According to Stedman's Medical Dictionary (2000, 27th Edition), “diabetes mellitus affects at least 16 million Americans, ranks seventh as a cause of death in the United States, and costs the national economy over $100 billion yearly.” Diabetes results in the impairment of the ability to properly store and utilize glucose. Diabetics have a high incidence of obesity, high blood pressure and long-term microvascular complications which can cause defects in eyesight (retinopathy), neurons (neuropathy), especially in the lower limbs, and kidneys (nephropathy).

Consequently, diabetics have long been recognized as being at high risk for cardiovascular disease. As cardiac surgery developed over the past 50 years, it was noted that a large number of these patients had diabetes, and with it a higher incidence of complications and mortality than non-diabetics.

Dr. Anthony Furnary, cardiac surgeon at St. Vincent's Medical Center in Portland Ore., having dealt with the many complications and mortality of these diabetic surgical patients, sought to improve their operative results. He noted that of the approximately 1,000 U.S. hospitals carrying out cardiac surgery, there was no single accepted treatment for handling the blood sugar level of the diabetic patients prior to, during or post-surgery. They either got too much or too little insulin, usually by injection.

Furnary studied approximately 4,000 patients who had undergone cardiac surgery since 1987, and concluded that the disordered metabolic state caused by high glucose levels was the basis for the complications experienced by diabetic patients. He felt that the high glucose levels indicated that the metabolism of the heart was using fatty acids as energy sources and not using glucose. This has been shown to be detrimental to heart function.

To change all this, Furnary proposed the “Portland protocol,” an intravenous drip of insulin given to diabetics two or three days before, during and two days after surgery. This insulin treatment acts to bring down the sugar level of 250-300 mg/deciliter, once thought to be an acceptable level, to a maintenance level closer to the normal level of 60-120 mg. When he used this protocol, he found a dramatic reduction in complications.

The medical literature reports an overall death rate for cardiac surgery patients of 2.7 percent, while that for diabetics is around 4.5 percent. By following the IV insulin protocol, Furnary has decreased that rate to 2.5 percent for his diabetic patients.

Furnary reports that the protocol has not yet been widely adopted. His most recent investigation revealed that only 5 to 10 percent of hospitals were using the IV insulin drip. Some hospitals remain skeptical because of the lack of a randomized controlled study. Others have questioned whether the results are due to the insulin entering the heart or the reduced blood sugar level that results in improved heart function.

However, Dr. Lawrence Cohn, cardiac surgeon at Brigham and Women's Hospital in Boston, who started the Portland Protocol two years ago, concluded that the data are incontrovertible. He has found only minimal complications in his patients, compared to a variety of complications that arose before they began using the IV insulin drip. Dr. Timothy Gardner, spokesman for the American Heart Association and professor of cardiac surgery at the University of Pennsylvania, has reported that “around the country and the world, most people are now being much more aggressive about maintaining tight glycemic control in our patients.”

Dr. Furnary commented that while he could help about 250 patients a year in his private practice, widespread adoption of the Portland Protocol could save 2,500 to 2,600 lives per year in the U.S.

Dr. Michael Fiocci, cardiac surgeon at Baltimore’s Union Memorial Hospital, and Dr. Marc Sussman of Johns Hopkins Bayview, and Dr. Peter Chu of Sinai Hospital have been using the IV insulin drip during and after surgery on their diabetic patients. They concur with Furnary in the marked improvement in lowering complications and infection.

I invite my readers to submit their comments on this or related topics by sending an e-mail to me.

Robert S. Coplan, M.D., M.P.H., has spent a half century studying, practicing and writing about medicine and issues facing the health care and biotechnology industries.

Reprinted with permission of The Daily Record Co. ©2004