

DR. DAROUICHE

Finding Solutions for Device-Related Infections: Cost, Catheter Placement and New Alternatives

NARRATOR: Welcome to Knowledge is Infectious.org. Today we are talking with Dr. Rabih Darouiche, Professor of Medicine and Physical Medicine and Rehabilitation, and Director of the Center for Prostheses Infection, Baylor College of Medicine, and Michael E. DeBakey Veterans Affairs Medical Center, Houston, Texas. Hospital-acquired infections affect millions of patients worldwide, and Dr. Darouiche's research touches on this very issue, with special emphasis on infections associated with medical devices, one of the major sources of nosocomial infections. He has published more than 100 peer-reviewed articles, has written a dozen textbook chapters on this issue, and holds 12 patents that describe innovative measures for the prevention and treatment of device-related infection. Dr. Darouiche talks with our Capella Tucker about the seriousness of one type of medical-device infection — catheter-related bloodstream infections — and the impact these infections have on patient care and health care costs.

C. TUCKER: How did you become interested in this topic?

DR. DAROUICHE: I became interested in the general topic of device-related infections while I was pursuing my infectious disease fellowship. I happen to firmly believe that the best research you can perform is the research that aims to answer or find solutions for clinical and perplexing situations. At that time, in the early 1990s, it was obvious that about 2 million cases of nosocomial, that is hospital-acquired, infections occurred each year in the United States. About half of those cases, that is about 1 million of nosocomial infections, actually were associated with some type of indwelling medical device; it could be a bladder catheter, it could be a central venous catheter, or it could be a surgical implant. Now, although bladder catheters are the most commonly inserted catheters, the potential consequences of infection of bladder catheters generally are less serious than those associated with infection of vascular catheters. So that is why I started my work on preventing device-related infections: by pursuing measures, innovative measures, to prevent infection associated with the most common implanted medical device, which is bladder catheters, as well as with central venous catheters, because they are associated probably with the most serious complications.

C. TUCKER: How is your research being received by your peers?

DR. DAROUICHE: I think it has been received exceedingly well, locally, nationally, as well as internationally.

C. TUCKER: I guess this is a topic that interests them also, in being able to provide better treatment for their patients.

DR. DAROUICHE: Yeah, you see, the thing about catheters is that catheters are here to stay. Catheters will never go away. In fact, the rate of usage of central venous catheters continues to escalate. Because, at least in the United States, we have a generally older population now than we used to two decades ago. And, because of other advances in the medical field, we are able to keep relatively sicker patients alive. That is why if you combine older age with more serious illnesses, you end up with a population with a high risk for developing catheter-related infection.

C. TUCKER: Why do central venous catheters present an infection problem for patients?

DR. DAROUICHE: Central venous catheters cause a unique problem to patients because of two reasons; one is because they are very commonly utilized. At the present time, about 6 million central venous catheters are inserted each year in the United States. About four and a half million of those are short-term catheters that remain in place between seven to 10 days on average. About a million and a half catheters are considered long-term, which remain in place for an average of months, and sometimes even years. The second reason they are important is because once infection occurs, the potential medical and economic consequences are tremendous. In terms of medical consequences, that can include mortality, which can be as high as 25 percent in critically ill patients, and of course less so in patients residing on regular nursing floors in terms of morbidity and development of disseminated infection in other bodily sites.

C. TUCKER: What is the range of problems that can develop?

DR. DAROUICHE: There are a number of potential complications, infectious complications, of inserting central venous catheters. Although the most common serious complication is bloodstream infection, which occurs in an average of about 4 to 5 percent of inserted catheters. However, there are some more infectious complications, which are less serious, so patients can have what we call exit-site infection, which is inflammation around the site of catheter insertion. And, in patients that receive long-term tunneled central venous catheters, they can also develop a tunnel infection, which unlike exit-site infection, but like bloodstream infection, generally requires the removal of the infected catheter in order to achieve cure of infection.

NARRATOR: Rabih Darouiche is the co-inventor of the minocycline rifampin technology, and this technology is licensed to Cook Medical. Dr. Darouiche is entitled to compensation through a royalty-sharing contract with the Baylor College of Medicine.