announced in March 2013 that it would be reducing its antibiotics R&D investment. One small company, Polymedix, which has one of seven antibiotics currently in development against deadly Gram-negative bacteria (GNB), filed bankruptcy in April 2013. Research on antifungal drugs against increasingly fatal, invasive fungal infections is similarly lagging with only a few manufacturers engaged.
- R&D related to antibiotics pose unique scientific, regulatory and economic challenges, which often make antibiotic R&D riskier than it is for other types of drugs. One company, GlaxoSmithKline, reports that over a ten-year period, it took 72 lead candidate antibiotic compounds in the early discovery phase to yield one FDA-approved product; other drug types only took 15 leads to yield an FDA approval.
- There are multiple reasons for the market failure for new antibiotics, but the primary reason is that the drugs become less effective as soon as they are used, because microbes evolve defenses to resist them and then transfer these defenses to other bacteria. As a result of antimicrobial resistance—a unique phenomenon among pharmaceuticals—the most powerful, antibiotics, once approved, are held in reserve to protect their long-term effectiveness. This makes developing the drugs less attractive to companies. The drugs also are typically priced low and used for short-durations and, therefore, can rarely successfully compete for R&D dollars against more expensive drugs including those that treat chronic diseases.

- The human costs of drug-resistant bacterial infections are high and growing. Approximately 100,000 Americans will die this year due to antibiotic-resistant infections including those due to highly problematic, drug-resistant GNB such as *Acinetobacter*, *Klebsiella* and *Pseudomonas aeruginosa*. In March 2013, the Centers for Disease Control and Prevention (CDC) issued a Vital Signs report highlighting what they termed a new “nightmare bacteria” — carbapenem-resistant Enterobacteriaceae (CRE), which kills 50% of infected patients. Antibiotics also are essential tools for protecting Americans against bioterror threats.
- The economic costs are high as well. Drug-resistant bacterial infections cost the U.S. health care system an estimated \$21 billion annually (including 8 million additional hospital days) and \$34 billion in Societal costs..

Fungi (e.g., *Candida*, *C. albicans*, *Aspergillus*, etc.) similarly cause a large number of serious, invasive (blood-stream), often fatal infections in the U.S. The most common fungal infections are become increasingly resistant to the few available antifungal drugs on the market. Invasive fungal infections are associated with extremely high mortality rates (e.g., mortality rates for invasive aspergillosis and mucormycosis have reached 70%).

- Antibiotics provide unique value to our society. They have changed the course of medicine. If the antibiotic crisis is not addressed soon, we face a future that resembles the days before these miracle drugs were developed – one in which people died of common infections and many medical interventions that we now take for granted become impossible, including care for premature infants, surgery, chemotherapy, organ transplantation and even dentistry for some patients (such as those with hip replacements).
- Antibiotics also have had a profound impact on public health. Antibiotics protect many lives, not just the life of the patient at hand, because their use prevents the spread of bacterial infections from person-to-person, which can wreak havoc across populations and disproportionately affect our most vulnerable patients. Few medicines can boast such an achievement.

Congressional Action to Date and IDSA’s Proposed Transferrable R&D Tax Credit

- Congress has recognized the need for federal action to address this patient care, public health and potential national security problem. In 2012, Congress enacted an incentive (5 years additional exclusivity) for antibiotics and antifungals in the Food and Drug Administration Safety and Innovation Act (FDASIA).
- While FDASIA was an important first step, experts agree it will require a combination of “push” and “pull” incentives to revitalize the antibiotic and antifungal pipelines. Such incentives include targeted and transferrable R&D tax credits as well as new reimbursement models that delink the volume of antibiotics sold from drug companies’ return on investment [based on the premise that broad marketing of antibiotics leads to greater use (both appropriate and inappropriate), which then leads to greater, more rapid development of drug resistance].
- If Congress fails to sufficiently incentivize antibiotic and antifungal R&D, this crisis will deepen, more lives will be lost, and more health care dollars will be needlessly spent.
- While the federal tax code provides a credit for research and experimentation (commonly known as the R&E or R&D tax credit), the incentive has not proved to be enough to stop the

steady and steep erosion of research in the antibiotic and antifungal drug area. In a recent round of discussions with tax representatives of several pharmaceutical companies (large and small companies), it became clear that additional federal tax incentives are needed to halt the decline of research in this area. The companies focused on the large expenses incurred in conducting clinical trials and cited the orphan drug 50% R&D tax credit as a potential model for a new tax incentive for research on antibiotic and antifungal drugs.

- Given this, IDSA is launching an effort to enact a new federal tax incentive for research on antibiotic and antifungal drugs. The key elements of the new tax incentive are as follows:
 - ✓ Establish a new provision under Internal Revenue Code §45 -- Clinical Testing Expenses for Antibiotic and Antifungal Drugs.
 - ✓ Provide a credit of 50% of the qualified clinical testing expenses for the taxable year.
 - ✓ Use the basic structure of the Orphan Drug Tax Credit (IRC §45C) the R&D tax credit (IRC §41), and:
 - Replace §41 language “qualified research” with “clinical testing,” and
 - Increase to 100% from 65/75% the level of contract research expenses that would be treated as clinical testing expenses.
 - ✓ Clinical testing conducted outside the U.S. would not be an eligible expense, unless there is an insufficient U.S. testing population and the testing is conducted by a U.S. person or by another person not related to the taxpayer.
 - ✓ Clinical testing expenses would not include amounts funded by a grant, contract or by another person or governmental entity.
 - ✓ Clinical testing expenses must relate to a “qualified infectious disease product,” defined under FDASIA as antibacterial or antifungal drugs for human use intended to treat serious or life-threatening infections, including those caused by resistant pathogens, including novel or emerging infectious pathogens, or qualifying pathogens listed by the Secretary. Under FDASIA, FDA is required to designate those drugs that qualify for FDASIA’s 5-year exclusivity incentive. That same designation would be used to qualify eligible drugs for the proposed R&D tax credit.
 - ✓ The provisions of the credit would be applied separately to each designated “qualified infectious disease product” tested by the taxpayer and would be applied only to expenses incurred in phases 2 and 3 of clinical testing.
 - ✓ Unused credits would be transferable for use by a qualified pharmaceutical research taxpayer, which is defined as any domestic corporation the primary mission of which is pharmaceutical research or development. This will enable emerging (small) companies without tax liability to sell the credit to established, profitable companies so that the emerging company may then invest this sales income into additional drug R&D.
 - ✓ Qualified clinical testing shall be taken into account in determining base period research expenses for applying the R&E tax credit (IRC §41) to subsequent taxable years.
 - ✓ The Antibiotic and Antifungal Drug Transferrable R&D Tax Credit would be permanent.
- IDSA is currently working with Ernst and Young to develop a cost estimate for this proposal, which we hope to share with the Committee in early summer 2013.