Surgeon test-drives Google Glass in the operating room

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When Dr. Heather Evans, a trauma surgeon at Seattle's Harborview Medical Center, stepped into the operating room wearing an eyeglasses-like, Internet-connected device known as Google Glass, she quickly realized its potential and its pitfalls.

With Glass, if she was in the middle of surgery and encountered an unexpected or unfamiliar condition - a rare tumor, say - she could use real-time video to show it to the world's expert and receive help.

With Glass' eye-level screen, which projects information right onto the wearer's retina, she could instantly see relevant parts of a patient's chart or get lab results.

And she would never have to put down her surgical instruments or turn away from her patient on the operating table.

As a teacher, she could have her students wear Glass and see through their eyes just where they were having trouble as they learned a difficult procedure - putting in a large, intravenous catheter known as a "central line," for example.

Evans is one of about 8,000 people around the country selected by Google as "explorers," testing and experimenting with uses for Glass, expected to be available for sale next year.

Like her fellow surgeon-explorers, Evans won the chance to spend $1,500 on the device by penning a winning tweet early this year, finishing the phrase: #ifihadglass.....

With a computer in the earpiece, and a tiny, eye-level rectangle that can project text, maps and other information to the wearer's eye, Glass responds to voice commands and can take pictures, stream videos, make phone calls and do other tasks.

Think of it as a smartphone, wearable video camera and computer rolled into one, with the ability to "see" - and instantly transmit - almost precisely what the wearer is seeing.

Like other surgeons, Evans is excited about the potential of this new device. But she also has learned that Glass has technical issues that, for now, make it less than ideal in the operating room, as well as difficult privacy concerns.

Some arise because of complex federal privacy laws, which govern the transmission of patient information, including photographs or videos. Other privacy issues come up just from wearing Glass.

If she wore Glass down the hospital hallway, Evans said, she could be accused of violating privacy.

Glass has particularly prickled privacy advocates, even earning its own Urban Dictionary epithet - "Glasshole" - for those who flaunt their early access, wear Glass into private spaces such as restrooms or instruct the device - "OK, Glass, take a video" - in public.

In Seattle, one self-described dive bar has banned the device - for two reasons, said 5 Point owner David Meinert: "They are easily abused as an invasion of privacy, which people should have a reasonable expectation of in a dive bar, and two, they make people look really stupid."

Despite such concerns, Evans had some specific tasks for Glass in mind when she applied to be an early explorer.

To win her spot, she linked to a YouTube video showing an event rarely caught on camera: a man's heart attack and resuscitation. A BBC crew, shooting a documentary on an emergency helicopter service, had just arrived at its office when the dispatcher suddenly slumped.

The crew kept the cameras rolling as emergency workers gave the man CPR and shocked him with a defibrillator, saving his life.

"#ifihadglass," Evans tweeted, "I would capture more events like this to learn how we can take better care of patients."

Like some of her fellow surgeon-explorers - a small percentage of the explorers - Evans can't say enough, fast enough, about the potential of Glass.

"If you talk honestly to any surgeon, they will admit they encounter things all the time they've never seen before, with varying levels of comfort," she said. "Immediately, you could have somebody else's eyes on this problem."

For teaching, Glass could capture a medical student's perspective - or the patient's. For students, knowing how they appear to a patient could be immensely valuable, she believes.

In trauma, in critical care, surgery and medicine in general, "we try to learn from the things that happen," Evans said.

The BBC crew's unexpected capture of the emergency workers' efforts could be deliberate with Glass, she thought. "We could look back and say, 'OK, what did they do right, what did they do wrong, how can we learn from this ...?'"

Long before Evans took Glass into the OR, she began wearing the device outside the hospital - at dinner, on public transportation, walking or riding her bike.

She wore it to become familiar with it, she said, and because she enjoyed the reaction from people. "I would say it's probably the single most illuminating thing that's happened to me since I became a surgeon, outside of learning a specific procedure, because it brings out this wonderment," she said. Even so, it was months before she finally wore

Glass into the OR - with the patient's permission, she notes, and restrictions on the video.

"With any new technology, you don't bring it into a patient-care setting immediately upon seeing it for the first time," she says. "I needed to have a real comfort level with them "

In the OR, where she wore the device only briefly, she found technical challenges. To turn the device on, she had to look up, taking her eyes away from the patient, and pay attention to the video recorder.

"I think interacting with the device when you're concentrating on the patient is almost impossible," Evans says.

The technology is in its infancy, she says, and will doubtless improve.

Demonstrating it recently at a national meeting of the American College of Surgeons, she was instantly surrounded by colleagues.

"You need to know what this is and what this does, and decide how you want to incorporate it into your practice," she told them. "Because whether you like it or not, it's coming."

Dr. Rafael Grossmann says he's the first surgeon in the world to have used Google Glass during a surgery - live-streaming to a Google Glass Hang-out, an invitation-only video chat. He believes technical problems will get worked out.

Grossmann, a surgeon at Eastern Maine Medical Center, has become a sort of Glass evangelist in his blog and speaking venues.

"I always bring Glass up to the forefront in those talks, because I think it's what's happening now," Grossmann says. "This is something

meaningful - not just another toy that comes our way and goes away in a few years."

Recently, he participated in what he believes is the first Glass-to-Glass consultation. A surgeon in Amsterdam streamed her operation via Glass to Grossmann in a different city; he asked her questions and projected the live stream to a big screen where 400 students and others watched.

He predicts Glass will "revolutionize the way we teach medicine."

But this revolution, he adds, is really evolution. A small, wearable, unobtrusive computer is an inevitable step in the journey from room-sized computer to desktop, to laptop and most recently, to smartphone.

So far, the medical professional societies haven't issued guidelines for using the device, which is still experimental. Companies are working on add-ons and apps to make Glass useful in the medical world, although Google spokeswoman Anna Richardson White said her company is "trying to build Glass so that it satisfies the needs of general consumers, rather than focusing in on specific industry use cases."

And rumor has it that competitors are on the march.

But there's work to be done, particularly on privacy issues.

"I'm sure if I were sitting in the same room as the IT people here, they would have a heart attack about this device," Evans said recently at Harborview.

Other questions: Will Glass become so easy to use that surgeons routinely wear it during surgeries? Will videos become accepted parts of a patient's medical record?

"We would incorporate it into our practices if it were secure, safe and added value," Evans said. But for now, she and Grossmann agree, Glass is all about the possibilities.

"Potential," says Grossman, "is the key word."