Hypertension treatment could be the next big thing for medical technology companies that are hard pressed to find growth from a stagnant market for electronic heart devices.

By Christopher Snowbeck

Back in the 1950s, surgeons experimented with big operations for patients who had severe cases of high blood pressure. Doctors at the time understood there was some connection between high blood pressure and a problem in what's called the sympathetic nervous system.

So they started offering a surgical fix that involved extensive removal of nerves from the mid-back through the abdomen, in procedures that cut the nerves running along the kidney arteries.

In terms of reducing blood pressure, the procedures were successful, said Dr. Paul Sobotta, a physician and entrepreneur in West St. Paul. But they also were associated with complications, and the surgery fell out of favor as medication treatments emerged.

Now some 65 years later, doctors and medical device companies are developing new tools to breathe life into the old approach. In the process, manufacturers in the Twin Cities are trying to stake a claim to a market that analysts say could eventually generate more than $2 billion in annual sales.

The companies hope that device treatments for high blood pressure—a condition that's also called hypertension—will be a new source of growth at a time when sales of other big device treatments for heart and cardiovascular problems have stagnated.

Minneapolis-based medical device maker Medtronic is pushing forward with a pivotal study in the United States to see if a much less invasive procedure, focused solely on nerves that run on the kidney arteries, can help tame blood pressure.

Medtronic acquired the technology in 2010 with its $800 million acquisition of California-based Hypertension Treatment, Inc.
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**Hypertension treatment**

Ardis Inc., where Schorka served as chief medical officer.

Meanwhile, Little Canada-based St. Jude Medical and two manufacturers based elsewhere with large operations in the Twin Cities — Medtronic and Boston Scientific and the Irish firm Covidien — are among the dozen or more companies also developing systems for what’s called,&n

The activity comes as a startup company in Brooklyn Park called CVRx continues work on a pacemaker-style implant that’s intended to treat high blood pressure by modulating the sympathetic nervous system.

**HI"G POTENTIAL, BUT QUESTIONS**

The patient population that might benefit from the treatment could be huge — an estimated one in every three adults in the United States has high blood pressure. But the evidence needed to currently being studied is only in those patients in whom the most difficult case to treat. "It’s very promising," said Dr. Yen Wang, a cardiologist who is conducting research on the treatment at the Minneapolis Heart Institute Foundation.

"Hypertension is a difficult disease to treat," said Dr. Robert Schwartz, the medical director for education at the Minneapolis Heart Institute Foundation. "It typically requires a lot in the way of multiple medications in the same patient to get it under control, and it’s only in a small number of patients that we’re only successful in about 60 percent of patients." The complexity of treatment with medications, Schwart said, contrasts with the apparent simplicity of device treatments that target the sympathetic nervous system.

"This has the potential to be a revolutionary technology — truly disruptive," Schwartz said of the device experience.

"The complexity of treatment still has many important hurdles to overcome," said Christopher DeMannon, director of the Innovation Support Center at Minneapolis General Hospital.

First, to the extent that effectiveness data are even available, they look only at one area of impact on a patient’s blood pressure score — whether the treatment actually reduces a patient’s risk of stroke or heart attack, DeMannon said. These are the primary risks of high blood pressure whether it affects with heart and kidney failure.

Second, it’s not clear what the long-term impact of the United States: the technology is in the hands of a few experts. "This is a technology that’s anywhere in the country," said Brian DeMannon, who runs a center within the Minneapolis General Hospital that works with clinicians on developing new medical devices. "When you think of how many new drugs are coming onto the market, and the number of patients in need of this technology, it tends to have doctors who are interested in being a part of it.

Finally, doctors don’t really know how long the treatment lasts.

"This is the most interesting technology," DeMannon said. "But the jury is still out."