

Dr. Fred Sweet: 4 Points on a New Method Proven to Reduce Spine Surgical Site Infection

Written by Laura Miller | [May 26, 2011](#)

Fred Sweet, MD, a spine surgeon with Rockford Spine Center, discusses four points on the new method of infection control to combat evolved forms of MRSA in orthopedic and spine surgery patients.

1. Regular antibiotics may not be enough. Most surgical site infections occur from contamination during a surgical procedure, which can include a flake of skin, dust or hair making its way into the wound intraoperatively. Staph infections are among the most common infections to occur because there are staph organisms everywhere, says Dr. Sweet. Studies have shown that 70 percent of surgical sites become contaminated within the first 30 minutes of surgery, and most healthcare providers administer antibiotics to patients through their veins an hour before the procedure begins to prevent infections. When patients began receiving pre-surgical antibiotics regularly, about 25 years ago, the infection rate dropped significantly. However, bacteria have become increasingly resistant to the antibiotics.

"We started noticing the emergence of MRSA and other Staph bacteria that were resistant to most antibiotics we use," says Dr. Sweet. "One of the problems with orthopedic surgery is that we are placing foreign objects in the body and if those are infected, the infection can hide within the implants and re-emerge later. One of the reasons we were seeing more of these infections is over half of Staph organisms found in hospitals are resistant to the normal antibiotics." Research has shown that the drug vancomycin is able to take on the evolved MRSA, but administering vancomycin comes with its own set of challenges.

2. Problem with vancomycin. The traditional antibiotics were administered orally or intravenously, but neither tactic works well with vancomycin. "Surgeons found administering vancomycin through the IV does not substantially reduce surgical infections more than regular antibiotics. Although vancomycin works against the bacteria, you can't give it to patients in high enough doses without hurting them as well," says Dr. Sweet. Too much vancomycin could cause several complications, including kidney damage and blood pressure drop. Oral administration of the drug also proved ineffective. "You can't take it by mouth and absorb it appropriately," Dr. Sweet says. "We needed a way to get the vancomycin into the wound with a high enough concentration to kill the bacteria, but with a low enough dose so patients wouldn't experience negative effects." As a solution, he decided to administer the vancomycin in powder form directly onto the wound to combat surgical site infections.

When vancomycin arrives to the healthcare provider, it comes in powder form for pharmacists to mix with saline to create the IV solution. Dr. Sweet took out the middle step. "I open the powder and sprinkle it inside the patient before closing the wound," he says. "It cost \$6 per patient and infections are much more expensive."

3. Study results support directly administering vancomycin to the wound. Dr. Sweet and his colleagues conducted a study to see if his method of administering vancomycin directly to the wound was beneficial. He recorded the results of 821 patients who received traditional antibiotics intravenously and 911 patients who received vancomycin directly into the wound. "The infection rate among the vancomycin group dropped ten-fold," says Dr. Sweet. "On all the patients, we ran blood tests and measured kidney infections, blood pressure, blood loss and healing."

The surgeons also measured the amount of vancomycin that was absorbed into the blood through Dr. Sweet's method. When the drug is in the blood stream, patients run the risk of damaging internal organs and fostering bugs that are resistant to the drug. However, the researchers found no detectable vancomycin in the bloodstream. "It stayed in the wound where it needed to be," Dr. Sweet says.

4. Spreading and validating results. Since the study, Dr. Sweet and his colleagues have presented their methodology at several professional spine and orthopedic organizations around the world. Orthopedic surgeons have also found administering vancomycin directly to the wound beneficial for joint surgeries, and the method could theoretically hold for reducing infection of most surgeries across the board.

"The national infection rate is between 2 and 3 percent and in the study it was 0.2 percent," he says. "If you look at the number of healthcare dollars, it really could save this country billions of dollars in infection healthcare spending. There are several deaths from post-surgical MRSA infections in this country and this could have a huge impact on infection rate and save many lives. "

In addition to his own group, Dr. Sweet says several practices and providers have adopted this method for infection control during spine surgery. An article on his findings has also been accepted to Spine and slated for publication in the near future.

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