



Renfrewshire
Council

Renfrewshire Council Social Work Services,
Renfrewshire Care 24 and Renfrewshire CHP

Telehealth Pilot

November 2008 – July 2009

Evaluation Report

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Contents

Executive Summary3

Introduction and Background4

The Pilot Programme5

Findings8

Conclusions11

Recommendations14

Appendices and Further Information.....15

1. Executive Summary

This evaluation reports on the pilot exercise recently undertaken by Renfrewshire Council Social Work Services and Renfrewshire Community Health Partnership, to trial the use of Telehealth as a means of supporting an alternative to hospital attendance and admission, therefore shifting the balance of care to Primary and Community based services.

Telehealth is an approach that uses a series of medical devices to capture patient health data in a remote environment and transfer it to a consulting clinician, using internet technology.

The pilot was initiated in recognition of the need to address the growing pressure on Acute services in Renfrewshire from increasing emergency hospital admissions and prolonged hospital stays of people with Long Term Conditions (LTC's), particularly Chronic Obstructive Pulmonary Disease (COPD).

The pilot has also investigated the ability of Telehealth to improve the efficiency, effectiveness and quality of GP surgery appointments by having patients provide their key health data immediately prior to their consultation.

Funding for the pilot has been provided by Renfrewshire Council Social Work Services.

The objectives of the pilot were:

1. To reduce unnecessary hospital admissions through the application of Telehealth and targeting a rapid response resource to support people at home
2. To shift the balance of care from hospital and institutional settings to community based resources
3. To improve the quality of life of service users and to enable them to contribute to the management of their own long term conditions
4. To ease pressure on care services by enabling people with long term conditions to access support when necessary by applying Telehealth as preventative methods of care
5. To enhance risk assessment & risk management
6. To reduce patient anxiety & boost confidence leading to improved health outcomes
7. To ease access to GP services, by automating data collection

The pilot was undertaken between October 2008 and July 2009 and has demonstrated some success with COPD patients, particularly the avoidance of emergency hospital admission.

It is recommended that the pilot be extended in the homes of COPD patients, using additional project management resource, so that further evidence of reduced emergency hospital admissions can be evidenced. This would be the key to accessing increased and sustained funding for a longer term roll-out of Telehealth.

2. Introduction and Background

This report provides an evaluation of the pilot undertaken by Renfrewshire Council Social Work Services department to determine the benefits of using Telehealth in the health management of patients with Chronic Obstructive Pulmonary Disease (COPD) and of patients with non-specific conditions attending their GP surgery.

The report details findings, draws conclusions and provides recommendations about the use of Telehealth technology in small scale, short term applications.

The aims of the pilot were to determine to what extent Telehealth can deliver the following benefits:

Patients with COPD:

- Avoid emergency hospital admissions and prolonged hospital stays
- Improve wellbeing, quality of life and confidence
- Maintain independence

Patients with non-specific conditions attending their GP surgery:

- Improve efficiency, effectiveness and quality of GP appointments
- Develop healthier lifestyles

The evaluation has been undertaken using an independent research consultant with experience in delivery of care services to older people in Renfrewshire. The methodology and objectives applied to this evaluation are contained in Appendix 1.

2.1 Scottish Government Agenda

The Scottish Government recognizes that increasing numbers of people living with long term conditions presents a major challenge for health, social care, community and voluntary sector partners. Improving knowledge about their long term conditions helps people understand symptoms and experiences as well as improving long term health and wellbeing.

The role of care professionals in the management of long term conditions is to encourage confidence, capacity for self management and to support people to have more control of their conditions and their lives.

In a whole systems approach recommendations include creating services that can support those who have long term conditions. It has been observed that improvements in quality of life are arguably more likely where the balance of power is tilted in favour of the service user. Establishing services that can support those who have a long-term condition to become 'experts' about the management of their condition is encouraged in as wide a range of situations as possible. However, such approaches need to be supported by appropriate professional advice, treatment and care.

The national Long Term Conditions Collaborative (LTCC) improvement programme, the Scottish Government's Long Term Conditions Unit (LTCU), the voluntary sector represented by the Long Term Conditions Alliance Scotland (LTCAS) and others are working together to promote self management approaches across Scotland.

2.2 Telehealth

Telehealth comprises two components: Telecare and Telemedicine.

Telemedicine is the provision of healthcare with clinical professional involvement at a distance, using a range of digital technologies, including videoconferencing.

Telecare is the use of a range of technologies to support those at home, or in a community environment who would otherwise be at increased risk of coming to harm from a range of causes. Professional clinical involvement is not necessarily part of their package.

The increasing convergence between Telemedicine and Telecare has given rise to the term 'Telehealthcare' which describes a range of care options operating remotely via phones, mobile phones, broadband and videoconferencing.

The main benefits of Telehealth are that GP's and medical clinicians can treat more patients earlier in the health cycle, prevent unnecessary deterioration and avoid crisis intervention.

2.3 Chronic Obstructive Pulmonary Disease (COPD)

Chronic Obstructive Pulmonary Disease (COPD) is an 'umbrella' term for people with chronic bronchitis, emphysema, or both. COPD is usually caused by smoking and results in the airflow to the lungs being restricted. Symptoms include coughing and breathlessness. The most important treatment is to stop smoking. Inhalers are commonly used to ease symptoms. Other treatments such as steroids, antibiotics, oxygen, and mucolytic (mucus thinning) medicines are sometimes prescribed in more severe cases, or during a flare-up (exacerbation) of symptoms.

According to the British Lung Foundation, COPD is a long term condition with no cure that has over 9000,000 sufferers in the UK and kills over 4000 people per year in the UK.

3. The Pilot Programme

In recognition of the growing demands on acute sector services and to test the use of remote monitoring in the management of long term conditions, Renfrewshire Council Social Work and Renfrewshire Community Health Partnership undertook this pilot as a means of trialing Telehealth technology in transferring patient care from Acute sector services to Primary and Community based services.

The exercise, facilitated by Renfrewshire Council Social Work and local GP's using funding from the Telecare Development Programme, focused on two separate areas of interest in the application of technology. The first strand of work was aimed specifically at individuals with Chronic Obstructive Pulmonary Disease (COPD). The second strand of the pilot sought to determine if Telehealth technology could improve the efficiency, effectiveness and quality of GP surgery appointments by having patients provide their key health data immediately prior to their consultation.

In Renfrewshire, according to figures provided by the Information Services Department (ISD), there are over 1620 emergency hospital admissions of patients over 65 suffering from COPD, per 100,000 population, which is almost 25% higher than the Scottish average.

3.1 Scope

The pilot was undertaken in two strands, covering the home and surgery environments in which the equipment was being trialled.

Strand A

Strand A was a trial in the homes of twenty COPD patients in Renfrewshire, using Telehealth pods to send their key health data to their GP on a daily basis. All twenty patients are registered with the same GP.

The intention was that their GP would be able to monitor each patient more closely and deliver anticipatory and preventative care to minimise acute illness, reduce emergency hospital admissions and extended hospital stays, and generally improve the patient's quality of life.

The pod that the COPD patients were using measures and transmits the following data:

- Blood pressure
- PO2
- Weight
- Cough
- Breathlessness
- Sputum – presence and colour
- Disturbance of sleep
- Use of inhalers

Strand B

Strand B was a trial in two surgeries within Renfrewshire, where patients attending their surgery used the Telehealth pods to provide their key health data immediately prior to their appointment with their GP. The data was transmitted electronically to the GP's computer, so that the patient's condition could be analysed and evaluated before or as soon the appointment began. The intention was that this approach would bring greater effectiveness, efficiency and quality to the appointment, since the GP should be able to diagnose the patient's condition more quickly.

In one of the surgeries the equipment was being used to treat patients with long term conditions, whilst in the other surgery it was being used to treat patients with mental health conditions such as depression and alcohol abuse.

The pod that the surgery patients were using measures and transmits the following data:

- Blood pressure
- PO2
- Weight
- Cough
- Breathlessness
- Emotional and physical state relating to mental health condition

Following project approval and funding from Renfrewshire Council, the pilot was implemented by the project team in November 2008.

3.2 Objectives

The objectives of the pilot were set out by the project team in their Project Implementation Document (PID), which is contained in Appendix 2, and are given below.

1. To reduce unnecessary hospital admissions through the application of Telehealth & targeting a rapid response resource to support people at home
2. To shift the balance of care from hospital and institutional settings to community based resources
3. To improve the quality of life of service users and to enable them to contribute to the management of their own long term conditions
4. To ease pressure on care services by enabling people with long term conditions to access support when necessary by applying Telehealth as preventative methods of care
5. To enhance risk assessment & risk management
6. Reduce patient anxiety & boost confidence leading to improved health outcomes
7. Ease access to GP services, by automating data collection

3.3 Project Team

Name	Title	Department
1. Lorna Muir	Sponsor	Social Work
2. No appointment	Project Manager	
3. Trisha Daniel	Project Team Member	Renfrewshire CHP
4. Andrea Healey	Project Team Member	Renfrewshire CHP
5. Doreen Watson	Project Team Member	Social Work
6. Lesley Deane	Project Team Member	Social Work
7. Fraser Ross	Project Team Member	Renfrewshire CHP
8. Jeremy Cummin	Project Team Member	Telehealth Solutions
9. Steve Patterson	Project Team Member	Telehealth Solutions
10. Kevin Bletsoe/ Jonathon Kenworthy	Project Team	Renfrewshire CHP
11. Colin Reid	Project Team	Renfrewshire CHP

3.4 Implementation

Having created an action plan for the pilot, which is contained in Appendix 3, the project team proceeded to implementation, as follows.

Following an assessment of a number of suppliers, Telehealth Solutions Ltd was appointed to provide the Telehealth equipment pods for the COPD and GP surgery strands.

Three GP's from the Renfrewshire area were recruited to host and oversee the field trials at their respective practices. One GP hosted the COPD strand and two GP's hosted the surgery strand.

For Strand A, a number of patients with varying degrees of COPD debilitation, and representing a demographic cross section of the surgery's COPD patient universe, were identified, by the host GP, for participation in the pilot.

Subsequently, twenty of these patients were recruited to the field trial. Each patient had the pod installed at their home and were given an induction on how to use it. An instruction manual was supplied and patients were also advised to contact the surgery for assistance in using the pod, if required. Similar training was provided to the GP and key staff at the surgery, as well as district nurses and home care staff.

A number of patients dropped out of the trial in the early stage, due mostly to issues with the pod's connectivity to the internet or mobile telephone networks. This left fourteen patients undertaking the field trial and providing their health data on a daily basis to the GP for monitoring, analysis and management.

The GP has been monitoring the incoming health data of the patients on a daily basis.

For Strand B, the pods were installed at the surgeries of two GP's and appropriate training on the use of the pods was provided to the GP's and their staff. The surgeries were asked to provide an appropriate and private area for patients to use the pod and to implement a process for inviting patients to use the pods prior to their appointment.

4. Findings

4.1 Strand A

Strand A has been successful in evidencing the benefits of Telehealth technology in the treatment of patients with COPD.

The host GP has stated that the home pod has been useful in helping to treat patients more effectively and there is observable evidence of a patient's symptoms being identified early and treated before their condition worsened, thus avoiding a potential hospital admission. Indeed, the GP has been particularly proactive in encouraging the patients to use the pods, and diligently uses the incoming health data to manage their conditions and wellbeing. This has led to patients being contacted or visited when intervention has been required.

Three of the patients participating in the trial were interviewed for this report regarding their experiences and views on the home pod:

Mr A

Mr A has acute COPD and lives at home with his wife in a 3rd floor flat in Paisley.

In discussion, Mr A and his wife confirm that having the equipment at home has been beneficial to them for monitoring and managing Mr A's condition. They evidenced this by explaining the regular contact they have with the GP when Mr A's data is abnormal. Indeed, it would appear that on at least one occasion the GP's early intervention has prevented a possible hospital admission for Mr A.

Mr A and his wife also reported that they both felt a greater reassurance about Mr A's wellbeing by having the equipment at home.

Regarding, the practical use of the equipment Mr A and his wife reported that once they understood how the equipment worked they had no problem using it. However, they did have to wait some time to have the scales fixed by Telehealth Solutions when they became faulty, and only after intervention from the pilot project team.

Mr B

Mr B has mild COPD and lives at home with his wife in a Victorian terraced house in Paisley.

In discussion, Mr B acknowledged the value of having the equipment and its ability to allow his condition to be monitored more closely, but he didn't feel that it brought any greater degree of peace of mind or reassurance. He says this is because he does not worry about his condition with it being so mild.

Mr B's view is that the use of the pod is no more than a mild intrusion in his daily life and that he found it no problem to use the equipment daily. He is confident that the GP is monitoring his condition and knows that he will be contacted if any problems arise, or that he can quickly contact the surgery if he feels there is a problem.

Mr B also expressed the opinion that whilst the home pod could be useful to others, some older people may need additional help with understanding and using the equipment. That apart, he would recommend it.

Ms C

Ms C has acute COPD and lives at home, alone, in a council house in Paisley.

Ms C had the equipment installed at her home, but eventually disconnected it because she said it was not working properly. She explained that she did contact a lady about the problems, but heard nothing back. She did not have the name of the lady she attempted to contact.

Ms C also advised that she did have a hospital admission after the equipment was disconnected, but she stated that it was as a result of an acute and immediate attack of her condition that may not have been anticipated had she still been using the home pod.

Ms C did say that she felt the equipment was of benefit and that she would be willing to reuse it.

Whilst Telehealth is proving beneficial in the treatment of patients with COPD, the host GP feels that it does not bring any more efficiency to the patient management process at this stage, because more time is spent evaluating incoming data. The GP also feels that because patients are more exposed to their health data and are more understanding of their symptoms, they may be more likely to seek additional assistance from the surgery.

As a means of making the patient management process more efficient, the GP suggests that the home pods be set up with triggered alerts that ask the patient to call the surgery when they give certain answers or combination of answers to certain questions when using the pod, as this would leave the GP only having to react when required to do so.

Regarding the equipment and the equipment supplier, Telehealth Solutions, the GP advised that, whilst the data was arriving into the surgery computer system okay, there had been some issues with the equipment, particularly around connectivity from patients' homes to broadband and mobile networks, and that Telehealth Solutions were not as responsive as they could have been in addressing this. The issue of responsiveness from Telehealth Solutions was also observed in an incident when a patient was left without a fully operational pod for several weeks.

4.2 Strand B

Strand B of the pilot has been unable to provide evidence of the successful application of Telehealth technology in the treatment of patients with non-specific conditions attending their GP surgery.

The reason for this is that this strand was not fully implemented in either of the two surgeries, due to a number of operational and technical issues.

In the one of the two surgeries, the trial was not implemented because of a number of issues around systems compatibility and perceived data integrity.

The practice manager stated that, due to: the incompatibility of the surgery pod with the existing surgery data systems; the loss of a health care assistant from the practice's staff complement, and concerns about the integrity of the data being generated by the pod, the practice were not willing to proceed with the pilot.

Expanding on this, the practice manager explained that the surgery had a customised patient data management system and that it was proving too difficult to integrate and synchronise data from the pod. The practice manager also explained that they were concerned that some of the readings on blood pressure were inaccurate.

For the short time that the practice had used the pod it was located immediately adjacent to the waiting area and separated only by way of a mobile medical screen. This did not appear to be an appealing area for patients to use the pod.

The practice manager advised that a request had been made to have the pod removed.

In the second of the two surgeries the trial has not been implemented because of a number of operational issues, particularly staff resources.

The host GP explained that, unfortunately, whilst everyone in the surgery is supportive of the pilot and the Telehealth initiative in general, a number of unforeseen circumstances, including unavailability of some key staff, have prevented the practice from fully implementing the field trial. In fairness, the practice is genuinely keen to find the time and resource to fully implement the trial and have demonstrated this by providing a dedicated area for patients to use the pod which is aesthetically appealing.

In the few cases where patients have been able to use the pod, the GP expressed the view that the effectiveness, efficiency and quality of patient appointment was improved, and that additional time became available for the GP to spend quality talk-time with the patient as a result of having the health data provided via the pod. However, the GP also stated that the appointment could still become elongated if the patient's data highlighted issues other than those the appointment was made for.

The GP sees the pods as having good benefit for all new patients, particularly patients with depression and obesity, and sees a role for using the pod to provide patients with a walk-in service to monitor and manage themselves towards a healthier lifestyle.

Unfortunately, because of the limited and irregular use of the pods at both surgeries there has been no opportunity to have meaningful dialogue or interviews with any patients.

Although there has been limited evidence of success in Strand B, it should be noted that this strand was only included in the pilot because the equipment supplier offered to provide pods for the surgery environment at no extra cost. Therefore, there has been no detriment to the overall pilot.

5. Conclusions

The pilot findings demonstrate that Telehealth technology is capable of adding value in the treatment of patients with COPD.

Not only can Telehealth facilitate greater anticipatory care, including avoidance of emergency hospital admission, it can also deliver increased confidence and wellbeing to patients by providing them with knowledge and reassurance about their condition.

Indeed, from the pilot findings, and additional discussion with a consultant for care of the elderly at the Royal Alexandra Hospital, it is also clear that Telehealth technology could be of potential benefit for the range of long term conditions, particularly those that often lead to emergency hospital admission, such as heart disease and digestive or urinary conditions (as documented in the Renfrewshire CHP Long Term Conditions report, Feb 2009).

However, given the small scale of this pilot, it is likely that additional trials will be required to conclusively prove the value of Telehealth technology for this area of medicine.

Unfortunately, though, due to the limited implementation of the pilot in the surgery environment, it is not possible to draw any conclusions about the potential benefits of Telehealth in the treatment of patients with non-specific conditions attending their GP surgery, other than to hypothesise that there is a logical rationale for this application.

5.1 Additional Potential Benefits

Crucial, though, to the decision making process on whether Telehealth should be introduced as a mainstream component of COPD or LTC treatment, are the efficiencies and cost savings that may be brought about from the resultant reductions in emergency hospital admissions and extended hospital stays.

In this respect, then, it is worth making some estimates, albeit speculative, on the potential savings that Telehealth could deliver.

The following example looks at the potential savings that could be achieved by preventing patients with COPD from having to be admitted to hospital in emergency circumstances.

Assumptions:

The established per day bed cost for emergency hospital admissions is £667. Source: NHSGGC March 2008

The mean stay period for COPD patients over 65 years of age with emergency admission to hospital is 9.45 days

The average no of emergency admissions per year for COPD patients over 65 years of age is 1.5

The number of preventable emergency hospital admissions when using Telehealth technology is 143 per thousand per year (based on the pilot of one prevention per 14 patients over six months).

The cost of providing Telehealth technology to patients is £600 per year.

Table 1 – Cost of emergency admissions of patients with COPD aged 65+ (rate per 100,000 Pop), Aug 2006 – Jul 2007

Admissions	No of Patients	Mean Ave Stay	Cost per day rate*	Total Cost
1621	1081	9.45	£667	£10, 217,406

Source: ISD and Renfrewshire Telecare Service.

Table 2 – Potential cost savings on emergency admissions of patients with COPD aged 65+ based on assumptions provided (rate per 100,000 Pop).

Admissions	Preventable admissions using Telehealth technology	Equivalent saving based on CPD rate x Mean Average Stay	Less cost of provision of Telehealth to corresponding number of patients	Total Saving based on 2001 census population of 175,000
1621	231	£1,456,028	£648,400	£1,615,256

Whilst the figures above are estimates, it should be noted that if the service were to be rolled out to the number of patients indicated, there would almost certainly be a corresponding reduction in equipment rental costs from those used in the example (which are the costs for the pilot sample group), particularly as more equipment suppliers are now offering rental rather than purchases agreements. Also, if this level of saving could be replicated in other long term conditions that have high emergency hospital admissions, then overall cost reduction could be considerably higher.

In addition to the improved treatment of patients with COPD and the potential costs savings that could be brought about through Telehealth technology, there is also the benefit of an excellent infrastructure in place within Renfrewshire – through the Community Alarm and Telecare Service – to support any future extended pilot, trial or full scale roll-out. Indeed, the Community Alarm and Telecare Service, which provides service to over 3000 clients in Renfrewshire, is recognised as one of the UK’s leading service models. The Service has received accreditation from the sector’s leading body, The Telecare Services Association, and its management team are already fully conversant with this new area through their involvement with this pilot.

Furthermore, as the NHS Greater Glasgow and Clyde framework for the development of a local community rehabilitation and enablement service continues to develop, Telehealth could play an important role in helping to deliver the framework’s aims and objectives.

5.2 Project Management

This has been an ambitious pilot project, particularly as the separate GP surgery strand trial was included as an additional component after the main COPD strand had been scoped.

Indeed, the pilot objectives themselves have been very ambitious, and have possibly attempted to cover too wide a spectrum. It would have been better to keep the objective to the central issue of determining to what extent Telehealth technology can help reduce emergency hospital admissions and extended stays, as this is the key to increased and sustained funding for a longer term roll-out of Telehealth.

Table 3 Project Objectives and Achievement

Objective	Achievement Level
To reduce unnecessary hospital admissions through the application of Telehealth & targeting a rapid response resource to support people at home	Evidence of achievement
To shift the balance of care from hospital and institutional settings to community based resources	Evidence of achievement
To improve the quality of life of service users and to enable them to contribute to the management of their own long term conditions	Evidence of achievement
To ease pressure on care services by enabling people with long term conditions to access support when necessary by applying Telehealth as preventative method of care	Evidence of achievement
To enhance risk assessment & risk management	Evidence of achievement
Reduce patient anxiety & boost confidence leading to improved health outcomes	Evidence of achievement
Ease access to GP services, by automating data collection	Evidence of achievement

Whilst the pilot has been able to demonstrate the success of Telehealth technology in the treatment of patients with COPD, it has been hampered by the absence of a dedicated project manager.

Had a dedicated project manager been available for the duration of the pilot, it would have been possible to provide more direction, encouragement and support to the stakeholders, particularly the GP's participating in the surgery strand and the equipment supplier, Telehealth Solutions Ltd. In turn, this may have led to additional evidence being provided on the ability of Telehealth technology to add value in the treatment of both patients with COPD and patients attending their GP surgery for general consultation.

It is understandable, though, why no project manager was appointed. The project team was formed by personnel from disparate backgrounds and departments, including Social Work, Renfrewshire Care 24, CHP, and other external care agencies, and met only as frequently as their schedules would allow. Significant commitments with main jobs prevented any of the project team from taking on the role of project manager, and there was insufficient funding available to bring in someone from outside. One of the project team did partially undertake the role to the best of the time she had available, but when she moved on in her full time position she was unable to continue as stand-in project manager, and indeed had to leave the project team completely. The absence of a project manager should be viewed as a learning for the future rather than a criticism.

6. Recommendations

As stated above, given the smallish scale of this pilot, it is likely than additional trials will be required to conclusively prove the value of Telehealth technology in relation to the treatment of patients with COPD and other long term conditions. The undernoted recommendations provide a platform for achieving this.

6.1 Continue the trial in the COPD strand only and implement a stronger, more defined action plan, with good project management, to drive further evidence of reduced emergency hospital admissions. This is the key to increased and sustained funding for a longer term roll-out of Telehealth technology.

6.2 Appoint a dedicated project manager, with clinical and operational skill-sets, to drive the trial towards achievement of objectives.

6.3 Develop enhanced training for surgery staff, district nurses and home care staff involved in the COPD trial, so that maximum evidence of anticipatory and preventative intervention can be recorded. This should include proactive contact with patients using the equipment.

6.4 Draw up a process for recording anticipatory and preventative interventions.

6.5 Draw up an SLA with the equipment supplier and, if possible, the GP practice. Ensure that equipment suppliers are providing appropriate levels of induction and technical support to patients and surgeries.

6.6 Consult with other CHP's to determine best practice and techniques for running the trial and evidencing anticipatory and preventative intervention.

6.7 Research sources of additional funding outwith local government (charities, funds, grants, etc), so that future trials and full scale roll-out can be supported.

6.8 Investigate the options for using Telehealth for other long term conditions, since this may also be a route to additional/increased funding.

6.9 Draw up a service delivery document to scope out the requirement for any GP surgery wishing to join the programme in any extended trial or full roll-out. This is important as it will ensure that surgeries joining the programme are fully briefed and supported in delivering a Telehealth service.

6.10 Develop a selection and recruitment process for COPD patients who may qualify to have the equipment in their home, so that when it is installed there is less chance of it not being used.

7. Appendices and Further Information

Please find Appendices 1 to 3 on attached pages of this report.

For further information on the report please contact Bill McGowan, InChannel Communications Ltd:
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