

# Use Of Insulin Pen May Save Diabetics Thousands Of Dollars

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Diabetics who need to switch from oral medications to insulin could reduce their annual healthcare costs up to \$17,000 by using an insulin pen instead of a syringe to deliver their daily dose of medication.

A new study found that using an insulin pen may result in fewer trips to the emergency department and to the doctor's office, resulting in substantial savings to diabetics and their insurers.

“For one, there is less chance of getting the wrong dose of insulin,” said Rajesh Balkrishnan, the study's senior author and the Merrell Dow professor of pharmacy at Ohio State University. “Diabetics who use syringes must carefully measure their insulin, so there is a risk of getting too much or too little.”

The pen contains a pre-measured dose of insulin in a disposable cartridge. Users simply push a button on the pen, and the proper dose of medication is injected through a needle. A syringe user must extract the exact dose of insulin from a vial.

The findings appear in a recent issue of the journal *Clinical Therapeutics*.

The Centers for Disease Control and Prevention estimates that 21 million people in the United States are diabetic. Experts say the disease accounts for \$132 billion in health care expenditures each year.

Balkrishnan and his colleagues followed more than 1,300 diabetic adults

enrolled in a Medicaid program in North Carolina . Each patient had failed treatment with oral medications prescribed to control the symptoms of their disease and had begun insulin therapy. Oral drugs are typically the first course of treatment when someone is initially diagnosed with type II diabetes.

The researchers compared 1,162 patients who started insulin therapy with a syringe to 168 who began their therapy with a pen. Patients in the pen group used either the NovoPen or the FlexPen, which are both manufactured by the pharmaceutical company Novo Nordisk.

The researchers tallied all healthcare costs related to diabetes, including visits to an emergency room, hospitalizations, outpatient visits, prescription costs and costs to treat conditions related to the disease. They also collected data on insulin refill rates for each patient. Refill rates are a way of determining if patients take their medications regularly.

The numbers showed that the annual average healthcare costs were nearly \$17,000 lower insulin for pen users than for syringe users (\$14,857 vs. \$31,764.) These figures represent the average amount reimbursed by Medicaid for diabetes-related care.

Prescription costs weren't included in the above totals because the researchers wanted to show a clear difference in non-prescription costs between the two patient groups.

“The numbers suggest that the proper use of prescriptions can translate into major healthcare savings,” Balkrishnan said.

According to the study's results, the cost reductions are mainly reflected by much lower total hospital costs (\$1,195 vs. \$4,965 for pen and syringe users, respectively); total outpatient costs (\$7,795 vs. \$13,103 for

pen and syringe users, respectively); and total diabetes-related costs (\$7,324 for pen users vs. \$13,762 for syringe users.) Diabetes-related costs include treatment for conditions related to the disease, such as vision problems like diabetic retinopathy, foot ulcers and circulatory problems that could possibly lead to limb amputation.

Annual prescription costs were also lower for insulin pen users in this group – \$6,122 vs. \$7,465 for syringe users.

The researchers found that roughly the same number of insulin pen and syringe users took their medication as directed, with 53 percent of the pen users taking their medications properly and about 50 percent of syringe users doing so.

“While these rates are low, they are usually what we find in Medicaid populations,” Balkrishnan said. “In a privately insured population we typically see rates above 90 percent. But historically, patients insured by Medicaid are often subjected to both poor medication management and administration – this is usually a result of the overall care that Medicaid patients receive.”

In a separate experiment, the researchers compared more than 1,100 diabetic patients who were already on insulin when the study started. Half of the patients switched from using a syringe to using a pen during the course of the study, and the rest of the patients continued using a syringe.

Results of this experiment showed that the annual healthcare costs of pen users were only slightly higher than those of syringe users (\$11,476 vs. \$10,755.)

“This is likely due to starting a new, more expensive therapy,” Balkrishnan said. “Also, patients using the pen were probably more

compliant with their therapy; that is, they took it like they were supposed to. That means refilling their prescriptions often, which would initially reflect in higher costs.”

Prescription costs for the syringe were lower than those for the pen (\$535 vs. \$670), and the cost of a pen itself was higher than the cost of a syringe (\$840 vs. \$0.)

“While the pen is initially more expensive than the syringe, in the long run it could considerably reduce overall healthcare costs,” Balkrishnan said.

Balkrishnan conducted the study with researchers from the Wake Forest University School of Medicine in Winston-Salem, N.C., and from Novo Nordisk Inc., with headquarters in Princeton, N.J.

Source: Ohio State University

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