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## Robotic legs among items tested at Kaiser labs

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Ted Kilroy's jowls quivered as he gripped the high-tech canes that held him erect while a pair of robotic braces lifted his paralyzed legs, one after the other, across a little-known laboratory in San Leandro where health giant Kaiser evaluates experimental medical technologies.

Kilroy, who is both a test subject and welding technician at Berkeley Bionics, the startup behind the technology, said his shaking was not from effort - his software-controlled eLEGS did all the heavy lifting - but from the undirected flexing of the useless muscles below his waist, a side-effect of paralysis known as spasticity.

"That's my legs saying: 'We want to walk!' " he said.

Kilroy's stroll was the emotional high of a recent show-and-tell at Kaiser's Health Care Innovation Center. It is here that the health maintenance organization tests and troubleshoots technologies as futuristic as robotic surgical centers and as mundane as the satellite wellness clinics that it is already testing at the Cisco corporate campus in San Jose.

"The overall theme is health care goes mobile," Faye Karnavy Sahai, executive director of Kaiser's innovation assessment group, said of the get-together, which put some of its top medical officers in the same room with a handful of medical technology vendors.

### Unique perspective

As an integrated health care network - Kaiser is both an insurer and a medical provider - the HMO has a unique perspective that encompasses quality, convenience, cost and all the other variables that affect whether inventions make useful additions to the medical toolkit, according to Dr. James Lewis, another official in the technology assessment group.

He said last week's event was a focus group of sorts to give med-tech vendors a chance to hear whether caregivers consider various features to be priceless lifesavers or gold-plated bells and whistles.

### Cost-effectiveness

Cost-effectiveness is becoming an increasingly important concern in health care, as an aging

population and other factors including costly new drugs and devices drive insurance premiums higher and more Americans into the ranks of the uninsured.

One such cost-saving technology on display was a robotic delivery cart from Aethon, a Pittsburgh startup that has deployed 19 of its TUG systems at El Camino Hospital in Santa Clara County.

Aethon Vice President John Allegra said each of these self-propelled, software-directed carts replaces 4.2 full-time technicians, saving the local hospital \$650,000 a year - after paying the roughly \$30,000 per year that it costs to send each of these robotic carts beep-beep-beeping through the hospital halls.

But the money-saving technologies now or soon available to health care providers are unlikely to do anything more than merely slow the rate of annual cost increases in health care rather than reverse the upward trend, suggested Dr. Robert Pearl, chief executive of the Permanente Medical Group, the physicians inside Kaiser. Other forces - notably the aging of the Baby Boomers and the ever-increasing cost of new medicines - overwhelm any savings that most new systems provide.

### **Some big saving**

But Pearl offered one example of how a simple technological fix - introducing secure doctor-patient e-mails - can save big bucks. He estimated that Kaiser handles 5 million e-mails per year and that, in 20 percent of these cases, a patient is saved the need to take a half-day off to visit the doctor. He estimated the cumulative impact of all that saved work time as being worth \$140 million a year to employers.

### **Computer items**

Other computer-based technologies on the verge of commercialization could save money while also enhancing quality of life. Lewis cited a roughly \$3,000 special-purpose computer, built by Intel and General Electric, that is meant to enable the remote monitoring of recovering patients.

Loaded with sensors to monitor vital signs, this prototype device is meant to allow patients to stay at home while remaining under medical supervision.

Of course, the real excitement revolves around devices like eLEGS, which will soon start the clinical trial process leading first to the use of the system in physical therapy settings on the way to eventually putting patients like Kilroy - paralyzed in a motorcycle accident - back on their feet.

"A lot of the technologies you see here are three to five years out," Lewis said.

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