

David Doherty, co-founder of 3G doctor

D Doherty co-founded 3G Doctor in 2006 as a means of providing patients with a means of private and economical access to the attentions of informed registered doctors. D Doherty's role involves bringing together feedback from patients and carers, the public, developer communities and technologists to learn how to improve the patient experience, bake in kindness and begin to understand ways in which 3G doctor can deliver and support new care experiences. Interact with D Doherty on Twitter: @mHealth.

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Q Tell us a little about your personal journey from medical student to co-founder of a healthcare company

My interest and awareness of the opportunity to use telecommunications tech to provide better care started long before medical school. One of my first memories was as a child in 1980 realizing why doctors on the wards of hospitals jingled as they walked. Seeing them reaching into the deep pockets of their white coats to give parents of a sick child some coins so they could go to the payphones and relay this information to their distant families, it was incredibly obvious to me the value of the emotional connection that could be made through a thin cord of wires. That experience stuck with me and shaped the way I see the opportunity to redesign care using telecommunication technology so that we can better serve the needs of patients.

Q Could you describe the 3G doctor platform?

It is not really a platform but a service that provides members of the public with the opportunity to have documented video consultations with registered doctors about any concerns they have 24/7 for a cost of only GBP£35.

Q Your blog is called mHealth Insight – what does mHealth stand for, and what is its relevance to clinical researchers?

mHealth is a word that I coined over a decade ago to help describe the opportunity we have to leverage Mobile for Health. Before the extent of this opportunity becomes clear it is important to appreciate that 'mobile' is not just that powerful device in your pocket or the billions of pounds of infrastructure that cover 98% of the world's population. Mobile is actually the newest mass media. Something that is brilliantly explained by my good friend and the world's most published Mobile Industry author Tomi Ahonen [1].

In 2009, I predicted that mHealth (the convergence of mobile and healthcare) would define the 2010–2020 decade just as Nokia defined the last. Half way through it is clear to me that this is happening and the next 5 years will see some incredible change in the pharmaceutical industry.

Q What role do you believe mobile healthcare platforms have to play in clinical trials and drug development?

They are the enabling infrastructure that will enable patients to engage with and share their experiences of clinical trials. At the moment

the pharmaceutical industry is trying to capture data with paper-based processes within the confines of Clinical Trial centers and the big mobile first platforms like ResearchKit will help consign these out of date processes to the history books. I recently gave a talk at the Mobile Clinical Trial Congress on the opportunity for Mobile First Clinical Trials that I think readers will find interesting [2].

Q How do you see the pharmaceutical industry changing, if self-monitoring becomes ubiquitous?

In many ways mobile phone based self-monitoring has become ubiquitous. I had an NHS GP friend a few years ago poll his patients and he was stunned at the number of patients who had used the alarm/calendar function to set a notification to remind them to take their pill, test their BG levels and so on. That was before the iPhone was launched when everyone had Nokias and the smartphones of the time do not even compare to today's most basic feature phones - so you can only imagine where we are at now!

The pharmaceutical industry has a habit of not noticing the big changes in mobile as they happen. If they were good at this, I believe they would have started selling camera phones, as these had a huge impact on the retail business because they obviously killed off the film sales and photo development services that led to so much footfall reduction. I think these had much more impact than the everyday low pricing from rivals like supermarkets that analysts convinced retailers was the competition they needed to worry about.

Q In a recent talk, you described the 'big challenges' of clinical trials. Could you describe for our readers what you believe these are, and the solutions you believe the future holds?

The big challenge lies in making the transition into being an organization that thinks 'mobile first.' You need to have your best people working on your mobile strategy and you need to really challenge yourselves to try to look at the things you do through the eyes of the 'born mobile' generation. Most of them have grown up never experiencing the feeling of being lost or disconnected, so they have uniquely different points of view to us that can be invaluable in helping us see and focus on what is important and valuable to patients.

Q You also described a system of 'ratings' for clinical trials. Could you talk us through how such a system might work, and what its effects would be?

Just recall the last time you downloaded an app to your phone or checked out a hotel on Tripadvisor®. Imagine if you could get something like that surrounding clinical trial experiences. Most clinical trials are not even

branded today so the clinical trial industry is today only making baby steps and there is a long way to go. In the MCT Congress talk [2], I expand on this as being the single thing that I think will have the most impact.

Q What are your thoughts on data safety in clinical trials?

I have drawn important lessons from Professor Jonathan Javitt's work at Telcare.com [3]. Telcare developed the world's first US FDA cleared glucometer with its own seamless mobile connectivity and went onto twin this tech with the smartphone by producing the world's top rated apps used today by diabetics. Before this transformational device was approved by the FDA he was asked the question 'when do you think the FDA will clear a mobile embedded medical device?' and he replied by stating that this was the wrong question and that the question should be 'When will the FDA refuse to clear a medical device because it does not have connectivity?'

The paper-based processes that are used today to document clinical data are, I believe, dangerous, error-prone, expensive and wasteful. Low cost seamlessly connected medical devices together with patients self-reporting their symptoms via apps and video consultations with remote carers are going to provide incredible insights into the effectiveness of drugs and data safety issues will be just one of the challenges that these will help the clinical trial industry to tackle.

Q How then do you believe wearable health-monitoring technology will be reconciled with user's concerns about privacy?

This is not a new concept as your privacy is already given away, to an extent, if you use a mobile phone or any ad funded internet services (e.g., search engines, 'free' internet email accounts and so on). The key to monetizing this will be by establishing an emotional connection (e.g., patients can provide their data if they want to help humanity learn more about medicine, cure this disease, improve this treatment, etc.), explaining the value proposition (e.g., sharing your AliveCor [4] ECG data via Apple® Researchkit app [5] will enable the world's smartest cardiologists gain accurate insights into the effects of their medications) and earning trust. Brands are going to wither or thrive based on the feedback and ratings provided by the patients and healthcare professionals who are helping them with their clinical trials.

Q Do you think it will become necessary to regulate mHealth applications and technology?

Absolutely and it is already the case. Good examples of this being done well can be found by studying Telcare's Glucometer [3] and AliveCor's ECG monitor. [4]

Q Finally, you recently claimed that Crowdfunding could have a place in clinical trials; could you explain what this would mean, and how such trials might be effective?

I think the rating of clinical trials will have a massive impact on how major charities (e.g., Cancer Research UK [6], the International Diabetes Federation [7] and so on) work. Today citizens donate money to charity in the faith that the money will be spent on research into medical conditions that they wish to support. Taking a mobile first approach can be a really effective way of encouraging this, and you can see this already if you look at charities that are advocating for mHealth.

Good examples would be the Atrial Fibrillation Association [8] which has been working extensively with AliveCor to raise awareness of the condition, widen screening, recruit AF'ers and improve the quality of treatments for those affected by atrial fibrillation. All of this is making the Atrial Fibrillation Association really stand out in a competitive marketplace and contribute back to the lives of citizens.

Another example would be the International Diabetes Federation [7] whose CEO Petra Wilson in 2014 called for mHealth to become an embedded part of how we provide quality care for diabetes [9] (Health-care spending on diabetes was predicted by the International Diabetes Federation to have reached US\$548 billion by the end of 2013 [10]). Why would not we want to support charitable organizations that are so transparent about the important work they are doing?

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