

# Ertapenem Effective for Diabetic Foot Infection

*Response to the single drug was similar to that of the combination of piperacillin and tazobactam.*

BY MITCHEL L. ZOLER  
Philadelphia Bureau

WASHINGTON — Once-daily treatment with ertapenem was as safe and effective as a four-times daily regimen with two other antibiotics for treating diabetic patients with moderate to severe foot infections in a controlled study with 445 evaluable patients.

"This is the largest and most comprehensive randomized controlled trial of treatment of moderate to severe diabetic foot infection to date, and the only one with a double-blind design," Benjamin A. Lipsky, M.D., said while presenting a poster at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

The study was sponsored by Merck, which markets ertapenem (Invarez).

The multicenter study enrolled adult

men and women with diabetes and a moderate to severe foot infection that required 5-28 days of treatment with a parenteral antibiotic. Patients were randomized to intravenous treatment with either 1 g of ertapenem once daily, or 3.375 g of piperacillin plus tazobactam every 6 hours. Patients could continue on the intravenous regimen, if needed, for up to 28 days, but patients who were treated for at least 5 days and met certain clinical criteria for improvement were switched to an oral regimen with amoxicillin and clavulanate.

The study's primary outcome was the percent of patients who achieved a favorable response of cure or clinical improvement by the time their intravenous therapy was stopped. The study was designed to test whether ertapenem was not inferior to the comparator regimen.

Randomization placed 289 patients in

the ertapenem group and 287 in the piperacillin plus tazobactam group. For the primary end point, 226 patients were evaluable in the ertapenem group and 94% had a favorable response by the time their intravenous treatment was stopped, as compared to a 92% response rate among the 219 evaluable patients in the comparator group, reported Dr. Lipsky, professor of medicine at the University of Washington, Seattle. The difference between the two groups was not statistically significant.

The two regimens also had identical effects when assessed by the study's secondary efficacy outcomes: the percentage of patients with a favorable response 10 days after antibiotic therapy was stopped, and the percentage of patients who had both a favorable clinical response and either microbiologic eradication or pre-

sumptive eradication by 10 days after treatment was stopped.

The safety profiles of the two regimens also were very similar. The fraction of patients with one or more adverse events was identical in both groups, 47.4%, and the fraction with serious, drug-related adverse events was also identical, 0.3%.

Dr. Lipsky reported at the conference, which was sponsored by the American Society for Microbiology.

The fraction of patients who stopped therapy because of drug-related adverse events was 1.0% in the ertapenem group and 2.1% in the piperacillin plus tazobactam group. The most common adverse events in both groups were diarrhea, nausea, and headache, although diarrhea was more common among patients treated with piperacillin plus tazobactam. ■

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## Resident Reward Program Leads to Increased Diabetic Foot Exams

BY ANNE SCHECK  
Contributing Writer

SAN FRANCISCO — To improve the level of foot care that family medicine residents provided to diabetic patients, their teachers at the Medical College of Wisconsin put a sock in it.

Literally.

"We came up with this idea that to bring [diabetic] foot care to a level we wanted it to be, we should award a pair of socks to every physician who helped us get there," said Robin Helm, M.D., associate director of the St. Michael Hospital Family Practice Residency Program in Milwaukee.

The effort was designed to raise compliance with the foot-exam benchmark of the Diabetes Physician Recognition Program, a national quality-of-care project of the American Diabetes Association and the National Committee for Quality Assurance.

For compliance checking, electronic medical records were analyzed for all 18 residents and 6 faculty members who treated or examined diabetes patients. What impact did the socks have? Compliance soared to 85%.

Dr. Helm outlined what was jokingly referred to as "the sock-it-to-'em program" at the annual meeting of the Society of Teachers of Family Medicine. She and Beth Damitz, M.D., the medical director of the program's family care center, gave an informal talk, along with Sandra Olsen, the



Regular foot exams can help prevent the formation of diabetic foot ulcers, such as the one pictured here.

program administrator. All three were stunned to see the rates of compliance zoom, once the socks were dangled as an incentive.

"I tried to get bright, fun sort of socks. But they were from just a regular store, maybe a little flashier, but nothing special," Dr. Helm said. In fact, some male residents thought the socks were "too feminine," so the trio found key-chains with charms of tiny feet. "This was given instead of socks to them, but it had the same effect."

"At first it seemed kind of goofy," Ms. Olsen said. However, at the monthly meetings of faculty and residents, a "big deal" was made when the socks were ceremoniously handed out. "After a while, we had residents who said 'I know I should qualify, and I haven't gotten my socks yet!'"

observed Dr. Helm.

The physician recognition program's benchmark for diabetic foot exams is 75% compliance, and the "rates started out dismally, at about 5%," Ms. Olsen said at the meeting sponsored by the American Academy of Family Physicians. Now, with 600 diabetic patients being seen intermittently, the rate is inching to 90%.

Another reason for the now-high compliance may be that letters are sent out to all patients, reminding them to bare their feet during visits. Dr. Helm said she did not know why the initial foot exams were so rarely undertaken. She speculated that some residents may have thought it invasive to have a patient remove shoes and socks after they reported no problems with their feet. ■

## Outcomes of Staph Wound Infections Worse in Diabetes

BY KERRI WACHTER  
Senior Writer

ATLANTA — Diabetes appears to be a predictor for identifying which patients with *Staphylococcus aureus*-infected wounds will develop severe complications or even die as a result, according to a study presented at the annual meeting of the Wound Healing Society.

"The presence of diabetes was the strongest predictor of severe outcome," said Lisa Tibor, M.D., of the University of California, San Francisco.

To assess potential clinical predictors of outcome, the researchers reviewed charts of patients identified with *S. aureus* infection during routine care. Investigators studied wound type and location, relevant comorbidities (diabetes and peripheral arterial disease), antibiotic resistance as reported for treatment protocol, and outcome. Severe outcomes were defined as amputation, sepsis, or death.

Overall, 38 strains of *S. aureus* were identified from wounds of patients at the University of Tübingen (Germany) hospital, from September to November 2001.

Almost 60% of diabetic patients had severe outcomes. In comparison, no nondiabetic patients with peripheral arterial disease had severe outcomes.

The researchers also looked

at possible bacterial markers for poor outcomes. In particular, they evaluated antibiotic resistance and a molecular marker called the *S. aureus* repeat (STAR) element. The STAR elements are variable-length nucleotide regions on the bacterial chromosome. Select STAR element groups were used as markers for methicillin resistance in this study.

The researchers hypothesized that infections caused by methicillin-resistant *S. aureus* strains (identified by STAR group) are bacterial indicators of poor patient outcome.

Antibiotic resistance of each strain was tested by plating the strains on antibiotic-coated agar. Polymerase chain reaction was used to identify STAR element groups for each strain.

There was a trend suggesting methicillin resistance was associated with severe outcome. About 40% of patients with methicillin-resistant *S. aureus* strains and 20% of patients with methicillin-susceptible strains that were resistant to other antibiotics had severe outcomes. Dr. Tibor noted that one patient with an apparently nonresistant strain had a severe outcome. However, there was no clear association between STAR group and severe outcome.

This study was part of a larger one to characterize strains of *S. aureus* at the molecular level. ■