Phase 1 Future Hospital development site

Betsi Cadwaladr
University Health Board
C@rtref – Final Report
July 2017
CARe delivered with Telemedicine to support Rural Elderly and Frail patients
Author
Dr Olwen Williams
On behalf of
Betsi Cadwaladr University Health Board Future Hospital Development Site

“Never thought we would be lucky enough to have such a wonderful service on our doorstep”

“The consultant was easy to see and hear despite the fact that my hearing and vision are both slightly impaired”
Aims
The overall project aim was to provide increased access to specialist opinion as close to home as possible for frail and elderly patients in rural north Wales through the use of e-health technology-telemedicine.

Objectives of C@rtref were to:

- Allow patients to have follow-up consultations closer to their own home. This would reduce the need for patient travel and reduce the burden on Welsh Ambulance Services.
- Facilitate improved chronic disease management in primary care through access to specialist support, resulting in increased patient satisfaction.
- Reduce waiting times in other outpatient clinics through releasing review appointment slots for true specialty patients.
- Ensure acceptability of a telemedicine service model through co-production with patients and carers and also information collected via patient feedback questionnaires.

The project was aligned with Future Hospital Commission (FHC) principles of patient care

- Patient experience is valued as much as clinical effectiveness.
- Patients have effective and timely access to care, including appointments, tests, treatment and moves out of hospital.
- Good communication with and about patients is the norm.
- Services are tailored to meet the needs of individual patients, including vulnerable patients.
- Staff are supported to deliver safe, compassionate care, and committed to improving quality.

Background
North Wales has a resident population of 690,000 living across approximately 2,500 square miles. In 2015 it was estimated that 150,000 (21.7%) residents were aged 65 years or older with a projected rise to 210,000 by 2039. Gwynedd is the least populated – 49 people per square kilometre – and has the highest proportion of Welsh speakers (57%). This poses a particular set of challenges in delivering care to a geographically dispersed population with a high number of older people, often with complex needs, living a long distance from the district hospital but often much closer to community hospitals. The catchment area for this project was Dwyfor Primary Care Cluster of 25,000 population, in the county of Gwynedd, with 27% aged over 65 years and 4% aged over 85 years (Public Health Observatory, Fig 1). This community is served by a small community hospital – Ysbyty Bryn Beryl in Pwllheli, 30 miles from Ysbyty Gwynedd, the main District General Hospital. Travel by car takes approximately 40 minutes and by bus 1 hour 40 minutes, requiring a transfer of buses. The community hospital was a suitable location to set up telemedicine. The clinician had identified that frail older people had multiple medical specialty outpatient follow-up appointments and aimed to rationalise this by selecting individuals suitable for a ‘generalist’ single outpatient review. The Rockwood Clinical Frailty Scale was adopted.
Project design and methodology

The methodology adopted was in line with 1000 Lives Improving Quality Together³ based on the Institute of Health Improvement (Berwick) work⁴ and the structured model for improvement using PDSA cycles was utilized for this project. Kotter’s 8-Step Change Model⁵ was adopted for organisational change (see Fig 2).

Figure 2

- Establishing a sense of urgency: identifying opportunities
- Forming a powerful guiding coalition: stakeholder involvement and teamwork
- Creating a strategic vision
- Communicating the vision
- Empowering others to act on the vision: getting rid of obstacles, encouraging activities
- Planning for and creating short-term wins: visible performance improvements
- Consolidating improvements and producing still more change
- Institutionalising new approaches: ensure leadership development and succession

Membership of the C@rtref team has varied over the 3 years – see Appendix 3. Fig 3 outlines the aims, drivers and change projects.
Access to specialist opinion for frail and elderly patients in rural north Wales as close to home as possible through the use of e-health technology.

**AIM**

**PRIMARY DRIVERS**
- Responded to chronic health needs including end of life care by bringing access to specialist care into easy reach of those living at considerable distance from secondary (or tertiary) care centres.
- Improved patient experience, cost of care, and clinical outcomes in the defined patient populations of frail elderly patients who are identified as at risk.

**SECONDARY DRIVERS**
- Increasing numbers of frail & elderly living in rural communities.
- Reduced Primary Care capacity to manage clinical demand.
- Increasing conveyances to emergency departments.
- Availability of technology to set up Telemedicine.
- Improved Patient Experience.
- Reduction in Carbon footprint due to decreased travel.
- Ensure appropriate Skill mix.

**CHANGE PROJECTS**
- Produce Standard operating protocol SOP.
- Install and test Video Conferencing technology – carts & i-pads.
- Engagement with Primary Care Community via Digital Inclusion Officer.
- Patient Experience Questionnaire.
- Commission Staff Wellbeing & Resilience programme.
- Arrange Improving Quality Together (IQT) Silver training for team.
- Staff experience questionnaire.
- Adoption of Frailty Score.

### Setting up the telemedicine clinic – Standard operating policy:

Bimonthly telemedicine ‘care of the elderly’ clinics, delivered by Dr Elghenzai and based at Ysbyty Gwynedd, with video conferencing into the community hospital Ysbyty Bryn Beryl (process shown in Fig 4).

### Figure 4 Process map

1. **Patients identified and letter sent to offer a telemedicine clinic**
2. **Patients calls to confirm clinic**
3. **Patient notes are sent to Ysbyty Gwynedd**
4. **Patient is greeted by a nurse at the clinic: clinic is explained to the patient (consent form)**
5. **Nurse takes the patient’s blood pressure and requests medication list**
6. **Consultation**
7. **Patients fills in feedback form**
8. **Patient discharged**
9. **Reappointed to another clinic**

### Patient selection criteria and frailty assessment

- Patients must live within Dwyfor postcode area.
- Patients must not require physical (hands-on) examination.
- All the review patients who fulfil above two criteria.
- Patients with progressive degenerative disease.
- Patients on more than five medications (polypharmacy).
- All patients must be aged 75 years or over (criteria altered from original as initially 70 years of age).
- Patients who have more than three outpatient department (OPD) visits per month within general internal medicine.
- All patients were assigned a Rockwood Frailty score (Appendix 4).
Enabling technology

Funding for the project was secured through the Welsh Government Health Technology and Telehealth (HTTF) Fund, awarded in May 2014. Part of the HTTF ‘Developing Community Services’ bid aimed to provide high-definition videoconferencing technology in order to develop new ways of working which would reduce travel for staff and patients.

Equipment

A combination of technologies was identified to support the telemedicine virtual clinics. At the patient end, a high-definition monitor with a Polycom Group 500 series VC and a 4x Eagle-eye camera was specified as a minimum. Equipment was trolley-mounted and Wi-Fi enabled to allow flexibility of location. Alternatively, clinicians could choose to use a VC enabled laptop with a Polycom VC client or Microsoft Lync. Digital auscultation (3M Littmann electronic stethoscopes) and digital spirometry (Vitalograph) devices were purchased to provide additional scope for the remote clinics. The team felt that additional bandwidth and wireless router upgrades were required to support the new ways of working. Alterations to the size of the VC screen were made following patient suggestions – with a minimum 42cm screen for best clarity.

Engagement with primary care and community – digital inclusion officer role (DIO)

In the opening phase of the project we employed Medwyn Williams, a former IT teacher with a background in health, as a digital inclusion officer (DIO), funded from November 2014 to the end of March 2015. The DIO provided essential patient advocacy and support throughout the project rollout, helping to inform the patients about what the consultations entailed and their benefits, which in turn improved the patient experience. He collected the patient feedback by administering the questionnaire during this period.

IQT silver training

All members of the C@rtref team completed a 2-day in-house ‘Improving Quality Together3 silver level’ quality improvement training in December 2014. This ensured the team had the necessary quality improvement (QI) skills.

Patient experience questionnaire

Two iterations of the patient experience questionnaire were developed. A more detailed version for proof-of-concept evaluation was developed into a shorter version that can be used for continuous QI (Appendix 5).

Service change – staff resilience and wellbeing

One of the recommendations of the RCP (FHC, 2013) is that ‘Hospitals should make staff well-being and engagement a priority to ensure high-quality patient care’.

During the lifetime of the project, Betsi Cadwaladr University Health Board (BCUHB) was put into special measures. Dr Olwen Williams realised the potential for this to cause a lack of wellbeing in the C@rtref Future Hospital team, and impact on patient care. The overarching objective in providing the Resilience and Wellbeing programme (©), developed and delivered by Dr Dee Gray, between May and July 2015, was to facilitate the development of a ‘sense of coherence’ during the organisational transition period, so that even during difficult working conditions the team would be resilient to the organisational change surrounding them. Whilst there are no data to support, it was felt that this programme enhanced team working and resilience.
Project findings

Telemedicine consultations are now routine in the care of the elderly service delivered by Dr Elghenzai. The service has converted 20% of follow-up consultations to telemedicine over a 24-month period, with, on average, 8 of the 11 patients fitting the criteria per month being seen via telemedicine (Fig 5). In summer 2016 there was a drop in telemedicine clinics. This was due to a decreased ability to recruit eligible individuals and the service being subsequently run on alternate weeks (Fig 6). Of the 196/250 individuals where data are available, 69% (109) have been transferred back to the GP for onward care. The remaining 87 have had their care escalated, including reversion to a ‘face-to-face’ consultation, inpatient admission and alteration of medication (30%). All individuals have previously had multiple OPD consultations with the specialties. Telemedicine clinics reduced travel, number of consultations per patient, movement of patient notes, and travel time for patients with associated cost savings.

Figure 5
The total time in the clinic, which included ‘meet and greet’, explanation of telemedicine, signing the consent form and consultation was 35 minutes (Fig 7). At the outset, the allocated telemedicine consultation time with a consultant was 30 minutes, however, with growing confidence in the system, the time was reduced to, on average, 14 minutes compared to a conventional outpatients consultation of 20 minutes.

Figure 7
Patient satisfaction questionnaire results

Figure 9

- Detailed patient experience questionnaires were collected in a sample of 55 consecutive patients in 2015/16 and 33 in 2016/17: 88.6% (78/88) of patients would recommend telemedicine to family and friends (Fig 9).
- 100% stated that they would prefer telemedicine in comparison to driving to the hospital clinic.
- Patients’ ages ranged from 75 to 104 years.
- 93% of patients felt they had enough time and privacy.
- 96.5% of patients had confidence in the service.
- 1.7% of patients required help with language.
- Of the 10 patients who would not recommend telemedicine, their issues included dissatisfaction of accompanying person, sensory issues, difficulty with communication.

The second questionnaire, implemented in November 2016, was specifically designed to seek users’ experience of telemedicine. The results highlight ongoing high patient satisfaction (Appendix 5).
Patient involvement

Carol Caporn, Patient and Carer Network (PCN), RCP

My role
- To provide support tailored to best meet the needs of the individual patient representatives and to stay in touch with clinical colleagues within the team.
- To retain a focus on the main purpose, principles and values of the FHP development sites (clinical effectiveness, improved outcomes and a better experience of healthcare for patients), throughout the life of the project.
- To sustain and support a patient perspective and voice.

How I was involved
- Attendance at quarterly FHP learning events – this was crucial to support patient involvement across the first phase development sites.
- Providing a listening ear; honest feedback; keeping communication lines open across the project team, especially during the short-term absence of a local patient representative.
- Affirming positives in project work to encourage ongoing progress. Providing occasional motivational ‘nudges’.
- Performing a ‘radar’ function from a patient perspective to anticipate and respond to queries and concerns and to provide a reality check on progress.
- Being part of the communication link between the project and the RCP.

Challenges
- Sustaining momentum in turbulent times, including organisational changes and the associated personnel changes, and these have slowed, but not stopped C@rtref’s progress.

Successes
- Continued commitment of the lead clinicians and their willingness to see their patient representatives as partners who have constructive, helpful insights to share.
Ann Rowe, local patient representative

My role
- To work with and be a part of the project team, helping to ensure that project activity always focuses on the needs and preferences of the patient, through the project design and operation.

How I was involved
- Assisting with the revision and streamlining of the patient questionnaire.
- Putting together a draft patient questionnaire and discussing this with the clinician running the VC clinic.
- Delivering patient questionnaire at VC clinics. Patients have been more than happy to share their experiences of the VC with me.
- Consultation with FHP team.
- Evaluation of patient data and subsequent revision of questionnaire.

Challenges
- I joined the project in August 2016, as the third patient representative on the team. I had to ‘get up to speed fast’ and, as the three clinicians involved were located in two different geographical areas, organising an initial briefing meeting was difficult.
- Clinic attendance has slowed down so gathering patient feedback has also been reduced.

Successes
- I have been pleased to work with such a committed clinical team.
- The team helped me to understand the difficulties under which they have had to ‘pull out all the stops’ to ensure C@rtref is a success.
- I now have a much better understanding of telemedicine, and of how important innovations like C@rtref are, to offer choice and a local service especially for frail and older people in rural communities.

Patient quotes:

“We were very happy for my wife to attend this clinic as it has saved me driving all the way to Bangor for a short follow-up consultation. It is over an hour’s drive from Aberdaron and then it takes forever to park. I worry taking her to Bangor as I have to leave her inside the foyer and then find somewhere to park. Coming to Bryn Beryl is a lifesaver in terms of time and travel.”

“It is good that the local community hospital now has another service to offer patients from such a rural area. The more we use the hospital the more it could be sustainable.”
Return on investment

Impact on patient travel and cost of travel

Figure 10: SPC chart detailing the total distance (in miles) and money (based on 30p/mile) that the patients saved by travelling to the telemedicine clinic instead of Ysbyty Gwynedd. The data below represent a return journey.

Impact on consultant

20% of OPD follow-up contacts now occur via telemedicine; a completely new way of working.

- Reduced travel time by 1.5 hours per clinic and mileage by 80 miles per clinic.
- This equates to a £1,411 saving per annum based on travel expenses being remunerated at 42p/mile.
- Now delivering Direct Clinical Care (DCC) session at base hospital.

Financial

Basic modelling has been undertaken with the BCUHB Finance Department to explore the scale-up of virtual outpatient services. An average outpatient follow-up appointment is currently budgeted at £170.98. Alternatives include video appointments, Skype calls, telephone calls, email or simple letter, with costs starting from £34.20 per patient (not taking into account additional savings in real estate usage). From an overall number of over 400,000 follow-up appointments per annum, it is therefore obvious that even a transformation of 10-20% of appointments from face-to-face to an alternative method could have a major effect on budget and/or waiting lists.

Progress against project plan

Organisational changes with three waves of restructuring led to serious challenges in team cohesion and the ability of the organisation to maintain a culture of innovation and deliver against shifting targets. These have been significant changes which have led to the project stalling in implementation of its second area for development - C@rtref XL. While the C@rtref telemedicine service has been delivered, the loss of a dedicated project manager since January 2016, restructuring and preventing fatigue arising from the upward struggle in maintaining momentum have been major issues. The Health Board has had significant issues as, from 2013, BCUHB has experienced significant disruption in leadership at Board level with:
• 3 appointed CEOs
• 3 caretaker CEOs
• 3 Medical Directors
• 3 Directors of Nursing.
• Since June 2015, it has remained in ‘special measures’ with direct line management from the Welsh Government, with specific focus on Leadership & Governance, Strategic and Service planning, Engagement, Mental Health, Maternity Services and Primary Care.

It has failed to achieve financial balance over a 3-year accounting period.

Delivering a quality improvement project against what has been a perfect storm of extraordinary pressures has been challenging.

**Profile raising – external and internal**

**Visit from Cabinet Minister for Health, Vaughan Gethin AM**

Overwhelming support has been received for the project from our Health Minister Mr Vaughan Gethin. He spoke about his visit at the Senedd in response to a question about telemedicine:

“I recognise the challenge … and its part of our informed healthcare digital plan for the future. We expect more people to be able to routinely use remote access and remote consultation with the healthcare profession……. Some of that can be done by telephone now and some of it can be done by video call as well. For example, when I was in Ysbyty Gwynedd on Monday, I had a very interesting presentation from the Cartref project, which is the future hospital project sponsored by the Royal College of Physicians. They were able to show me an active clinic where someone was actually based in the hospital, and they had people who were attending a clinic in a more remote hospital for people who didn’t have access in their own homes to IT facilities, and they were having their consultation remotely. That was a regular feature and a regular part of it. And actually, the individual citizens using the service in that way were quite happy to do so because they recognised it saved them a long and difficult journey to do so.”

**HSJ Awards**

The C@rtref project was Highly Commended in the HSJ Value Awards Telehealth category in spring 2016.
Future Plans for Telemedicine at Betsi Cadwaladr Health Board

The BCUHB executive management team confirmed the organisation’s position on adopting the C@rtref model as part of its Health Technology strategy for outpatients with the aim of having 20% of consultations via telemedicine. We have been successful in disseminating our learning and engaging other teams in setting up telemedicine services as outlined below:

Uptake of telemedicine clinics by other specialties

- Rheumatology consultations and Parkinson’s clinics established between Ysbyty Llandudno and the community hospitals Ysbyty Bryn Beryl and Ysbyty Dolgellau, respectively.
- Gastroenterology are currently setting up a telemedicine service.
- The neuroscience network is adopting telemedicine.
- The majority of specialties at Wrexham Maelor Hospital have elected to do VC consultation follow-ups at HMP Berwyn - a super prison with 2,000 men.

C@rtref- Dr Williams has now joined the Outpatients Transformation workstream at BCUHB and the All Wales 1000 Lives Outpatients transformation workstream in order to support other teams in implementing telemedicine through sharing the experience and learning from the Future Hospital development site programme.

C@rtref XL – Ongoing discussions and work in developing an unscheduled care telemedicine service with care homes are planned.

- ‘Hub’ established in the frailty unit at Ysbyty Gwynedd, initially staffed for daily scheduled consultations in working hours between Dr Salah Elghenzai and a care home for Polish residents (200 in number) plus two other care homes with high patient attendances at the emergency department.
- The IT department has strengthened the security and safety of the connection between the nursing homes in the area and the internal BCUHB network. Roll-out of the iPads has occurred. Patients consented for telemedicine. The project has not yet gone live, therefore there are no data to report.
- A bid for £1.2million submitted for consideration to the Welsh Government ‘Efficiency through technology’ fund was unsuccessful. This has had a significant impact on acceleration of development site work and a commitment to deliver change. The team are now seeking other funding sources.

Summary and key messages

Our work with the Future Hospital Programme has been a hugely enjoyable journey, an opportunity to learn, share ideas, team build and hone quality improvement skills. This was a clinician-driven project and we recognise that, without strategic organisational support, such projects can be difficult to deliver. For our development site, our resilience and support from our patient reps has been our strength in succeeding in an ever-changing environment. One can reflect that the ‘change process’ is akin to a grieving process and requires a certain skill to manage everyone going through that change. We acknowledge that, in line with Kotter’s model, we have stalled at stage 7. This is possibly due to a disconnect between the project team, lack of a project manager since early 2016 and the organisation priorities while in special measures, however, this has not stopped progress.

1. Co-production is essential - patient satisfaction has exceeded our expectations. Despite the fact that older patients may have been expected to have difficulties in adapting to new circumstances, the virtual clinics have received positive feedback, leading to this service now being routine. This has been an enlightening experience for staff and has driven change.
2. Telemedicine is a viable option for outpatient consultations in frail older individuals.
3. We have established proof of principle that we can use similar technology in some of our local care homes and early experience has been positive and helped us to iron out some technical issues, but it is too early at the time of report writing to demonstrate impact on admissions to hospital.

4. Patient quotes and stories are powerful tools in diffusing clinician anxiety regarding adopting digital technology.

5. Organisational buy-in and support are essential for delivery/success. We have achieved all this against a background of organisational change, when stability would have helped, and we have reflected on some lessons for other organisations embarking on similar quality improvement projects.

6. Supporting staff through change is essential - coaching and mentoring help to build resilient teams.

7. External support provided by the RCP Future Hospital team has been invaluable.

8. Relationship building and cross-fertilisation of ideas amongst the eight Future Hospital development sites has been a powerful motivator to strive for excellence.

The C@rtref Team would like to thank everyone who has supported and encouraged us on our journey of quality improvement.

References


Appendix 1

CARTREF (Welsh for ‘Home’)

CARe delivered with Telemedicine to support Rural Elderly and Frail

CARTREF aims to improve access to care for frail elderly patients in rural Wales. Our objectives are to respond to chronic health needs including end of life care by bringing access to specialist care into easy reach of those living at considerable distance from secondary (or tertiary) care centres.

CARTREF brings together a number of pre-existing work streams around a recently funded telehealth program, pilot projects of near patients testing, implementation of computerised triage algorithms to identify risks in elderly frail patients, existing work by the Digital Inclusion Community Team and learning from an expanding frailty research program into a single pathway.

The intervention will improve patient experience, cost of care and clinical outcomes in a defined patient population of frail elderly patients who are identified as at risk. This identification will be based on two factors:

a. The patient’s frailty as measured by the Clinical Frailty Scale. This is an evidence-based tool that is already integrated into care standards in the organisation and provides the much needed metrics.

b. An index hospital admission/presentation to unscheduled care services. The PRISM program identified this as the strongest predictor or future hospital care needs.

By establishing video clinics for patients in primary care and community hospitals we will facilitate communication and assessment with and between patients, care of the elderly physicians, social services, nursing homes and palliative care practitioners. Additionally we will facilitate communication between primary, secondary and social care.

The project will support the pathway of frail elderly patients in rural networks based around community hospitals and GP surgeries in Dolgellau. We will provide telecommunication equipment, coaching and expertise.
The following interventions will be tested in small samples:

1. Follow-up appointments patient near:
   - GP facilities (2 surgeries)
   - Community hospital (1 community hospital)
   - in nursing homes (2 nursing homes)

   This will include measurement of vital signs and review of laboratory tests.

2. Virtual shared care clinics for frail patients with complex needs with General Practitioners (2 surgeries)

3. Unscheduled care access through video-link to senior staff in Acute Medicine and Care of the Elderly (CoTE) through:
   - live link to out-of-hours GPs
   - live link to pilot nursing home from nursing home to out-of-hours General Practitioner and senior staff in Acute Medicine and CoTE
   - live link to Community hospital from nursing home to out-of-hours General Practitioner and senior staff in Acute Medicine and CoTE: this part of the project is linked to a pilot of using a computerised risk-assessment tool that allows better capture of safety critical information.

As a result of the new pathways we hope to:

1. Allow patients to have follow-up reviews closer to their own home. Usage of telemedicine for General Medicine or Geriatric Medicine will measurably reduce the need for ambulance resource to transport patients to a hospital that might be 60-90 minutes’ drive from their home within 12 months by 20% against a rising base line.

2. Increase flexibility for follow-up by switching scheduled follow-up to on-demand appointments and setting free travel time. This will reduce the number of follow-up appointments in hospital in CoTE by 20% within 12 months.

   Facilitate chronic disease management in primary care by using specialist support. This will result in measurable increase in patient satisfaction within 12 months.

3. Reduce hospital emergency admissions for terminal patients (admit-to-die) by 20% within 18 months.

4. Reduce bed-days in community hospital beds by increasing the frequency of specialist reviews within 12 months.

5. Reduce waiting lists for outpatient clinics by using existing space in community hospitals without the need for specialist travel time within 24 months.

6. Ensure acceptability of model through co-production with patients and carers.
Appendix 2

C@rtref-XL

**Technology enables patient choice for Specialist care closer to home**

C@RTREF – XL will spread the usage of technology for easier contact between patients, carers and health care professionals in a community setting.

C@RTREF – XL will be using methodology from a demonstrator project for the Future Hospital program that has been successfully implemented in Gwynedd with excellent patient feedback.

**Description of change**

**Aim**

C@RTREF – XL will focus on spread of the methodology to allow a broader group of patients resident in care and nursing homes to benefit from non-hospital based contacts with doctors and other members of multi-disciplinary care teams via video-link, telephone or internet based communication.

**Objective**

To reduce un-necessary admissions from nursing and care homes through use of telemedicine.

The focus is of the project is dual: We will improve the experience of patients and change behaviour of health care professionals in taking up new ways of working outside ‘pilot-projects’

The project brings together a number of pre-existing workstreams including:

- the RCP Future Hospital development project C@RTREF around a recently funded Telehealth programme –‘The Hub’
- pilot projects of near patients testing, implementation of computerised triage algorithms to identify risks in elderly frail patients
- existing work by the Digital Inclusion Community Team and learning from an expanding frailty research program into a single pathway.

**National evidence:** Nationally, despite significant improvements in our understanding of the problems around patient flow and experience, there are still all too visible problems with the provision of unscheduled care both nationally and locally.

There are a number of drivers to reduce overcrowding in emergency departments. At the centre of many of these is the challenge to provide responsive care to an ageing population with multiple, in principle, survivable chronic conditions in the limits of a fixed budget.

Work from Airedale NHS Foundation Trust who worked with technical providers has shown that Telemedicine has reduced hospital admissions by 35%, and attained a reduction in ALOS by 30% (Audit of 2000 residents in 23 care homes 2014)

**Local evidence:** Locally we have been able to translate this into a data set to help us to understand the needs of the patients who we care for. This data set was created against the backdrop of the merger of a number of health care organisations in North Wales into what is now Betsi Cadwaladr University Health Board (BCUHB). The data was linked to a consultation process under the title of ‘Health Care in North Wales is Changing’:

North Wales covers approximately 2,500 square miles with a population of approximately 670,000, estimated to grow to almost 700,000 by 2028.

- 18.5% of the population of North Wales is aged 65 and over and this
- predicted 60% rise in the numbers of 85 year olds in 30 years’ time
- Doubling of the numbers with dementia (currently approx. 10,000 identified individuals).
North Wales currently has the following numbers of nursing and residential care homes: Anglesey 57, Conwy 68, Denbighshire 81, Flintshire 14, Gwynedd 39, and Wrexham 25. Research shows that residents of care homes have on average 6.2 diagnoses – with a higher prevalence of stroke, dementia, Parkinson’s disease and osteoporosis than non-care home residents, making them more prone to falls with more injurious consequences.

Our aims

1. Using Lynx technology to provide a visual link between a care home with GP OOH /Hub via tablet device - testing in 15 care homes as part of the first phase.
2. Using Lynx technology to provide a visual link between the Ambulance Trust and GP OOH to build on the successful telephone link that is already in place.
Appendix 3

C@rtref Project Group

The C@rtref Team assigned to differing roles are listed below:

- Clinical lead/lead physician - **Olwen Williams** acted as liaison with RCP
- Consultant physicians - **Chris Subbe/Salah Elghenzai**
- Project manager- C@rtref - **Mrs Eleri Roberts, Mr Guto Gwyn**
- C@rtref XL - **Mr Stuart Harmes, Mrs Bethan Bailey**
- Data specialist - **Katherine Williams and Hannah Roberts**
- Information and improvement manager - to be appointed - Band 6
- IT specialists - **Kathy Spiller/Christine Couchman**
- Project manager - **Mandy Jones** 2015/16
- Patient experience lead - **Ann Rowe**
- RCP Patient and Carer Network - **Carol Caporn**
- Telemedicine consultant - **Ian Jones**
- Questionnaire developer - **Dr Eilir Sion Hughes**
- Wellbeing and resilience coach - **Dr Dee Gray**

We would like to acknowledge and thank Mr Stuart Stevenson, Mrs Marion Poulton (local patient representatives) and Dr Dee Gray for their valued input and support over the past 3 years. It has been much appreciated.

The executive leadership role sits with the Medical Director who recently commenced at BCUHB - Dr Evan Moore with the Lead Director Mrs Ffion Johnstone Area Director (West). Dr Olwen Williams has focused on being the liaison between BCUHB and RCP Future Hospital Team.

The Health Board has established a telemedicine working group to be chaired by Mr Stuart Harmes as part of the Planned Care Transformation Board which is led by Acute Site Director Mr Nigel Lee.

Betsi Cadwaladr University Health Board remains in special measures. All senior executive posts are now recruited to, following a period of significant change in personnel.
## Appendix 4

### Rockwood Frailty score

#### Clinical Frailty Scale*

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very Fit – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.</td>
</tr>
<tr>
<td>2</td>
<td>Well – People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally, e.g. seasonally.</td>
</tr>
<tr>
<td>3</td>
<td>Managing Well – People whose medical problems are well controlled, but are not regularly active beyond routine walking.</td>
</tr>
<tr>
<td>4</td>
<td>Vulnerable – While not dependent on others for daily help, often symptoms limit activities. A common complaint is being “slowed up”, and/or being tired during the day.</td>
</tr>
<tr>
<td>5</td>
<td>Mildly Frail – These people often have more evident slowing, and need help in high order IADLs (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.</td>
</tr>
<tr>
<td>6</td>
<td>Moderately Frail – People need help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (e.g., standing) with dressing.</td>
</tr>
<tr>
<td>7</td>
<td>Severely Frail – Completely dependent for personal care, from whatever cause (physical or cognitive). Even so they seem stable and not at high risk of dying (within ~ 6 months).</td>
</tr>
<tr>
<td>8</td>
<td>Very Severely Frail – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.</td>
</tr>
<tr>
<td>9</td>
<td>Terminally Ill – Approaching the end of life. This category applies to people with a life expectancy &lt; 6 months who are not otherwise evidently frail.</td>
</tr>
</tbody>
</table>

#### Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common symptoms in mild dementia include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal. In moderate dementia, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting. In severe dementia, they cannot do personal care without help.

---

*1-Canadian Study on Health & Aging Revised 2008.

© 2007-2009 Version 1.3 All rights reserved. Dementia Medicine Research, Dalhousie University Faculty, Nova Scotia, Permission granted to copy for research and educational purposes only.
### Patient questionnaire version 1

1. **How likely are you to recommend this hospital to your family and friends?**
   - Extremely likely ☐
   - Likely ☐
   - Neither ☐
   - Unlikely ☐
   - Extremely unlikely ☐
   - Don’t know ☐

2. **Have staff introduced themselves before treating or caring for you?**
   - Yes, all staff have introduced themselves ☐
   - Yes, some staff have introduced themselves ☐
   - No, staff have not introduced themselves ☐

3. **Have staff made you feel at ease by being friendly and warm in conversations?**
   - Yes, always ☐
   - Yes, to some extent ☐
   - No ☐

4. **Have staff showed you care and compassion?**
   - Yes, all of the time ☐
   - Yes, some of the time ☐
   - No ☐
   - Don’t know ☐

5. **Overall, did you feel you are treated with respect and dignity?**
   - Yes, always ☐
   - Yes, sometimes ☐
   - No ☐

6. **Have staff listened to what you have to say?**
   - Yes, definitely ☐
   - Yes, to some extent ☐
   - No ☐

7. **Have staff explained your condition and treatment in a way you can understand?**
   - Yes, completely ☐
   - Yes, to some extent ☐
   - No ☐
   - I have not needed an explanation ☐
8. Have your family or carers been informed by the staff about your condition?

- Yes, definitely ☐
- Yes, to some extent ☐
- No ☐
- There has been no need to inform my family or carers ☐
- There are no family or carers to be informed ☐

9. Have each of the following members of staff answered your questions in a way that you could easily understand?

**Doctor:**
- Yes, completely ☐
- Yes, to some extent ☐
- No ☐
- I have not had any questions ☐

**Nurse:**
- Yes, completely ☐
- Yes, to some extent ☐
- No ☐
- I have not had any questions ☐

10. Did you have confidence and trust in the each of the following members of staff treating you?

**Doctor:**
- Yes, always ☐
- Yes, sometimes ☐
- No ☐

**Nurse:**
- Yes, always ☐
- Yes, sometimes ☐
- No ☐

11. Did the following members of staff ever talk over you as if you weren’t there?

**Doctor:**
- Yes, always ☐
- Yes, sometimes ☐
- No ☐

**Nurse:**
- Yes, always ☐
- Yes, sometimes ☐
- No ☐

12. Were you involved as much as you wanted to be in decisions about your care and treatment?

- Yes, definitely ☐
- Yes, to some extent ☐
- No ☐

13. Have you had enough time to discuss your health or medical problem with a doctor or nurse?

- Yes, definitely ☐
- Yes, to some extent ☐
- No ☐
- I have not seen a doctor or nurse ☐
14. If you have had any anxiety or fears about your condition or treatment, has a member of staff discussed them with you?
   - Yes, completely
   - Yes, to some extent
   - No
   - I have not had any anxieties or fears

15. Has a member of staff told you about what danger signals regarding your condition or treatment to watch for?
   - Yes, completely
   - Yes, to some extent
   - No
   - I have not needed this type of information

16. Do staff appear confident and able to perform their tasks when caring for you?
   - Yes, always
   - Yes, to some extent
   - No
   - Don’t know

17. In your opinion, how clean was the hospital or healthcare room that you were in?
   - Very clean
   - Fairly clean
   - Not very clean
   - Not clean at all

18. Are there any comments you would like to make about the quality of care you have received?

We greatly appreciate your participation in this survey. It would be very helpful if you could answer the following questions to tell us a little more about you:

Who was the main person or people who filled in this questionnaire?
   - The patient
   - A friend or relative of the patient
   - Both patient and friend/relative together
   - The patient and the volunteer together
Are you male or female?  
Male ☐  Female ☐

What was your year of birth?  

Do you have any of the following long-standing conditions?  
(Select ALL THAT APPLY)

- Deafness or severe hearing impairment ☐
- Blindness or partially sighted ☐
- A long-standing physical condition ☐
- A learning disability ☐
- A mental health condition ☐
- Dementia ☐
- A long-standing illness, such as cancer, HIV, diabetes, chronic heart disease, or epilepsy ☐
- No, I do not have a long-standing condition ☐

Does this condition(s) cause you difficulty with any of the following?  
(Select ALL THAT APPLY)

- Everyday activities that people your age can usually do ☐
- At work, in education or training ☐
- Access to buildings, streets or vehicles ☐
- Reading or writing ☐
- People’s attitudes to you because of your condition ☐
- Communicating, mixing with others or socialising ☐
- Any other activity ☐
- No difficulty with any of these ☐

To which of these ethnic groups would you say you belong?  
(Select ONE only)

- English/Welsh/Scottish/Northern Irish/British ☐
- Irish ☐
- White and Black Caribbean ☐
- White and Black African ☐
- White and Asian ☐
- Indian ☐
- Pakistani ☐
- Bangladeshi ☐
- Chinese ☐
- African ☐
- Caribbean ☐
- Arab ☐
- Any other ethnic group ☐
- Any other ethnic group, write in here:
Patient questionnaire versions 2 and 3

C@rref - Telemedicine Clinic Survey Version 2
Taking part in this survey is voluntary; your answers will be treated in confidence and will be kept anonymous.

Survey to be completed in clinic after consultation

Gender: ☐ Strongly Agree ☐ Agree ☐ Undecided ☐ Disagree ☐ Strongly Disagree
Age: ☐

1. I could see the Doctor clearly?
2. I could hear the Doctor clearly?
3. The Doctor was easy to talk to using the video link?
4. I would be happy to use telemedicine for your consultation again?
5. I was put off by the technology?
6. The telemedicine technique was explained well enough to put me at ease prior to the consultation?

7. Which would you prefer:
   A) Travelling to Bangor for a consultation
   B) Travelling to Bryn Beryl, using telemedicine close to home for your consultation

8. Is there anything you would like to add about the consultation?

9. Would you recommend this Telemedicine Clinic to your family and friends (circle)?
   Yes, definitely Yes, Probably No

10. The main reason I went to the Telemedicine Clinic dealt with to my satisfaction? (Circle)
    Yes, completely Yes, to some extent No

11. Overall, how would you rate the care you received at the Telemedicine Clinic? (Circle)
    Excellent Very Good Good Fair Poor Very Poor
C@rref - Telemedicine Clinic Survey Version 3

Taking part in this survey is voluntary; your answers will be treated in confidence and will be kept anonymous.

Survey to be completed in clinic after consultation

<table>
<thead>
<tr>
<th>Gender:</th>
<th>Age:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
</tr>
</tbody>
</table>

1. I could see the Doctor clearly?
☐ ☐ ☐ ☐ ☐

2. I could hear the Doctor clearly?
☐ ☐ ☐ ☐ ☐

3. The Doctor was easy to talk to using the video link?
☐ ☐ ☐ ☐ ☐

4. I would be happy to use telemedicine for your consultation again?
☐ ☐ ☐ ☐ ☐

5. I was put off by the technology?
☐ ☐ ☐ ☐ ☐

6. The telemedicine technique of was explained well enough to put me at ease prior to the consultation?
☐ ☐ ☐ ☐ ☐

7. Would you recommend the clinic to your friends and family?
☐ ☐ ☐ ☐ ☐

8. The main reason I went to the Telemedicine Clinic dealt with to my satisfaction? (Circle)
☐ ☐ ☐ ☐ ☐

9. I prefer having the clinic in Bryn Beryl rather than in Bangor
☐ ☐ ☐ ☐ ☐

10. I prefer having a video clinic to a usual clinic
☐ ☐ ☐ ☐ ☐

11. Is there anything you would like to add about the consultation? ____________________________
Results from Patient Survey 16/17

- **I could see doctor clearly (n=33)**
- **I could hear doctor clearly (n=33)**
- **The Doctor was easy to talk to using the video link (n=33)**
- **The main reason I went to the Telemedicine Clinic was dealt with to my satisfaction (n=88)**
- **Would you recommend this Telemedicine clinic to your family and friends? (n=88)**
- **Overall, how would you rate the care you received at the Telemedicine clinic? (n=88)**
Appendix 6

Publications


- Chartered Society of Physiotherapy - 450 word article Title- CARTREF (Welsh for ‘Home’) CARE delivered with Telemedicine to support Rural Elderly and Frail patients

- Seen the doctor on the Tele? Patient centred care needs to arrive for all, and none more urgent than for our older patients. [British Geriatrics Society blog](#) - Dr Chris Subbe, July 2017.

Presentations

- Oral presentation at Annual Public Health Wales Conference - 2/11/16 Title: C@rtref – How positive patient experience drives change in the digital age
- Bangor University Behavioural Change conference 18/05/16 Title: How digital technologies in health and change behaviours of both patients and staff to support Prudent Healthcare.
- Welsh Audit Office - Good Practice Exchange conference on Digital Seminar 13/09/16 Title: C@rtref - getting staff on board with digital
- RCP Wales conference poster Nov 2015 Title: C@rtref - CARe delivered with Telemedicine to support Rural Elderly and Frail patients
- Oral presentation Dr Salah Elghenzai at Medicine 2017. Title: C@rtref - CARe delivered with Telemedicine to support Rural Elderly and Frail patients
- Abstract accepted for oral presentation at European Healthcare Design 2017 conference June 11-14
- Future Hospital Symposiums BCU- the RCP Wales have in conjunction with Regional RCP lead organised 3 meeting in Spring 2015, 2016, 2017
- C@rtref is included in 1000 Lives Improvement compendium
- BCUHB used C@rtref as an example of QI and integrated working at the Annual 1000 Lives conference 25 March 2017.

Report produced by Betsi Cadwaladr University Health Board Future Hospital development site.