

Tackling Antibiotic Resistance

Tom Lowery, Ph.D., Chief Scientific Officer, of T2 Biosystems, discusses the growing threat of antibiotic resistance.



Dr. Tom Lowery

ies. Clinical trials is another area where a rapid diagnostic paired with the right antibacterial treatment can have a big impact.

➔ **PV:** *How can the healthcare system address antibiotic resistance?*

LOWERY: The CDC is developing guidelines that focus on new approaches. One approach is the creation of Antibiotic Stewardship Programs in hospitals to regulate and monitor how antibiotics are used. These committees aim to find the most efficient way to use drugs and diagnostic tests to have the biggest impact on patient care. These programs aim to increase infection cure rates, reduce treatment failures, and increase frequency of correct prescribing for therapy. All of this should also have a significant impact on reducing costs.

➔ **PV:** *How can the pharma industry impact antibiotic resistance?*

LOWERY: Those on the pharma and diagnostics side have an opportunity to come together and make an impact on patient outcomes and health-care costs. Pharma has the tools and the ability to develop targeted drugs for specific types of infections. Diagnostics companies have the ability to develop breakthrough ways of determining the strain of the organism in a matter of a few hours. They need to work together to make sure that the test panels match the pathogen that needs to be detected rapidly. They can also work together during the clinical trial stage of development so that the size of the clinical trial and the cost of the clinical trial can be greatly reduced. **PV**

The CDC's Action Plan

- » Avoiding infections in the first place reduces the amount of antibiotics that have to be used and reduces the likelihood that resistance will develop during therapy.
- » CDC gathers data on antibiotic-resistant infections, causes of infections, and whether there are particular reasons that caused some people to get a resistant infection.
- » Perhaps the single most important action needed to greatly slow the development and spread of antibiotic-resistant infections is to change the way antibiotics are used.
- » Because antibiotic resistance occurs as part of a natural process in which bacteria evolve, we will always need new antibiotics to keep up with resistant bacteria.

Source: Centers for Disease Control and Prevention

➔ **PV:** *Why is antibiotic resistance an issue?*

LOWERY: Antibiotic resistance is something that impacts patients' lives. It hits the sickest patients — for example, those in the ICU or those who suffer immune-compromised diseases — who are most

susceptible to infection. Sepsis, for example, is the top 10 cause of death in the United States, but it is the most expensive hospital-treated condition in this country. Additionally, infections caused by fungus like *Candida* or by some bacteria don't always respond to the antimicrobial therapies. This increases the amount of time and money spent on ineffective drugs and also increases the rate of antimicrobial resistance. When patients don't get the right therapy, mortality rates go up.

There is a need for a quick and accurate diagnostic that can identify the pathogen, allowing for delivery of the accurate therapy that can kill the pathogen. It is a complex problem. The Centers for Disease Control is beginning to shine a light on this matter.

➔ **PV:** *Why have infections become resistant to therapies?*

LOWERY: A patient, for example, may have a fever of unknown origin. There are a lot of antimicrobials, antifungals, and antibiotics at physicians' disposal. Doctors will take a blood draw and send it out for a diagnostic test and get the result in two to five days. But they need to start the treatment immediately to help the patient so they are forced to make a decision based on their judgment.

Often doctors will use a combination of antimicrobials. That is in the best interest of the patient, but this can breed resistance. If the bug doesn't get knocked out by the antimicrobial the doctor chooses, resistance can develop over time not only in that patient but in the population as whole.

Antibiotics are being used with good intent by physicians, but it is often not targeted use. The physicians just doesn't have the information about the underlying pathogen to use antibiotics appropriately. Until they get that information, which can take days, they don't know what species or what strain of organism. So they have to guess.

Pharmaceutical companies also have to be able to identify the pathogens during clinical trials so that the right patients can be enrolled into stud-

Antibiotic Resistance Facts

- » Each year in the United States, at least 2 million people become infected with bacteria that are resistant to antibiotics.
- » In the United States alone, drug-resistant bacterial infections cause about 23,000 deaths each year.
- » These infections cost the U.S. healthcare system \$20 billion annually in direct costs with an additional estimated \$35 billion in lost productivity.
- » Additionally, almost 250,000 people each year require hospital care for *Clostridium difficile* infections. In most of these infections, the use of antibiotics was a major contributing factor.
- » At least 14,000 people die each year in the United States from *C. difficile* infections.
- » Antibiotic-resistant infections can happen anywhere. Most deaths related to antibiotic resistance happen in healthcare settings, such as hospitals and nursing homes.
- » The use of antibiotics is the single most important factor leading to antibiotic resistance around the world. Up to 50% of all the antibiotics prescribed for people are not needed or are not optimally effective as prescribed.
- » Antibiotics are also commonly used in food animals to prevent, control, and treat disease, and to promote the growth of food-producing animals, but the use of antibiotics for promoting growth is not necessary.
- » The other major factor in the growth of antibiotic resistance is the spread of the resistant strains of bacteria from person to person, or from the non-human sources in the environment, including food.

Source: Centers for Disease Control and Prevention

Not Your Traditional Call Center

customer
experience center
a **trialcard** company



ON A RECENTLY COMPLETED CAMPAIGN, TRIALCARD'S CUSTOMER EXPERIENCE SPECIALISTS:

REACHED THE TARGET PRESCRIBER **60% MORE** OFTEN THAN STANDARD TELE-DETAILING

COMPLETED THE CAMPAIGN AT **7% OF THE COST** FOR A TRADITIONAL SALES FORCE

The TrialCard Difference

p 1.877.343.1238

e cxcenter@trialcard.com

w www.trialcard.com



#YourExperienceMatters



trialcard[®]



Analytics

Product launch to peak sales. Faster.

Which prescribers are worth pursuing? How many sales reps is too many? What messages are breaking through the competitive clutter? The quicker you get the answers, the healthier the return on investment.

With expiring patents, generic pricing, stalled pipelines and personalized medicine putting the pressure on, sales and marketing analytics is now a top priority for optimizing contact strategies, collaborating with payers and improving health outcomes.



Visit us
sas.com/LScommercial




THE POWER TO KNOW.