Vodafone mHealth Solutions

Summary Report

The Washington Health Debate and The mHealth Summit 2011

power to you

Vodafone advanced its worldwide Health Debate series through its participation at the 2011 mHealth Summit in Washington DC with a main stage panel presentation on the 6th of December and a Health Debate session the day after.

Both sessions advanced the discussion around a recently published document from Vodafone mHealth Solutions, the first of a new series of Insights Guides. The document looks at one of the key barriers to the adoption of mHealth services: human behaviour.

The speakers and panellists contributed sections to the publication, but this report does not repeat their central opinions, it extends the discussion by charting some of the discussions which took place at the mHealth Summit and the Health Debate.

Evaluating mHealth adoption barriers: human behaviour, main stage panel presentation

Opening the first session, the Head of Vodafone mHealth Solutions, Dr Axel Nemetz, defined Vodafone's mission in mHealth as "improving healthcare outcomes and quality of life by giving patients and healthcare professionals increased freedom and flexibility". To achieve this, he acknowledged that every party – patient, carer and funder – had to overcome barriers to adoption which are potentially significant.

As an example of a successful implementation he quoted the SMS for Life project, now rolled out across all 5,070 rural health facilities in Tanzania, to ensure that each is adequately stocked with anti-malarials. In return for a Friday count of stocks, the health facility representatives receive free credit to their mobile phone. By creating a win-win situation to all stakeholders, the SMS for Life project has become a great success.

In contrast, he talked about a hospital to home project, which has been live since summer 2011 in the UK. Patients with a low immune system spent five to ten hours for five consecutive days at a hospital receiving their medication via an infusion pump every six weeks.

Through this hospital to home project however, patients can follow this treatment in their own home environment. Homecare nurses administer the infusion and patients fill out questionnaires over a mobile application before and during infusion.

Preliminary results have shown a positive response from both nurses and patients participating in the project. The problem is that it is not a good match for the current funding model, which rewards hospital managers for bed occupancy. No in-patient fee means it looks bad on the hospitals' management accounts so funding is hard to come by, even though it is likely to provide better health outcomes.

Financial and regulatory issues, though, will be addressed in further Vodafone Health Debates. The current publication and public sessions are concerned with human behaviours.

Stephen Johnson, the CEO of Fordcastle, explained the factors for success through a triangle. At each apex was *adoption* (simplicity, empathetic design, comprehensiveness), *impact* (user value, joined-up solutions, clinical and economic results) and *engagement* (interactive, consumer delight).

To illustrate the simplicity theme, he picked up on the SMS for Life example made earlier.

SMS, he pointed out, was often the best way to get information out, reminding delegates that because chronic sufferers are frequently older they tend to have the lowest penetration of internet access so more complex information delivery platforms will not be practical.

Patients will be more likely to adopt a technological solution if both its operation and its benefits are immediately obvious. A good example of empathetic design, Johnson suggested, was an asthma inhaler with a sensor and mobile communications device on the top. It did not change the operation of the inhaler but it gave time and location data to the carer, building up more information on the triggers for asthmatic episodes.

Where there is a need for more interaction from the patient – where the mHealth element is more than an automatic sensor – then there is a need to keep the patient engaged, and this can be a challenge. If the application needs the patient to maintain a diary, for example, and there is no apparent response to the data then they tend to lose interest. Conversely, research has shown that where there is personalised feedback to the patient, 80% remain committed.

He also suggested that making it fun is a good way to maintain engagement. Nintendo Wii applications could maintain interest based on the "grin factor", and a smartphone app that measures heart rate by simply taking a photograph has had 10 million downloads.

Turning his thoughts towards the future of successful mHealth applications, he underlined that the solution has to be joined up: it has to engage the patient, improve outcomes and save money. That fits well with the current pressure to move from health (treatments) to healthcare (prevention), but requires a systematic approach which extends beyond the immediate patient-doctor link.

In Barcelona, for example, the health authorities tracked spikes in asthma symptoms and found a direct correlation to the unloading of soya beans from ships in the city's docks. We should look to build bridges with the data.

AN IMPORTANT PART OF THE BARRIER IS THE SPECIAL RELATIONSHIP BETWEEN PATIENT AND PHYSICIAN, AN ENVIRONMENT THAT GOES BACK CENTURIES

Ruud Kooi of Across Health looked at the issue from a business perspective. Bringing technology into medicine, he said, should and would result in cost reduction, but it means a shift in budgets and business models, and someone has to pay for that.

The human benefit comes as the technology moves from fixed to mobile data: it becomes personalised, driven by the patient not by the location. The problem is tracking all this data: if it is being collected by different standalone services and projects it may exist in a number of disparate and incompatible databases run by potentially competing commercial bodies. There is a strong case for a unified solution, even if it is just a data broking business.

Such a business would need to be trusted, though.

He went on to underline the need for systems, whatever their nature, to be customer-centric. Whereas a few years ago it was enough for a website to be one-way, often simply disseminating marketing messages, today they have to be interactive, and to be perceived by the user to be offering real value. If health technology is to take off then this message has to be clearly understood.

The potential for mHealth is that it gives you access to information and to care at the right time and place, linking the patient with the right doctor.

But that can only work if it is friction free: if you can do it without adding to the burden of either the patient or the healthcare professional.

An important part of the barrier is the special relationship between patient and physician, an environment that goes back centuries. Patients go to doctors to be considered as individuals, and physicians essentially gain their income by charging for appointments. On each side there is much work to be done in changing both perceptions and business models.

Kooi also emphasised the need to develop behavioural understanding, for instance in the way that people now use smartphones. This understanding of behaviour was picked up by the final speaker,

Dr Juliet Bedford, founder of Anthrologica, the research consultancy focussing on applying anthropology to healthcare.

Her opening point was that, although there are pilot projects and studies on specific applications, there is currently an absence of real research into the progress of adoption of mHealth.

She referred back to work carried out in the 1950s to develop the "health belief model" which identifies four key concepts which impel an individual's readiness to take action: the individual's perceived susceptibility to a condition; the perceived severity to it; the perceived benefits of treatment or prevention; and the perceived barriers.

People fixate on the barriers, she continued. Some are insurmountable, so we should focus on what can be changed or overcome. Forge new behavioural imperatives, based on empirical research on what can be achieved. mHealth has a real potential to change outcomes, Dr Bedford concluded: we need to figure out how to develop the conditions for acceptance.

The importance she drew from this was that it was dependent upon individual perceptions. These are modifying factors between sound advice and the likelihood of action. Consequently, at the heart of evaluating the human behaviour barriers to adoption, lies the need to understand these models of acceptance for patients, doctors, and any other stakeholders involved.

Dr Bedford identified five barriers: logistical, clinical, technical, economic and social. Rather than being considered individually, she suggested that it is the links between them that are important.

The questions and answers session started with a question that suggested that there is no single route to modifying behaviour patterns, as responses vary by age group, education and disease. Dr Bedford replied that it was certainly wrong to treat mHealth as one demography.

But before developing a communications strategy for changing behaviours, we need to understand the baselines of health understanding.

WE NEED TO EDUCATE PATIENTS TO THE BENEFITS OF CONNECTED HEALTHCARE TECHNOLOGY BEFORE THEY NEED IT

A second question from the floor continued the theme, suggesting that while the conference treated mHealth as a unity, no single solution was ever going to fit everyone.

Stephen Johnson agreed, suggesting that even the expression "mHealth" was difficult.

He suggested that one of the roles of the wireless provider was to offer a perspective on the range of solutions which may have been applied in different markets and use that as a lens to focus on what can be achieved in healthcare.

Juliet Bedford suggested that this issue goes beyond mHealth and that if there was one perfect patient it would be possible to design one perfect healthcare provider. From his perspective,

Ruud Kooi observed that the pharmaceutical industry has a tendency to look at one successful project and impose the lessons drawn from it everywhere. For Vodafone, Axel Nemetz underlined that this debate is not about the technology, but about what is right for the patient.

Johnson said that each application needed to be broken down into the user perspective and the provider perspective. For the user, they want a joyful experience. For good outcomes, it needs to be a platform which is integrated and open, to provide whatever connectivity and functionality that is necessary. And the business plan should deliver a win-win.

Ruud Kooi reinforced the need to change the business model. Reimbursing doctors on contact is no longer sustainable, and he pointed to a trial in Australia which is currently giving doctors financial incentives for developing telemedicine approaches.

Finally, Bedford picked up on the patient perspective, and underlined the point that introducing technology at a time when they are vulnerable is difficult. Patients are going to react against multiple choices and new technology, especially if it is perceived to limit personal contact with a doctor.

So we need to educate patients to the benefits of connected healthcare technology before they need it. We need to look at how individuals can interact with mHealth technology on a daily basis, so that they are comfortable with it should they have a personal health crisis which can be addressed by it.

The Vodafone Health Debate

The second session was chaired by **Dr Tim Jones** of the Future Agenda, and featured panellists Stephen Johnson and Dr Juliet Bedford again, together with Jeroen Corthout of Across Health. Each made a brief opening statement referring to their sections in the Vodafone Insights Guide publication and the previous day's session, but the bulk of this workshop was given over to a free-ranging debate with the delegates.

The first question from the floor was "What is the one big thing that will make mHealth happen?" Bedford suggested that the key is to build confidence in the concepts of mHealth right away by adopting it into daily lives. When you are ill it is not the time to be pressured into adopting new technologies.

Corthout expanded the argument, suggesting that mHealth should initially be about improving the wellness of the individual. To drive forward adoption, though, you need to understand the motivation of the patient for engaging with mHealth. The motivation will be different for each patient.

Johnson made the radical suggestion that we stop calling it mHealth. First, it makes it a debate about technology, and second "health" has negative connotations in the mind of the public, when what we should be doing is focussing on wellness.

He also suggested that this would be a positive step in convincing doctors that this is good for them, too, and Corthout picked up on this point. He suggested that doctors need to understand how it can improve their workflows by giving patients information whenever they need it, and by leading to faster, surer diagnosis and care.

Bedford agreed that lumping everything together under a blanket banner of mHealth was not helpful. She noted the need to distinguish between different applications, and to show that they are complementary to existing practices not threats. It should add to the care available, but while there is a lack of knowledge of the technology out there it is difficult to tell that story.

From the floor came the strongly argued point that we were holding a debate on healthcare with only a couple of practising physicians present. We all need to recognise that mHealth will not take off until doctors are part of the debate, and when doctors are excited by the prospect. At the moment the mobile phone is seen as a threat, with the perception that it will replace the doctor's fee with free advice. That perception must be reversed before real progress can be made.

Another comment from the floor moved the discussion on to using online devices to drive forward behaviour change.

Suggestions included using social networking for debate and support, and online games to change individual attitudes to wellness. A second delegate spoke from experience that gaming applications were fun and got the interaction moving, but the really successful approach involved social applications.

PRESENTING A FINISHED TECHNOLOGY TO ANY GROUP OF STAKEHOLDERS WILL ALWAYS BE PERCEIVED AS A THREAT

Johnson argued that, while it was a concern that doctors were too busy to attend the conference, there is a shift in the healthcare environment from being physician-centric to patient-centric.

Bedford argued that doctors need to be involved at a much earlier stage of development of mHealth applications. Presenting a finished technology to any group of stakeholders will always be perceived as a threat.

She also commented on the lack of scientific background. Clearly there are interventions which work well through mHealth, but we need to build up an evidence base of how and why they work.

Corthout again drew the distinction between health and wellness, arguing that wellness initiatives can move quickly and effectively, but changing the healthcare system will be much slower. He also made the point that people who are keenest to adopt these technologies tend to be in good health. Those who have been diagnosed with a serious condition are less likely to be motivated to understand technological solutions.

Johnson felt that the concept of mobility is often seen as a magic bullet which it is not. He suggested that the strength of mobile applications is in timely and contextual information. That, in turn, needs to be useful and useable: you cannot present complex information to an uninformed individual.

A delegate who had been involved in the immediate aftermath of the Haiti earthquake described how mobile communications were used to promote survivability: how to find safe shelter or clean water, for example. An informal survey afterwards suggested that 75% of the population had changed their behaviours after the event, demonstrating a different attitude to seeking and reacting to information.

Also from the floor, the point was made that there are great similarities between wellness and managing chronic illnesses.

ONE OF THE BIGGEST BARRIERS IS THE DISPARITIES NOT JUST IN AVAILABILITY OF INFORMATION BUT IN THE HEALTH LITERACY OF THE INDIVIDUAL

In each case, the motivation from the individual is to live life to the fullest. Taking this view, one of the biggest barriers is the disparities not just in availability of information but in the health literacy of the individual.

Moving on from that, the point was made that there is a flood of apps at present, and the challenge is for the consumer to find out what is good advice, what works and what is valuable. Again, this needs to be driven by physicians.

Dr Juliet Bedford agreed that the flooded market is overwhelming, and that it is not fair to expect the patient to make a decision. She asked if there was a case for registration or accreditation of services.

Stephen Johnson suggested that the world of healthcare should look at other businesses where the digital revolution has created a flood of information. He suggested that reliable intermediaries will spring up in health as they have elsewhere, providing a filtering and curation service to answer the basic patient question can you tell me where to look.

A question from the floor brought the discussion back to the shift in control from the physician to the patient.

Jeroen Corthout agreed that the patient will probably have to take the lead, but that is no bad thing as the patient is living with the condition 24/7. He said, though, that this is a fundamental shift for the whole of the healthcare industry.

Bedford was less convinced that we could predict precisely how the relationship will shift, and a delegate from the floor argued that the shift should be mediated by the physician. That will make the increased reliance on technology more acceptable: patients value the opinions of physicians.

Another delegate agreed that doctors should be involved, saying that while there was an assumption that doing something yourself will be effective and save money, in health that can have disastrous consequences. The best route must be to decide what the outcomes will be, then see where the patient and the physician need to be empowered. But unless private and public organisations fund that change, the barriers will remain.

From the floor the question of the ageing population was raised. Johnson suggested that one of the most exciting applications of technology is how the need for care homes can be modified, given the cost of placing elderly patients into them. Lifestyle mHealth applications can certainly allow people to live longer in their own homes.

It should also be noted that solitary people tend to be depressed, and this can lead to significant increases in healthcare costs. Social initiatives have a second value driver, therefore, in keeping patients active and involved.

The next question returned to the message that mHealth is a diverse subject by raising the differences between applications in the developing and developed world, and suggesting that the next five years will see the biggest action in the developing world.

Bedford suggested that it was an interesting and exciting time all round, and that she saw similarities as well as differences between the two environments.

Johnson identified a technology halo effect here, as there has been in other markets. The developing world will see the volume application of relatively simple applications (as in SMS for Life), while technical innovation will drive the industry in the west.

From the floor one delegate agreed that the value propositions are so different in the two environments, so from the mHealth industry viewpoint they both have opportunities in different ways, although one day we may bridge the chasm.

Another delegate said that this is just a fraction of the argument. Economic rules go out of the window when someone is sick. Ultimately, doctors are not going to have a choice about mHealth: regulatory and economic drivers will force it to happen.

Dr Tim Jones reminded the session that regulation and commercial considerations were other key barriers to adoption, and would be addressed in future Vodafone publications and debates. To conclude this debate, though, he asked the panellists how the industry will look five years from now.

Stephen Johnson suggested that it will be invisible: that we will not realise we are being monitored or receiving subtle guidance to modify behaviours.

What will be fascinating will be how genomic information will form part of this connected, data-driven world, and how we address the privacy issues that this implies.

For Dr Juliet Bedford, the message was that mHealth is an enabling technology, which will open up prospects, particularly in emerging countries, where healthcare was not previously available.

WHAT DO YOU BELIEVE TO BE THE BIGGEST BARRIER TO MHEALTH ADOPTION? DISCUSS YOUR VIEWS ON MHEALTH.VODAFONE.COM/LINKEDIN

Other comments from mHealth Summit 2011

Regina Benjamin, the US Surgeon-General, stated that she saw the aim of mHealth as prevention and wellness, and that "prevention needs to be profitable".

In a session called *Mobile health in the clinical enterprise*, **Krishnan Ganapathy** of the Apollo Telemedicine Networking Foundation (and a practising neurosurgeon in India) said "The ordinary practitioner has yet to be engaged with this new potential. Unless the general practitioner is incentivised he is not going to embrace mHealth – he will say 'what is in it for me?'."

He also addressed the difficulties of moving from pilot projects to full-scale implementations, saying "we are still suffering from pilotitis". He pointed to a diabetes care pilot project which has yet to lead to implementation, and wondered if it was a behavioural barrier: are patients still not comfortable in accepting clinical instructions on a smartphone?

Joseph Kvedar of the Center for Connected Health suggested that if we give healthcare providers a robust stream of information they can deliver just in time care, keeping patients out of doctors' offices and hospitals. Patients are the biggest untapped resource, he suggested, so they should be engaged in their own care.

Eric Yablonka of the University of Chicago noted that the accelerating trend to take care of patients outside hospitals meant that wireless carriers are now part of the healthcare system, especially with the growth in connected devices such as swallowable GI imaging and wearable sonograms. He coined the term "body area networks".

He said we are now in the situation where we need a reference architecture for wireless connectivity at three levels: to consumer grade and enterprise grade we need to add medical grade. He asked how we licence for medical applications commoditised consumer devices like Android tools.

Russell Glasgow of the National Cancer Institute noted that mHealth is particularly good for tracking and recording what we do in our lifestyles, which is a valuable tool in promoting healthy lifestyles and preventative care. We need to reward the recording of data, but the problem is with people who have literacy and numeracy issues and who may be at high risk. It is all too easy to produce patient feedback which is only of interest to people with a high level of understanding.

He said that the response must be personalised. Patients will respond only if they think the solution is tailored to them as an individual, not a patient number. It should be a shared decision-making process, with patient input into the way that information is collected and presented. It should also be connected across the spectrum: a cancer patient may also suffer from depression, for example.

JOIN THE HEALTH DEBATE ON LINKEDIN AT MHEALTH.VODAFONE.COM/LINKEDIN