Carlisle Healthy City: Rural and Urban: Use of Digital Technologies in supporting the WHO Healthy City programme

Alison Marshall[1], Emma Dixon[2], Darren Crossley[2], Elaine Bidmead[1]
[1]University of Cumbria, Fusehill Street, Carlisle, CA1 2HH, UK
[2]Carlisle City Council, Civic Centre, Carlisle, CA3 8QG, UK

1. Context

The UK Healthy Cities Network is part of a global movement for place-based health that is led and supported by the World Health Organization (WHO). Its vision is to develop a creative, supportive and motivating network for UK cities and towns that are tackling health inequalities and striving to put health improvement and health equity at the core of all local policies.

Healthy Cities is a global movement that engages local authorities and their partners in health development through a process of political commitment, institutional change, capacity-building, partnership-based planning and innovative projects. Healthy Cities seek to apply Health for All principles such as equity, empowerment, intersectoral collaboration and community participation through local action in urban settings. Within Europe there are more than a 100 Healthy Cities and 30 National Healthy Cities Networks with designated status from WHO Europe.

Over 20 years and through many changes in political systems and public health initiatives, Healthy Cities has been steadfast in its focus on political leadership and partnership working to tackle the social determinants of health and health inequality. These values have stood the test of time and are as crucial now as they were when first proposed.

The aims of the UK Healthy Cities Network are to:

- Enhance learning and build capacity through sharing ideas, experience and best practice
- Widen participation in the Healthy Cities movement and support member towns and cities to develop and test innovative approaches to emerging public health issues
- Become a strong collective voice for health, wellbeing, equity and sustainable development – informing and influencing local, regional, country and national policy.

Carlisle was first designated as a Health City in 2010 as part of phase V, Carlisle identified the challenges and inequalities within the district, and the need to collectively work together to tackle these issues.

Carlisle, and District, is a mixture of rural and urban communities. The historic city of Carlisle is the largest settlement, with a number of smaller market towns and large villages spread across the district. The population of the

district is currently estimated at 108,000[1]. It has experienced steady growth since the turn of the century and this trend is predicted to continue over the next 20 years, particularly in the number of older people living in the district. Carlisle is the 122nd most deprived district out of 354 nationally, and a number of inner city wards feature in the 25% most deprived. A key characteristic of Carlisle is the variation between wards across a range of deprivation and health indicators which reveal, at times, considerable inequalities.

The Cumbria Rural Health Forum (www.ruralhealthlink.co.uk) was established in 2013 to bring together public, private and third sector organisations involved in the delivery of health and social care in Cumbria. The aims of the Forum are to understand the specific issues around rurality and the implications for delivery of services. Rural communities face particular issues in accessing healthcare. These issues include:

- Dispersed communities meaning that people have limited access to services and have to travel further to access basic healthcare;
- Smaller GP practices and other health centres, meaning that staff may feel professionally isolated and removed from opportunities for professional development;
- A greater reliance on volunteer services;
- Population demographics that include relatively more older people than in urban centres;
- Poor quality broadband and mobile infrastructure.

2. Rationale

In October 2015, Carlisle was asked to host the UKHCN and in doing so took the opportunity to not only host a business meeting, but additionally invite local partners (including the University of Cumbria), to add value to the day and additional generate outcomes that could be advanced both locally and nationally. Additionally the need to engage in different ways, in order to reach a variety of communities was key.

The Cumbria Rural Health Forum developed the Cumbria Strategy for Digital Technologies in Health and Social Care in 2014-2015 and was then commissioned to conduct a number of digital implementation workshops, between October 2015 and March 2016, with the aim of proposing specific ways in which digital technologies should be implemented within a pathway, place or around a particular group of individuals. As with all the Forum activities, workshops are designed to bring together professionals from the public, private and third sectors, linking to suitable technology providers as needed.

The scope for the work on digital technologies includes telemedicine, telehealth, telecare and assistive technologies, e-health products and services that are commercial available (see Figure 1 below).

[1] Public Health England, 2016. Carlisle District Health Profile 2016. Crown Copyright. Available online at www.healthprofiles.info.

3. Description

The UK Healthy Cities Network digital implementation workshop focused on health promotion and wellbeing to address long term conditions and risky behaviours. Where examples and case studies were needed, they were largely drawn from Carlisle or Cumbria.

The objectives described and reported here are:

- Share an understanding of what is possible, what technologies have been used in health promotion and public health, in Carlisle and elsewhere, and how successful they have been found to be;
- Brainstorm and propose opportunities for implementing digital technologies with the identified group in Carlisle (and elsewhere at other WHO Healthy Cities);
- Develop and agree an action plan for the group, to influence change in Carlisle, within the WHO Healthy Cities network and within other partner cities.

Within this report and all the work of the Cumbria Rural Health Forum, the term 'digital health' is used to encompass any use of digital technologies in the delivery and provision of health and social care. Terminology is not always used consistently, but other terms used include 'telehealth', 'telemedicine', 'e-health', 'mobile-' or connected health'. These terms can be used to refer to a specific type of digital health (see diagram below), but are also sometimes used more generically. For clarity, a description of scope is given on our website and is summarised in Figure 1 below. In section 5 some examples are given to bring to life how these technologies can be applied in health and social care.

Digital technologies in health encompass a range of technologies and modes of use. Public health professionals and policy makers need an awareness of the different modalities.

Telemedicine is the use of video links for scheduled and unscheduled consultations (or other non-face-to-face types of contact, possibly including phone, email, SMS). These consultations can be undertaken with or without a nurse, carer, GP in attendance at the patient's home or local clinic. There are a number of technologies available, ranging in price (and quality) depending on the requirements. Some are free (such as Skype or Facetime), but if high quality video is required then more specialised equipment can be used. Telemedicine is also used to link different professionals, for example to enable multi-disciplinary teams to discuss a case. One benefit of telemedicine is the upskilling of health and care professionals, for example, if they attend alongside a patient in a specialist consultation with a remotely located clinician.

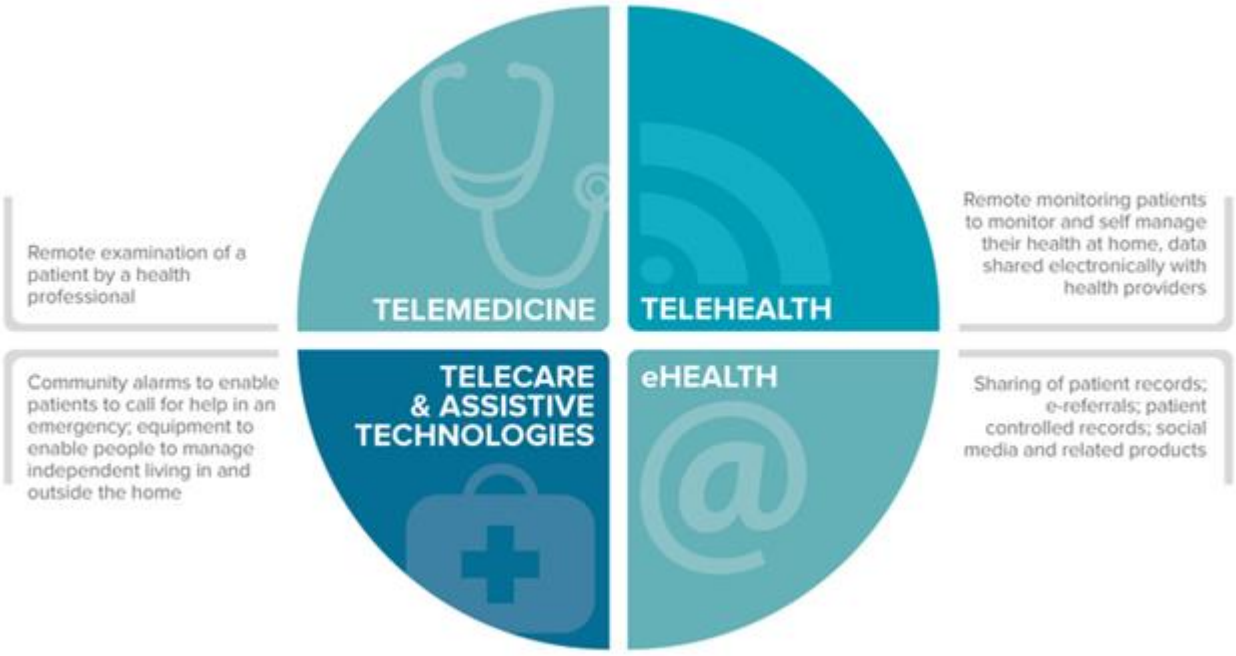

Figure 1: Overview of different modalities of digital health and social care

Telehealth refers to the use of monitoring equipment linked to a remote data centre that can respond if there are problems and also can analyse trends in symptoms. The monitoring centre may be staffed by, or linked to, health professionals who can respond directly to the patient. Telehealth provides support for people with long term conditions, enabling them to maintain working life and minimise impact on family/friends (symptom management, pain management).

Telecare and assistive technologies are in widespread operational use by social services as well as many private providers. This segment includes falls detection, assistive devices to support independent living at home for longer, or outside the home to extend independence. Telecare can also be used for activity monitoring for wellbeing and fitness, during rehabilitation.

The underlying IT provision and software only based products are called e-health services. These are often about data and information sharing, including patient record sharing between services, patient or carer owned records, information services, forums, social networks - health prevention, education. Here we would also include consumer smartphone or tablet apps that are used by both patients and their carers, often independently of the health services.

For some examples of uses of digital health and social care, see the mapping section[2] on the Cumbria Rural Health Forum website.

After a general discussion on which technologies might be suitable for which types of applications, delegates worked in groups to identify specific ideas for

[2] See http://www.ruralhealthlink.co.uk/activities/

implementation, either within Carlisle or one of the other Healthy Cities, or as a recommendation to the UK Healthy Cities Network.

Groups categorised their ideas by target group and/or risk factors and considered benefits and barriers, resource requirements and scalability.

Technology idea	**Target group**	**Risk factors addressed**	**Other details (benefits, barriers, resources)**
App with tags linked to walking routes to schools, with prizes for those who walk most	Healthy Safe Young People	Obesity	Benefits: incentivised behaviour change Resources/costs = low Scalability = high
Share NHS A&E data with social services *(note – work already in progress in Cumbria through Strata project)*	All	Risky behaviours	Benefits: families – social services will understand health issues better Barriers: confidentiality issues Resources/costs = low Scalability = high
App for access to EHC (Education, Health and Care plan), condoms, home testing, prevention messages	Young people/All	Sexual health	
App (or Florence) with reminders for accessing ante-natal appointments with tips on lifestyle, breastfeeding or other individual requirements	Pregnant women	Risky behaviours	
App to monitor alcohol units intake	All	Alcohol	
GPS tracking with healthy text (nutrition) alerts – eg. when going into supermarket '*buy fruit and veg'*, when in a coffee shop calorie information		Diet	Benefits – all, make healthier choices Resources/costs = low Scalability = high

Technology idea	Target group	Risk factors addressed	Other details (benefits, barriers, resources)
Real time information at bus stops – how many minutes it will take you to walk to the next stop and 'beat the bus' – and how much money you can save. By text or on screen information at bus stops		Sedentary lifestyle	Barriers: need infrastructure (real time information), display screens, connectivity etc. Resources/costs = medium Scalability = high
Find people in local vicinity who want to join a 'casserole club' (app or social media?) – cook an extra portion and eat together, deliver to an elderly neighbour	Socially isolated		Benefits: social contact, more healthy eating Resources/costs = low Scalability = high
Use social media to send messages about harm minimisations			

Other points made by groups are summarised below:

- Be aware of the risks of over-reliance on technology
- Be aware of information sharing and confidentiality risks – 'exposing too much information online'
- Consumer apps like fitbit, vivofit, sleep and inactivity monitoring will grow and spread organically. Making them 'public interventions' could 'kill their use'
- What are Healthy City partners doing already (telecare, apps, Virtucare)?
- Need to determine the problem carefully, then use co-production with potential end users
- Don't reinvent the wheel
- What about 'fusion' ideas – link technology and apps to existing interventions such as 'couch to 5 km'/ Park Runs.

Following sharing of ideas to the full workshop and discussion, the separate groups then discussed implementation and came up with some tangible actions that they wish to implement.

Actions from the workshop:

1. **UKHCN** to research what apps are available which related to Phase VI themes[3] and put on the Phase VI grid.
2. Audit what each UKHC member city is already using (eg. telecare, apps, record sharing).
3. Consider developing a Digital Health briefing paper for the network.
4. Each member to choose top 5 apps, test and feed back to the next network meeting.
5. Look into digital health promotion tools.
6. Explore future awareness and training pathways for those interested in developing more – note courses already available at University of Cumbria[4].
7. Raise awareness of opportunities with digital health in each of our localities.

4. Achievements

The session and focus of this agenda has resulted in a number of achievements, some of which are challenging to measure the impact of and others which the outcomes are only beginning to appear.

- A multidisciplinary group of local stakeholders were brought together to discuss, shape and influence the Digital Health agenda locally in each city. Not only did this bring local members up to speed with the agenda, but it also allowed each partner to take the learning back to their organisation, as to how it could be useful and how it could be taken forward
- A number of suggested schemes and projects were outlined. The Steering group are considering funding opportunities to further advance this.

More specifically, work in Carlisle has developed a number of the ideas and actions.

- Digital tools have been used within projects: for example Fitbits as a motivator for a workplace health activity, the mapping of routes and steps for a local walking programme.
- A Google Garage and Digital Carlisle engagement event was held at Carlisle Racecourse on the 14th July 2016. Not only were key stakeholder invited to discuss the boarder Digital agenda, but a workshop took place to explore key themes around:
    - *Leadership and Collaboration*
    - *Infrastructure and Investments*
    - *Developing digital skills and supporting entrepreneurs*
    - *Developing the local digital ecosystem*
- Key questions highlighted the need for a multidisciplinary approach with health partners taking a key enabling role. Stakeholders felt that a successful

[3] The WHO Healthy City programme has a number of designated themes for those participating in Phase VI of the programme. These are summarised here http://www.healthycities.org.uk/phase-vi-themes.php?s=196 and on associated web pages.

[4] Digital Health: Use of Technology in Health and Social Care and Work Based Project. Part time postgraduate certificate. Online at www.cumbria.ac.uk/digitalhealth.

digital city would “improve quality of life” and there was a breadth of discussion around the future of digital, health and preventative work.

- There has been a significant increase of discussion and visibility of the agenda locally and in Cumbria around the Digital Health agenda, we now see:
    - The development of a Health and Wellbeing social system which has a clear digital pathway and focus. Local Health And Wellbeing Coaches (HAWCs) will assist advancing this agenda.
      One of the key elements of the system and the digital development was to find a client management system for prevention. In partnership AGE UK (South Lakes) the COMPASS system has been discovered and will be brought in house to Cumbria County Council and will be used by the HAWCs as part of the countywide pathway. In order to further develop the population and preventative approach the third sector will also be granted access. Most recently the COMPASS system won a GSK impact award, which recognises excellence in charities improving health and wellbeing in their communities. The Award was granted as the system helps older people retain their independence and provide activity and exercise choice in their live.
    - The development of a Countywide Cumbria Local Digital Roadmap (2016-21). The development of a local Digital Roadmap offers Cumbria an unprecedented opportunity to start to bring its entire healthcare economy, primary care, NHS trusts, social care, local authorities, third sector and independent providers and other related bodies such as housing, into the digital lives of our communities. The expectations of the people and communities we serve are increasingly shaped by their experiences in other areas of their lives. It is now time for Cumbria’s healthcare system to capitalise on the digital revolution for the benefit of those we serve.
    - Closer working with health service (NHS) partners through the NHS Local Digital Roadmap. This includes recognition for the need for improved digital infrastructure to ensure information is accessible, exploration of a digital hub based on a model in Scotland.
    - Digital is also a key focus of the Carlisle Plan The consideration of digital infrastructure being built into housing development (this would further allow care, adaptivity and monitoring of individuals health home). Superfast broadband was built into the Crindledyke development in Carlisle.

5. Conclusion

The workshop and further discussions have highlighted the opportunities and possible benefits of digital health in health promotion, to improve wellbeing and public health. Some of the barriers were discussed and strategies proposed to address them. One of the key enablers identified has been collaboration between providers, citizens and policy makers. This is emerging as a key theme and one in which Carlisle and Cumbria are pioneering some good models. The Cumbria Rural Health Forum has been successful in starting the process and in highlighting particularly ‘rural’ issues. However, as the UKHCN meeting discussed, some of these issues apply equally in inner city urban areas. The

implementation of the ideas from workshop participants is proceeding steadily, but greater progress will depend on stakeholder influencing and real collaboration.

6. Acknowledgements

The workshop was run by staff at University of Cumbria and funded, as part of a larger project, by the Academic Health Science Network for North East and North Cumbria (AHSN-NENC) and the North West Coast Academic Health Science Network (NWC AHSN). It was hosted by Carlisle City Council.