

A Glimpse into the Future: The Use of Antimicrobials in Healthcare in 2016

In the U.S., an average of two million people become ill with antibiotic-resistant infections, many of which have exceptionally high mortality rates, each year. On top of that startling statistic, the Affordable Care Act (ACA) has provisions that financially penalize facilities with high infection rates, and increasingly informed, connected healthcare consumers are using tools like Medicare's "Hospital Compare" to make decisions about where to go for quality care.

All of these factors are forcing healthcare providers to put more pressure on medical-device manufacturers and other suppliers to share in the responsibility. Some of the country's largest health systems are also embarking on pay-for-performance contracts, which will significantly impact how (and if) a supplier is paid based on how well its products work.

These shifts in healthcare will essentially change the suppliers' role in the industry – especially when it comes to infection prevention, and greatly impact how both providers and suppliers think about the use of antimicrobials this year.

Antimicrobial Use: Today and Tomorrow

The use of antimicrobial-embedded medical devices has grown in popularity as a second line of defense against infection, but much more has to be done. In addition to following vigilant guidelines and changing staff behaviors, the use of antimicrobials in more products and surfaces will be the third component within more stringent, effective infection-prevention plans.

Every single surface in the healthcare setting needs to be looked at as a potential conduit of infection. The use of antimicrobials on devices such as catheters and endoscopes has proven to have high-kill rates against some of the most dangerous strains of bacteria. To help manufacturers better play their parts in the new age of healthcare, this year will see the use of proven antimicrobial technologies in a much larger array of products and surfaces throughout healthcare.

In light of these changes, Sciessent has identified the five biggest trends that will greatly change how and when antimicrobials are leveraged in healthcare this year.

1. Designing for Infection Prevention

Traditionally, the onus of infection prevention has fallen on hospitals. But with the shifting of responsibility within healthcare, med-device manufactures have an increasingly critical role to play – especially since devices are major conduits of infection. While many manufacturers have found ways to incorporate antimicrobials onto the surfaces of already-designed medical devices, which adds another layer of protection for patients, more must be done.

This year, manufacturers will begin to employ infection-prevention strategies much earlier in the lifecycle of a product. While designing for infection prevention is a new concept, to play their part in improving patient care, manufacturers will work to:

- Better educate design teams on the risks associated with products
- Experiment with the design of easy-to-clean devices and components, including the use of smooth surfaces, curved corners and fewer crevices
- Incorporate more active surfaces, which perform a function, vs. passive surfaces that can promote bacterial attachment
- Consider disposable options for reusable devices

Responsibility will also fall on compounders, who have traditionally only offered materials in bulk, to provide smaller quantities of polymers and other materials to facilitate easier and faster infection-prevention R&D for designers.

2. Antimicrobials and Permanent Implants

While the healthcare industry has recognized the need for antimicrobial-treated permanent implants for some time, it has taken a while for manufacturers to find the right technologies and gain the regulatory approvals to make it happen. This year, the industry will see an increase in the availability of antimicrobial-embedded permanent implants. This will be due mainly by the ACA-driven changes in reimbursement for surgical-site infections.

3. The Use of Antimicrobials in 3D Printing

Personalized medicine has always been cited as the future of healthcare, and the use of 3D printing technologies is making it happen today. Custom implants are already on the market, providers are actively exploring ways to improve patient treatments with 3D printing and the government is even experimenting with it to better aid soldiers injured in battle. And while 3D printing technologies provide, at times, better treatment options, these “parts” are not exempt from being potential conduits of dangerous infections. The use of antimicrobials within the printing materials will drastically rise this year. Whether they are compacted into the surface or blended into the materials, antimicrobials will play a large role in ensuring that these customized components do not become gateways for harmful bacteria.

4. Reevaluating the Safety of Reusable Devices

With the high-profile outbreak of deadly healthcare-associated infections (HAIs) linked to endoscopes, and recent studies showing the presence of [HPV on “disinfected” ultrasound wands](#), healthcare organizations are taking a much closer look at the safety of reusable devices. To test for the presence of bacteria on reusable devices takes time and there are no instant-feedback options available to make that happen. A time lag like this is simply unrealistic for healthcare. With the rise of increasingly deadly strains of bacteria, the use of embedded antimicrobials will be seriously considered for reusable devices – not just in hospitals, but also in doctors’ offices, clinics and all healthcare settings.

5. The Protection of All Surfaces, Not Just Devices

As noted above, the use of embedded antimicrobials in medical devices – especially those that are known conduits of infections (catheters, endoscopes, etc.) – has rapidly increased in popularity. But the healthcare industry has a long way to go in terms of protecting all of its surfaces: things like workstations bed rails, doorknobs, tables and even ductwork for air conditioning.

In addition to medical devices, it has been found that the environment can act as a harbinger of dangerous infections. This is due to general human error that comes from standard disinfection and, at times, untrained environmental services firms that often experience high turnover rates. In 2016, the incorporation of antimicrobial surfaces into patient rooms, operating rooms and all other locations within the healthcare setting, will be increasingly common as yet another layer of infection prevention for patients.

While the healthcare industry has won a few battles against antibiotic-resistant infections, it is still losing the war in thoroughly protecting patients from these deadly illnesses. Every organization across the continuum of healthcare has a role to play in strengthening infection prevention – and the use of antimicrobials is being looked at to play a big part in eventually winning the war against infection.