



Nanotech Wages War on Infections

Jack McMaken, President and CEO, AcryMed -- 5/12/2008

The medical community faces mounting pressure to prevent hospital-acquired infections, says Jack McMaken, president of Oregon-based [AcryMed](#).

What is the makeup of your infection-fighting nanomaterial, SilvaGard?

Made of pure silver, these particles measure about 10 nm in diameter. We manufacture them in a proprietary solution and then treat the devices we coat in the same solution. SilvaGard-treated surfaces can provide for a programmable duration of antimicrobial efficacy — lasting days, weeks or months. Our patent-pending process basically grows nanotech particles on the surface of medical devices. SilvaGard particles tightly adhere to these surfaces, requiring no intermediate binder layer. Nor do these particles change the mechanical or physical properties of the device to which they are applied.

Why was this new material developed?

We started our company about 15 years ago, developing wound-care products, such as gels and dressings that incorporate the antimicrobial properties of ionic silver to fight infections. Then we began to see the potential of these particles to treat medical devices that penetrate the skin, such as central venous catheters, urinary catheters and feeding tubes. In such applications, there's a natural exposure to pathogens outside the body that want to colonize those catheters. In addition, you have another category of devices, such as implanted pacemakers and orthopedic devices, whose surfaces are also susceptible to the formation of biofilms that can cause very serious systemic infections in patients. So you have an individual coming into the hospital for a knee implant and coming down with a hospital-acquired infection. That shouldn't happen. The hospitals ought to be able to prevent those infections. And what's happened recently is that Medicare and insurance companies are balking at reimbursing hospitals for such infections. The hospitals in turn are putting pressure on medical device manufacturers to do more to prevent this problem.

How serious is this problem?

About one in 20 people who go to the hospital get some type of infection. The Centers for Disease Control estimates that 2 million U.S. patients a year acquire hospital-related infections. These infections cost an average of \$47,000 per patient to treat and cause 90,000 deaths each year. The added cost to hospitals is \$4.8 billion annually in extended care and treatment.

What devices incorporate SilvaGard?

The first FDA-approved application was for I-Flow Corp.'s SilverSoaker catheter, a nylon polymer device that delivers a local anesthetic for pain relief during surgery. I-Flow did not have a problem with infections, but the company wanted to make sure that they were doing everything possible to prevent them. Late last year, the FDA also approved use of our coating on Baxter Healthcare's needleless V-Link connectors, made from polycarbonate, which sit outside the body and connect catheters to IV bags or IV pumps. Beyond these public examples, we have development partnerships with companies in the field of orthopedics, where we are treating metals. We have agreements with other companies in applications using Teflon and are working with several firms in various catheter and stent applications. In addition, there is potential for using the coating in clothing, such as garments for surgery.

Author Information

Jack McMaken has served as president and CEO of AcryMed, Beaverton, OR, since 1997. Before joining the company, he was director of business development for Kimberly-Clark.