

## Project Macmillan Exploratory Report

### DHI Exploratory Team

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## **Project Macmillan Exploratory Report**

Date: Thursday 4 September 2014

Location: Appleton Tower, University of Edinburgh

### **Introduction**

The Project Macmillan Exploratory aimed to discover how asthma care could benefit from augmented reality by reviewing existing evidence (patient surveys, professional feedback, etc.) and discussing the future direction of asthma treatment, including how to further develop adherence behaviour.

### **Augmented Reality**

Augmented reality is a live direct or indirect view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated sensory input such as sound, video, graphics or GPS data.

The group discussed the difference between Blippar and QR, which differ both in the way in which markers are recognised and the way in which content is delivered. QR codes are black-and-white squares read by a mobile device using a camera that sends the user to a website. By contrast, Blippar uses a device's camera to recognise a whole image of any size, shape and colour. This recognition can trigger a whole range of other actions which appear directly on the phone screen. The content can be easily updated by the providers as and when required; users will always see the latest content available. The experience offered by Blippar is thought to be especially engaging for the user.

### **Virtual Genie Presentation**

Augmented reality is like seeing the world with a layer over it. Mobile technology normally provides this layer either through smartphones or Google glasses.

While lifestyle is the main beneficiary of this technology at the moment, there is a need to consider the benefits of such technology for the health sector. The challenge is finding an appropriate end user. Virtual Genie believe there is considerable scope for impact and that there is existing evidence to show that pharmaceutical companies are already interested and active in the field. The considerable rise in smart phone use in Scotland (now 83% of mobile users in the UK) and world-wide (e.g., there are 100

million users in Sub-Saharan Africa) will drive this interest ever further. The simplicity and value of the technology is now so great that the opportunities cannot be ignored by the health industry.

The current prototype does not require QR codes. Using Blippar, which is available free to users, the Talking Medicines app simply locks on to images (on drug packaging, for example) and brings up a variety of audio, video and text-based information. For example, the platform allows the patient to watch how to use their medication or inhaler via a video. Talking Medicines believes that this kind of simple and fast interaction has the potential to get the patient to use their prescription more effectively. User engagement with prescription leaflets and instructions is notoriously low. Watching a short video (less than 60 seconds) has the capacity to engage patients and ensure more effective use of their medication (particularly in the case of inhalers). In addition to this online information, there would be signposting to further areas of help and support, e.g., a pharmacist, a nurse practitioner or a general practitioner.

### **Celesio & NHS Dumfries and Galloway**

Celesio was brought into the current proposal in order to help Talking Medicines access pharmacies and for support around data content. Asthma was selected as one of the most significant health challenges where little had been done in terms of digital advances.

NHS Dumfries and Galloway was selected as an area where there were more asthma-related A&E admissions than in any other part of Scotland. Admissions were statistically worse than major metropolitan centres such as Glasgow but NHS Dumfries and Galloway provided a big enough population sample for the project. There are 3 Celesio/Lloyds Pharmacies in that NHS Scotland board area that are being used to test the platform. The appropriate label is being applied to the medication and data is being recorded by Celesio.

### **Patient Profiles**

It is important to understand how patients get the message and why. Celesio noted that at present research suggests that:

- ⊗ 1 in 20 don't take medicine because of side effects.
- ⊗ Only 1 in 5 commit to regularly taking their prescription (the problem of perceived need of medication is a major challenge in asthma treatment).

- ⌘ 71% forget to take their medication entirely.
- ⌘ Only 4 in 10 people know why they are taking their medication and how to use it effectively.

In England, the financial burden of prescriptions was deemed to be an obstacle to asthma treatment (prescriptions cost £8.05 at time of Project Macmillan Exploratory<sup>1</sup>). Some avoid paying for treatment until it is too late. This is not currently an issue in Scotland, where prescriptions are available free of charge.

There is a need to decrease concern amongst patients around key areas like steroids and misplaced public concerns. There is a need to increase patients' perceived need to use prescribed medication.

### **Case Study**

Ness presented her experience of asthma and her rate of adherence to medication. She outlined the challenge of treating herself regularly: the fact that her condition waxes and wanes in severity has an impact on how often she uses her inhaler.

Having had a hospitalisation recently, she thought it would be useful to have a system that could advise her on how much she could safely use her emergency inhaler in one day before she should seek urgent care from a doctor. She noted that it would also be helpful to know at what point use of an inhaler would no longer be beneficial, again letting her know when it would be time to seek medical help. Ness explained how panic can set in during a severe episode and so she would appreciate better, readily-available information on what to do in an emergency.

### **Discussion**

It was pointed out that self-management has an important role to play in asthma treatment. One participant noted that often those who have been hospitalised take self-management more seriously and treat themselves more effectively. It was believed that the perception of risk amongst patients varies widely, with few envisaging hospitalisation as the final outcome of an asthma attack.

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<sup>1</sup> <http://www.nhs.uk/NHSEngland/Healthcosts/Pages/Prescriptioncosts.aspx>

## Moving towards greater adherence

The group discussed the use of the word 'adherence', some of whom felt it carried authoritarian connotations. Others disagreed, arguing that the term provided a reliable method for classifying the patient experience. All agreed on the power of labels in asthma treatment (for example, the difference between 'asthma sufferers' and 'people with asthma').

It was agreed that it is necessary to demonstrate and analyse the impact of any potential solution. Asthma is a condition that comes and goes so a reliable sample of active patients can be difficult to find.

The group also discussed the importance of understanding the cross-section of experiences of people with asthma and the need to tailor approaches to support both those with regular asthma attacks and those whose condition is linked to hay fever. There have been a variety of methods trying to address different groups. In Dumfries and Galloway there was a drive to get clinicians and pharmacists to demonstrate how to use inhalers effectively. This was welcomed and considered to be hugely beneficial to patients. Unfortunately it was time consuming and therefore not a viable solution for all of Scotland. Paper action plans have also been tried but they have low take-up rates and mixed responses from patients and clinicians. It was agreed that more tailored approaches were therefore required for each patient.

There is a need to identify and address when people are beginning to deviate from their self-management plans. However there are also various legal issues around how technology can respond to changes in what are now termed 'personalised action plans'.

## **The role of health professionals**

The group discussed the role of the health professional who manages/provides the personalised action plan. What is the appropriate role for a community pharmacist? There was concern over the potential lack of clinical participation being considered in the development of Talking Medicines. It was highlighted that spotting symptoms is different to providing a diagnosis or immediate solution.

It was generally agreed that pharmacists can do more to help patients with self-management, e.g., signposting, sharing their knowledge of the medication, showing how to use it effectively, etc.

Pharmacists are also key in promoting and supporting the use of self-management plans so they are used effectively.<sup>2</sup>

The platform is here to provide some form of support to pharmacists and indeed all health care professionals by providing key information outside of the pharmacy and GP clinic. It is aimed at keeping people out of the system and giving health care professionals more time.

### **The Role of Talking Medicines**

There was concern that the Talking Medicines would follow the model of many websites or worse still become a website in itself. However it was made clear that the platform would be a signposting device and would simply show people where to go next.

Backing up the information with visuals is seen as a key step forward. Visual metrics are important and make improve people's capacity to adhere to information.

The Virtual Genie team noted that Talking Medicines also offers an opportunity to build a social base to discuss how to use an inhaler and share information more freely. There would be links to support groups, discussion forums, etc. This is seen as key to long term support and adherence.

There are some important questions for Talking Medicines, for example:

- ⊗ What do clinicians want from the platform?
- ⊗ What does success look like?
- ⊗ Will there be a real impact on patient quality of life?
- ⊗ For pharmacists is it a case of signposting alone?

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<sup>2</sup> Pharmacists have an impact on clinical care and decision making, and the Scottish Government want this participation and influence to grow. More details on this can be found in the 10-year plan in Prescription for Excellence: <http://www.scotland.gov.uk/Resource/0043/00434053.pdf>

- ⌘ For the academic is it simply a trusted flow of information?

Questions and considerations regarding the Talking Medicines platform:

- ⌘ Who will hold any data collected?
- ⌘ Will there be a correlation between the platform use and prescriptions dispensed?
- ⌘ What will the outcomes be (e.g., rate of A&E admissions)?

The group advised that Virtual Genie would need to be careful in its use of terminology for the purposes of potential trials and ethics. This led to a discussion about whether this was to be a project solely for a pharmaceutical company (commercial) or one that was aimed at NHS Scotland. Virtual Genie must decide on whether to take a commercial or clinical path reasonably early on in the project as NHS Scotland steps for clinical and randomised trial are rigorous.

They typically include the following:

- ⌘ Feasibility assessment
- ⌘ Creation of viable outcome measures
- ⌘ Randomised controlled trials
- ⌘ Larger scale participant trial

Decision-makers require this level of evidence as a minimum. The current platform is at ‘null hypothesis’ stage.<sup>3</sup>

There is a need to think carefully about the precise aim of the platform. It was argued that it was aimed at incremental changes at the baseline of healthcare. This was understood but the group asked what would be the direct impacts on people with asthma. The group also asked who would lead a pilot or trial.

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<sup>3</sup> A null hypothesis is a general statement or default position that there is no relationship between two measured phenomena. Rejecting or disproving the null [hypothesis](#)—and thus concluding that there are grounds for believing that there is a relationship between two phenomena or that a potential treatment has a measurable effect—is a central task in science, and gives a precise sense in which a claim is [capable of being proven false](#) stage.

Lloyds will cover this for the time being but the NHS Scotland would need to be involved at some stage. Virtual Genie has said that the ultimate aim is to take this product to NHS Scotland.

There needs to be great care put into where and how the platform is used. It will need to be standardised to avoid a 'postcode lottery'. It should also look at creating more patient information channels. It will need to be standardised for all medication – this is the only way to make it appealing to NHS Scotland. It is thought that this will be possible in time.

This platform could have wider applications beyond asthma, e.g., use of insulin by people with diabetes. Consideration should be given about the scope of this platform's utility. It is also important to consider other languages such as Urdu, Polish, Farsi and Romanian and the cultural challenges involved in getting some communities to use medication effectively.

The need for wireless Internet access should not be taken for granted, particularly in rural communities where people could benefit most from such a service. Understanding rural and city pharmacies and the different patient expectations that come with this will also be key to its success.

## **Outcomes**

Possible outcomes were suggested by attendees. These could include the following:

- ⌘ Increase (more effective use) or decrease (less need) in steroid use from inhalers
- ⌘ Decline in unscheduled appointments
- ⌘ More effective control of symptoms
- ⌘ Less future risk
- ⌘ Decline in exacerbating symptoms

## **Partner participation and cost**

At present, the plan is that the Talking Medicines platform will be free to patients. Research and Celesio participation is in kind. Intellectual property rights are currently owned by Lloyds. The DHI will provide academic costs (for example for the services of a health economist). This is the current financial model, although Virtual Genie stressed that there is considerable interest from the wider pharmaceutical



community. It is thought the costs will be very low in terms of creation and running of the platform. If there was a demonstrable impact, the potential low cost would be a key advantage.

Talking Medicines noted that a similar veterinary-focused platform for anti-inflammatory medication cost £30k with £15k per annum upkeep. Pricing will all depend on what the platform will do. It is thought the supply of data will be a key selling point for pharmaceutical companies. Insurers will also find the concept attractive as they could establish patient adherence to their medication more effectively.

#### *Other resources – advice on where to go next*

- 🔗 Asthma UK
- 🔗 Patient.co.uk
- 🔗 NHS Scotland
- 🔗 American Lung Foundation

#### **Key Discussion Comments**

- 🔗 Self-management plans are important in treatment but a more effective means of engaging with them is required. This platform could help.
- 🔗 Is it going to be commercial only or is there a desire to take the platform to NHS Scotland? A decision must be made soon.
- 🔗 The evidence base is presently very slim. It must be expanded and demonstrate more rigour regardless of the business plan and the current project.
- 🔗 There must be a clear message on how this platform differs from apps.
- 🔗 A feasibility study and academic input is required.
- 🔗 There is a need for greater collaboration between clinicians and pharmacists.
- 🔗 Involving a health economist at an early stage would be very beneficial.
- 🔗 It will need to be future-proofed, e.g., Talking Medicines will need to be compatible with a variety of platforms as-yet undeveloped or with a currently lower user base (such as Google Glass).

#### **Glossary**

**adherence:** the extent to which a person's behaviour - taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider (<http://apps.who.int/medicinedocs/en/d/Js4883e/6.html>)

**asthma:** a common long-term condition that can cause coughing, wheezing, chest tightness and breathlessness; caused by inflammation of the small tubes, called bronchi, which carry air in and out of the lungs (<http://www.nhs.uk/Conditions/Asthma/Pages/Introduction.aspx>)

**Celesio:** an international wholesale and retail company and provider of logistics and services to the pharmaceutical and healthcare sectors (<http://www.celesio.com/en/>); owns Lloyds Pharmacy, which will be used to test the Talking Medicines platform.

**community pharmacist:** A person who usually works in the high street, local and rural pharmacies. They are involved in the sale and supply of medicines and give advice about medicines, symptoms and general health matters. They are responsible for dispensing medicines, counsel patients on their proper use, clarify with GPs and other prescribers that dosages are correct, and check that new treatments are compatible with other medicines the patient may be taking. (<http://www.nhscareers.nhs.uk/explore-by-career/pharmacy/pharmacist/community-pharmacist/>)

**inhaler:** devices that deliver medication directly into the lungs as you breathe in (<http://www.nhs.uk/Conditions/Asthma/Pages/Treatment.aspx>)

**postcode lottery:** a situation in which where a person lives determines the quality of public services they can access

**Talking Medicines:** private company that uses augmented reality technology to enhance medical packaging (<http://www.talkingmedicines.com/>)