Connect2Health[fcc] Consumer Tips

Ingestibles, Wearables and Embeddables

Routine tests can be anything but. Appointment times are often inconvenient. You may be at the mercy of walk-in labs and testing facilities, where waiting could be uncertain and often longer than many people can accommodate. Personal health – which should be a top priority – can suffer when important diagnostic tests fall off our to-do lists.

Recent advances in broadband-enabled sensor technology offer the potential for the emergence of more convenient, ultimately less-costly – and less-invasive – solutions. For example, we may soon see widespread use of smart clothing (or smart "tattoo" applications) that use skin-based sensors to measure things like heart rate, respiration and blood pressure. These new types of technologies are generically called "ingestibles," "wearables" and "embeddables."

Ingestibles are broadband-enabled digital tools that we actually "eat." For example, there are "smart" pills that use wireless technology to help monitor internal reactions to medications. Or imagine a smart pill that tracks blood levels of medications in a patient's body throughout the day to help physicians find optimum dosage levels, avoid overmedicating, and truly individualize treatment. Also, miniature pill-shaped video cameras may one day soon replace colonoscopies or endoscopies. Patients would simply swallow a "pill," which would collect and transmit images as it makes its way through the digestive system.

Wearables are digital tools you can "wear," such as wristwatch-like devices that have sensors to monitor your heart rate and other vital signs. Beyond medical monitoring, such wearables may also help improve athletic performance, track fitness goals or help prevent dangerous falls in the elderly. In fact, designers are now able to put sensors in T-shirts and other clothing to monitor perspiration as a stress indicator. And, "tattoo-like" sensors that could be peeled off after use or that might be absorbed by the body are another similar advance. These sensors gather data through skin contact and transmit information wirelessly to smartphones and remote diagnostic facilities.

Embeddables are miniature devices that are actually inserted under the skin or deeper into the body. A heart pacemaker is one kind of embeddable device. In the future, embeddables may use nanotechnology and be so tiny that doctors would simply "inject" them into our bodies. Some promising applications in this area could help diabetes patients monitor their blood sugar levels reliably and automatically, without the need to prick their fingers or otherwise draw blood.

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Want to Know More? The Connect2Health[fcc] Task Force is working to raise consumer awareness about the value of broadband in the health and care sectors. Learn about the FCC's Connect2Health Task Force and its work on consumer health issues at www.fcc.gov/health. For information about other communications issues, visit the FCC's Consumer website at www.fcc.gov/consumers.

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