

A note of caution about health apps

April 28 2015, by Misha Gajewski



There's a running joke that if you check your symptoms on the Internet, it will probably diagnose you with cancer.

But there seems to be a growing trend that we are starting to rely more and more on digital technology to help us with our health. For example, WebMD last reported an average of 156 million unique users per month – a 33 per cent increase from the previous year.

Health apps (applications that offer health-related services on your mobile phone or tablet) are flooding the market. And the same goes for wearable technology, or 'wearables', like the Fitbit, JawBone and most recently the Apple Watch.

But how much can we rely on this technology? And does it actually do us any good?

Alarm bells

Some health apps have the potential to be very useful – for example to help people who live in remote areas access a GP when they can't go in person.

Similarly, given that four in 10 cancers are linked to lifestyle, apps that allow you to track and monitor your health could help you lead a healthier life, or could be used to give your GP a more rounded picture of your health.

But when health apps start claiming that they can diagnose cancer from a 'selfie', warning bells start going off.

Recently a number of [smartphone apps](#) appeared, that claimed to be able to diagnose skin cancer based on a photograph. They were advertised as a modern way to check a mole to see if it was cancerous or not.

While it could be a good idea in principle, these particular apps didn't turn out to be very accurate.

One recent study in *JAMA Dermatology*, which looked at various skin cancer apps, found that three out of the four apps they examined incorrectly classified at least 30 per cent of melanomas as 'unconcerning'.

The only one that was accurate wasn't a diagnostic app at all – it helped people with suspected skin cancer by sending a picture directly to a certified dermatologist.

Another study, this time published in the *British Journal of Dermatology*, examined 39 skin cancer-focused apps and found that none of them had been validated for diagnostic accuracy or usefulness by any established research methods.

The inaccuracy and false claims didn't go unnoticed. Earlier this year the US government [cracked down](#) on two apps that were claiming to be able to diagnose skin cancer. "Truth in advertising laws apply in the mobile market place", said the US Federal Trade Commission (FTC), which issued a strong warning to app makers who claim that their product has diagnostic capabilities.

App manufacturers, the Commission said, should be able to back up their claims. Saying "consult a doctor" or "for information only" does not absolve you of responsibility.

But it's not only [skin cancer](#) apps that were dubious.

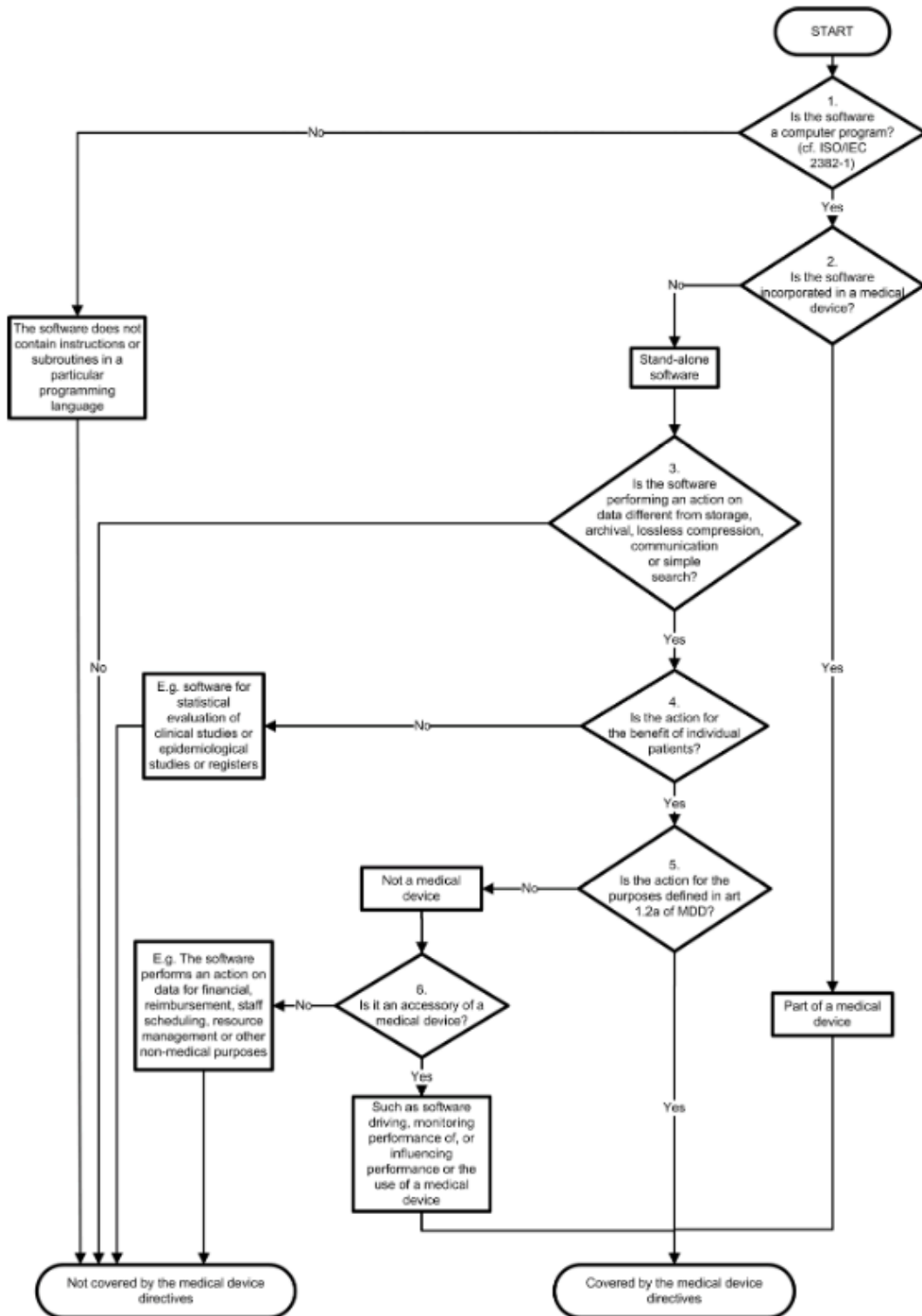
A recent study by researchers at Imperial College, London, published in the journal *Breast*, looked at 185 health apps that mainly focused on breast cancer information and awareness. Only 15 per cent were based on robust evidence and even fewer – 13 per cent – had medical professional input when they were designed and created.

On top of this, potential safety concerns were found in more than 15 per cent of the apps they reviewed.

Each week it seems that another app comes out claiming it can diagnose a different cancer or disease – but we need to be careful how much we

trust them.

"All apps are not created equal," warns Sarah Williams, our health information manager.



"When apps claim to give you a diagnosis, be wary, and remember there's no technological replacement for seeing your GP," she advises.

No harm, no foul?

So it looks like diagnostic apps that can accurately and reliably diagnose cancer are a long way off.

But some health apps may be helpful – or at the very least not harmful.

There has been some evidence to suggest mobile weight loss programmes are just as effective as paper- or website-based ones but these studies are small.

And Williams points out that having the goals in the first place is what probably matters the most.

And wearables might be prone to many of the same issues as software.

Researchers have also tested popular fitness tracking wearables such as Fitbit and Jawbone. While these may accurately measure the various metrics they claim to, there is no evidence yet to suggest that they have any added health benefits (Although, granted, there is no evidence that they cause you any harm either).

"When it comes to improving your health it isn't getting the information that matters, it's what you do with it," said Williams.

So while they may not be harmful, they may not be particularly useful either.

And just because you can track these metrics doesn't necessarily mean you should.

The BMJ recently interviewed two experts – with opposing views – about whether we should even be tracking this data at all.

"We shouldn't confuse more health care with better health care," said Dr Des Spence, a General Practitioner in Glasgow, in a linked podcast for the journal.

And while Iltifat Husain, editor of iMedicalApps.com, was generally positive about health apps he agreed: "Most of the metrics these apps measure are pointless. They just add noise."

Dr Spence raised particular concerns about technology that claims to track things like blood pressure, body temperature, heart rate etc.

"The apps that measure your vital signs [...] have no background of testing, they're completely unregulated and I'm worried about what impact this might have," he said, citing 'overdiagnosis' – diagnosing a disease or condition that wouldn't cause harm to that person in their lifetime – as a legitimate concern.

"We need to be cautious and not lunge into these things, because they have the potential for harm".

Wild Wild West

But while it may not be morally responsible for app makers to sell these apps to consumers, ultimate responsibility rests with governments, and regulations.

Unfortunately, there are no real regulations for health applications.

Essentially, if you can code it, you can market it.

"It's like the wild wild west," Husain told the BMJ.

But regulations are slowly being made.

In February the [US Food and Drug Administration \(FDA\)](#) said it was going to start to regulate apps – but at its discretion and only apps that meet the definition of "medical device". This leaves a host of apps without regulation.

In the UK and Europe regulations are taking a similar route and only focusing on health apps and wearables that qualify as a "medical device".

As it stands those apps and wearables that qualify as a "medical device" need to prove that they work and are safe to obtain a CE mark or certificate, which allows the product to be sold and distributed in Europe.

But unlike actual medical devices, like an x-ray machine, which need to get the CE mark before they are sold, apps may go straight onto the market. Only if they are later deemed to be a "[medical device](#)" will they need to meet the standards to get the CE mark.

As for proving effectiveness the Medical and Healthcare products Regulatory Agency (MHRA) has told us that while apps and wearables do not go through clinical trials in the way medicines do, manufacturers do need to produce clinical data before they can get a CE mark.

How much clinical data they need to produce is uncertain and, as with the US, there are still many health apps that will go unregulated.

And then there's still the question of what happens when software is

updated – for example, do manufacturers need to prove an update is as effective as the original?

Due to the ad hoc nature of the regulations other organisations, such as the NHS, have taken it upon themselves to help advise consumers on which apps are good. They have a library of apps that have been reviewed for relevance to people in the UK, using information from a verifiable source and complying with data protection rules. But it is by no means a comprehensive list or a gold standard quality mark.

So until there is some more robust evidence and better regulation we're saying be wary of how much you trust health apps and wearables – they might not be all they're cracked up to be.

More information: "Diagnostic Inaccuracy of Smartphone Applications for Melanoma Detection." *JAMA Dermatol.* 2013;149(4):422-426. [DOI: 10.1001/jamadermatol.2013.2382](https://doi.org/10.1001/jamadermatol.2013.2382)

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