



JIMS VIRTUAL WORLD

A NEWSLETTER BY THE DEPARTMENT OF INFORMATION TECHNOLOGY

The stethoscope – medical icon, lifesaver and doctor's best friend – is disappearing from hospitals across the world as physicians increasingly use their smartphones to monitor patients' heartbeats. More than 3 million doctors have downloaded a 59p application – invented by Peter Bentley, a researcher from University College London – which turns an Apple iPhone into a stethoscope. Peter Bentley of UCL, who created the iPhone stethoscope app. Last week, Bentley introduced a free version of the app, which is being downloaded by more than 500 users a day. Experts say the software, a major advance in medical technology, has saved lives and enabled doctors in remote areas to access specialist expertise. "Everybody is very excited about the potential of the adoption of mobile phone technology into the medical workplace, and rightly so," said Bentley, who initially developed the app "as a fun toy".



"Smartphones are incredibly powerful devices packed full of sensors, cameras, high-quality microphones with amazing displays," he said. "They are capable of saving lives, saving money and improving healthcare in a dramatic fashion – and we carry these massively powerful computers in our pockets."

Bentley's iStethoscope application is not the only mobile phone programme lightening doctors' bags and transforming their practices: there are nearly 6,000 applications related to health in the Apple App Store. The uptake has been rapid. In late 2009, two-thirds of doctors and 42% of the public were using smartphones – in effect inexpensive handheld computers – for personal and professional reasons. More than 80% of doctors said they expected to own a smartphone by 2012.

The trend looks likely to gain pace as younger doctors enter the workplace. Some medical schools issue students with smartphones. In America, Georgetown University, the University of Louisville and Ohio State University are among those requiring undergraduates to use one.

However, experts say they are being prevented from exploiting the technology's opportunities. Bentley says that he is unable to launch a new range of applications because of out-of-date regulations.

"It's much easier to develop technology than it is to get permission to use it," he said. "I could create a mobile ultrasound scanner and an application to measure the oxygen content in blood, but the regulations stop me. We're not allowed to turn the phone itself into a medical device, and what that precisely means is currently a grey area in terms of regulation. That's the only reason we're not seeing a flood of these devices yet."

Professor Ian Wells, head of the scientific computing section in the department of medical physics at the Royal Surrey County hospital in Guildford, agrees that innovation is being hindered by regulations that are "still in their infancy".

He said: "The approach of the regulators is not well worked out yet. There's a wonderful new world out there but we need to find a way for regulators to protect patients and doctors, while not impeding innovation, research and development."

The Medicines and Healthcare products Regulatory Agency (MHRA) – the government body with responsibility for standards of safety, quality and performance in healthcare – recently set up the Medical Device Technology Forum, a group of industry representatives, regulators, users and scientists, to help establish how to regulate novel technologies.

"This is such a complex area that we are currently looking at every application on a case-by-case basis," said an MHRA spokesman. "We want to ensure that these new technologies are effectively regulated – thereby protecting health and avoiding unnecessary deterrents – while at the same time removing any unnecessary obstacles to manufacturers who wish to exploit new technologies for the benefit of patients."

European regulators are also striving to bring their guidelines up to date. A group of regulators from Austria, Belgium, Denmark, France, Ireland, Sweden and the UK was set up last December to develop guidance for software under the European Medical Device Regulations. They are expected to report at the end of the year. •

Wonders of Today's Smart Phone Applications

- Star Analytical Services has developed an app that allows patients to cough into their phone, and tells them whether they have a cold, flu, pneumonia or other respiratory diseases.
- OsiriX lets doctors look at x-rays, ultrasounds, CT and MRI images on handheld devices or mobile phones with special software, enabling radiologists, for example, to diagnose acute appendicitis from remote locations.
- ERoentgen Radiology Dx helps radiologists identify the most appropriate radiology exam for a patient by searching a large database of signs, symptoms and diagnoses to help them make quick assessments.
- Instant ECG is just one app that analyses the most common ECG results. It distinguishes the difference in various myocardial ischemia or injury patterns. Using the iPhone's interactive touch screen, the app offers "real-time" films to make rhythm analysis similar to the clinical setting.
- AirStrip OB, an iPhone app, gives obstetricians real-time remote access to foetal heart tracings, contraction patterns, nursing notes, and vital signs. Obstetricians can monitor different stages of labour even when they are not by a patient's side.

(CONTRIBUTED BY GAUTAM BHALLA , MCA IIIrd SEMESTER)

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