

» The future of health is mobile

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The most rapid uptake of any technology in our history has been the global uptake of mobile phones. At the end of 2017 there were more mobile phone subscriptions in the world than there were people (Figure 1).¹ Mobile communications networks have penetrated into places where there are no health care services and even no reliable electricity supply.

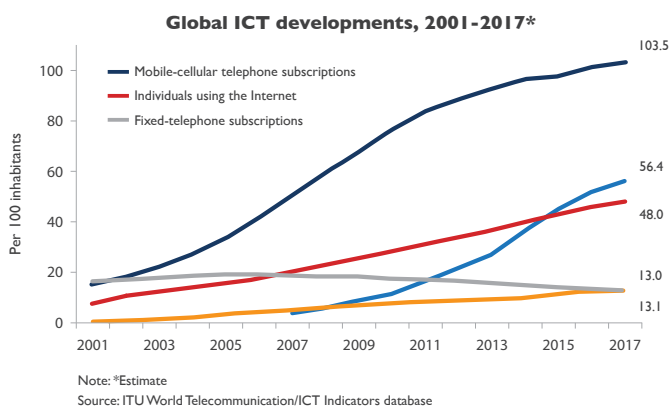


Figure 1: Global ICT uptake

In the developed world, more and more homes are 'wireless only' (that is, they have no fixed phone line, computer or access to the internet other than via mobile phones).² These wireless only households in the U.S. have been shown to be more likely to be those who are living in poverty, have no health insurance and no usual place of health care.² It is fast becoming the case that the only way to reach a great proportion of the population – indeed, the proportion that is most likely in greatest need of support to access health care – is by their mobile phones.

For health services to really make a difference to the health of those who need it, we must ensure we are reaching these people where they are. Through completely unrelated efforts, people have been trained to always carry a mobile phone within arm's reach, and to touch it on average 2617 times a day in 76 separate sessions.³ So how can we use this ubiquitous tool to improve people's health?

Much has already been proven effective and many services are in place

around the world.⁴ The most common include emergency services and text message reminders for appointments. One area with considerable evidence is the use of text messaging to support healthy behaviour change. In particular, text messaging support has been shown to double smoking cessation rates compared with control groups, and to be one of the most cost effective services we can provide.^{5,6} Other areas include appointment reminders, medication adherence prompts, activity reminders, weight management, and general health information.⁷

We can also engage people in managing their long term conditions. Several different types of mobile phone based programmes have demonstrated effectiveness in supporting self-management. This may be just by providing motivation, support and reminders - our SMS4BG programme reduced HbA1c in people with poorly controlled diabetes significantly⁸ – while others more directly link people with diabetes with their health care providers for clinical advice on the management of their condition.⁹ Proven effective cardiac rehabilitation programmes can also be delivered by mobile phone for those who are unable to attend group sessions or find them inappropriate, or as an adjunct to in-person rehabilitation.¹⁰

In some countries, such as Sweden, people can access their own health care information via a mobile enabled patient portal.¹¹ Now Apple has made that even easier by working with some of the major electronic health record (EHR) companies to allow people to view their health records from multiple different institutions on their iPhone.¹²

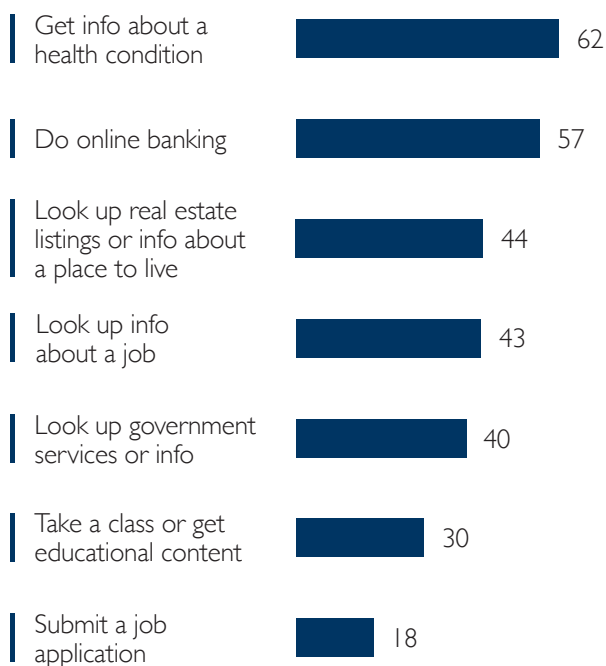
Smartphones are becoming the most common means for people to seek out health information. In 2015, 62% of U.S. smartphone owners had used their phone to look up information about a health condition in the past year.¹³ Using apps and mobile websites we can provide education and advice about health conditions, videos from other patients about how they have coped with their illness, and connect them with others living with the same rare conditions from all around the world. *Patientslikeme* provides support, a social network of those suffering from the same issues, and information on treatments and side effects.¹⁴

Smartphone apps can connect with wearables like smartwatches to provide people with direct feedback on health-related parameters like activity levels, and make suggestions or use gamification to keep people motivated and moving. The opportunities for apps to connect with other sensors and other related information for specific health conditions is

huge, such as with smart inhalers, real-time weather information and asthma.¹⁵ The mobile phone itself can be a means for individual data collection that can then be used to help the individual – such as a system which uses information on mobile phone activity and behavioural analytics to identify issues in those with underlying mental health conditions¹⁶; or ECG monitors that can be attached to the smartphone to be used to capture arrhythmias when symptomatic.¹⁷

More than Half of Smartphone Owners Have Used Their Phone to get Health Information, do Online Banking

% of smartphone owners who have used their phone to do the following in the last year



Pew Research Center American Trends Panel survey, October 3-27 2014

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Figure 2: Use of smartphones to obtain health information in the U.S.

The ultimate mobile health service, perhaps, is when people can connect directly with real or virtual clinicians via their smartphone whenever and wherever they need it. Not only are there services now providing almost instant access to a clinician or therapist by video for many basic health services, we can also provide chatbots using artificial intelligence to provide support and cognitive behavioural therapy.¹⁸

That is not to say that all that glitters is gold. Mobile health interventions must be designed for, and with, those most in need. We risk widening health inequalities if mobile health programmes are only accessed by those with high end technology, data plans, and a high degree of health/technology literacy. Other issues such as data security, privacy and on-selling of data by vendors, must also be adequately addressed.

Who knows what the size and shape of future mobile phones will be. But we can be fairly sure that they will be powerful connected computers that will be with us at all times. They will be talking to the world around us and processing incoming information about where we are and what is happening around us, as well as what is going on in our bodies. The health system of the future will need to be linked into this system or we

will fall far behind our population's expectations and the opportunities for improving the health of our people. Health professionals of the future need to embrace these possibilities, be open to constant change in practice following the pace of change in technological advances, and be willing to learn about new technologies and how to use them. Doing so will keep clinicians at the forefront of how to best apply technology in clinical practice, rather than letting multinational companies outside the sector make the decisions for us.

Your job in the future is likely to not just be about medicine. We already need medical people who are interested in data, analytics, informatics, digital platforms, consumer engagement, behaviour change techniques, information systems, social networks, change management, cybersecurity, ethical use of aggregated data, and innovation. Who knows what else might be needed in the future?

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