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IMPLANTABLE DEVICES START PLUGGING IN

In recent decades the job of discovering remedies for humankind's myriad ailments has fallen mostly to the \$600 billion pharmaceutical industry. But as the drug pipeline has slowed to a trickle in recent years, and R&D costs have escalated, another branch of medical technology—implantable devices—is stepping up to grab a share of the market.

While Merck, Pfizer, and others will introduce relatively few new drugs this year, companies like Boston Scientific, Medtronic, and an array of startups are readying dozens of devices that reprogram the brain and other parts of the nervous system to tackle everything from migraines to severe depression. The FDA will consider about 20 devices for approval between now and June and a similar number in the second half of the year. "The potential for devices is astonishing," says Bijan Salehizadeh, a health-care partner with VC firm Highland Capital. "It's as vast as the scope of disease itself." Here's a look at where the current market stands, and where the much more promising market of tomorrow is headed.

— MELANIE HAIKEN

IMPLANTABLE DEVICES TODAY ...

BRAIN

THE DEVICES: Brain and nerve stimulators
WHAT THEY DO: Send electrical currents deep into the brain or to specific nerves to control tremors, seizures, depression, Parkinson's, and pain.
WHO MAKES THEM: Boston Scientific, Cyberonics, Medtronic, Neuropace, St. Jude Medical



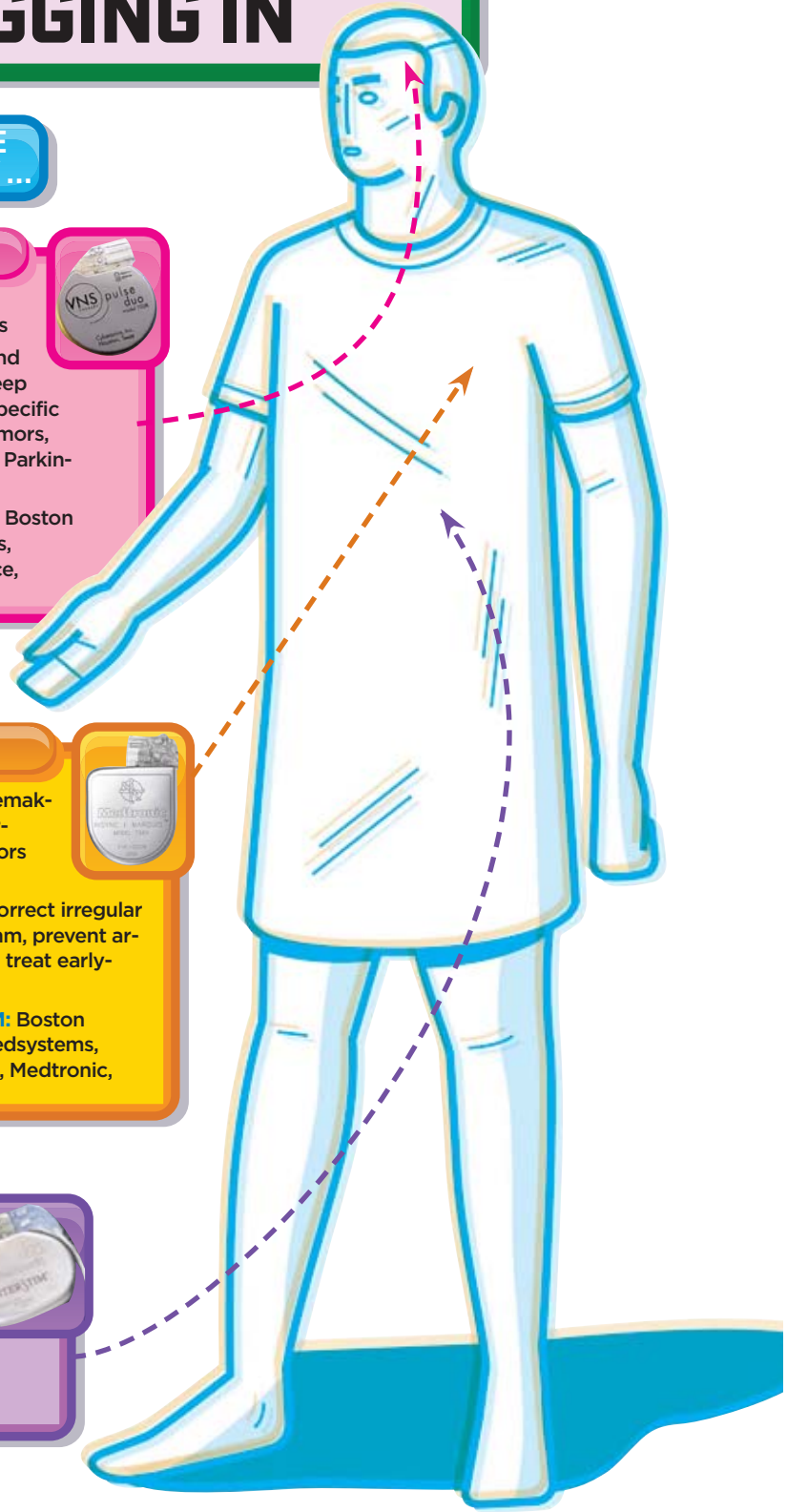
HEART

THE DEVICES: Pacemakers, implantable cardioverter defibrillators (ICDs), stents
WHAT THEY DO: Correct irregular heartbeat and rhythm, prevent artery blockages, and treat early-stage heart failure.
WHO MAKES THEM: Boston Scientific, Conor Medsystems, Johnson & Johnson, Medtronic, St. Jude Medical



INTERNAL ORGANS

THE DEVICES: Glucose monitors, sacral nerve stimulators
WHAT THEY DO: The former provides continuous blood-sugar monitoring and/or insulin delivery for diabetes patients. The latter is becoming a popular treatment for urinary incontinence and over-active bladders.
WHO MAKES THEM: Medtronic



... AND OTHERS COMING SOON

SPINE

2007

THE DEVICE: Bone-growing implant

WHAT IT WILL DO: This protein-coated device stimulates cells to regrow damaged or missing bone and provides a nonsurgical remedy for patients in need of spinal fusion or disk replacement. Only twoCK companies hold patents on the technology, but spinal implants make up the fastest-growing segment in the market for orthopedic implants.

WHO'S DEVELOPING IT: Medtronic, Stryker

STOMACH

2010

THE DEVICE: Electrical hunger suppressor

WHAT IT WILL DO: Researchers are developing neurostimulators that deliver a jolt of electricity to specific stomach nerves. The device will make the brain think the stomach is full, thus helping to control obesity, which has reached epidemic levels in the United States.

WHO'S DEVELOPING IT: Leptos Biomedical, Medtronic

PANCREAS

2010

THE DEVICE: Remote-control insulin pump

WHAT IT WILL DO: Allow booming numbers of diabetes patients, especially children, to have insulin and glucose levels managed remotely via data sent to a physician or parent. Controlling glucose levels is key to preventing life-threatening complications; it also saves insurers money.

WHO'S DEVELOPING IT: Johnson & Johnson, Medtronic, Roche

BRAIN

2007-2011

THE DEVICES: Next-generation brain stimulators

WHAT THEY WILL DO: Control obsessive compulsive disorder (OCD), help stroke patients regain motor function, treat migraine headaches, and treat severe drug-resistant depression by stimulating specific nerves with electrical impulses.

WHO'S DEVELOPING THEM: Boston Scientific, Cyberonics, Medtronic, Northstar Neuroscience

HEART

2008

THE DEVICE: Remote-control defibrillator

WHAT IT WILL DO: In addition to heart pacing, it will transmit data on blood pressure and lung fluid buildup, allowing MDs to diagnose problems before they occur. A remote monitor relays data to a doctor, who views it on a laptop, phone, or PDA.

WHO'S DEVELOPING IT: Boston Scientific, Medtronic, St. Jude Medical

LEG

2009

THE DEVICE: Migraine neutralizer

WHAT IT WILL DO: New research has linked migraine headaches with the existence of a tiny congenital hole between the upper chambers of the heart. Scientists are testing new implants that, when inserted through a vein in the upper leg, will patch and seal the hole and alleviate migraines for some of the 28 million Americans who suffer from them. An added bonus: The implant may also reduce the risk of stroke.

WHO'S DEVELOPING IT: AGA Medical, Boston Scientific, Cierra, NMT Medical, St. Jude Medical

