

**A TELE-MONITORING PILOT PROJECT  
EVALUATION  
COMMERCIAL IN CONFIDENCE**



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**EUROPEAN CENTRE FOR CONNECTED HEALTH**

**WESTERN HEALTH AND SOCIAL CARE TRUST**

**A TELE-MONITORING PILOT PROJECT**

**EVALUATION**

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## 1 INTRODUCTION AND BACKGROUND

### 1.1 Introduction

The Department of Health, Social Services and Public Safety's (DHSSPS) European Centre for Connected Health (ECCH) has commissioned BDO Stoy Hayward to evaluate eight tele-monitoring Service Pilot Projects, which were established in 2007/08 with an initial two year funding provision from the DHSSPS in Northern Ireland.

This report presents the evaluation of a Western Health and Social Care Trust ('WHST') tele-monitoring service pilot project.

### 1.2 Policy and Operational Context

The demographics of Western Europe, and Northern Ireland, show an almost exponential increase in the elderly population over the course of the next 20 years. Growing longevity will lead to a significant increase in chronic diseases, which in turn is expected to place additional pressures on health and social care systems across Europe. Indeed, Northern Ireland's predicted population increase of the over 75s and 85s is steeper than that predicted for the rest of the United Kingdom, adding to cost pressures on the local health economy.

In light of this increasing demand, existing approaches to patient care are unlikely to meet public expectations in relation to the quality and accessibility of the care people will require. Therefore, in order to provide high quality care in a sustainable manner within an environment of significantly increasing demand and constrained resources, a new system will be necessary to monitor chronic illnesses, as well as providing better care to patients and reducing both hospital and nursing home admissions.

The introduction of healthcare technology to effectively manage issues associated with this changing demographic profile and increasing chronic disease, has the potential to greatly improve the quality, sustainability and cost efficiency of service provision.

The overall aim of the DHSSPS is to improve the health and wellbeing of the people of Northern Ireland. In pursuing this aim through the health and social care (HSC) system, the key objective of the Department is to improve the health and well-being outcomes through a reduction in preventable disease and ill-health through the provision of effective and high quality services, equitably and efficiently, to the whole population.

To this end, DHSSPS' Regional Strategy 'A Healthier Future- A Twenty Year Vision for Health and Wellbeing in Northern Ireland 2005-2025' provides a vision of how the health and social services will develop and function over the twenty-year period. It recognises the need for health and social services to change to reflect the changing needs of the population, particularly in terms of the increasing aging population. It recognises that the range and nature of healthcare service provision will also change to reflect new ways of working, new technologies and the development of new treatments.

Whilst it is recognised the population living longer is a positive development, an increase in age-related chronic diseases is also likely to occur, which may be further exacerbated by changing behaviours. Chronic diseases and conditions such as diabetes, cancers, heart disease, respiratory diseases and arthritis look set to grow in prevalence, although it is noted that a key aim of this new Regional Strategy was the reversal of such trends in relations to these conditions.

The use of technology will be key to meeting the needs of the increasing aging population in the future, particularly in relation to chronic disease management. Associated rapid advances in technology will impact on health and social care services in terms of the provision of (potentially costly) new forms of treatment and care. Such technologies are expected to allow some terminal

illnesses to be treated as chronic conditions and also to provide cures for some chronic conditions. Furthermore, new information technologies will support service users by providing ready access to information on conditions and treatment, whilst also supporting more effective and integrated working across the health and social services.

The next twenty years are therefore likely to see a greater provision of, and emphasis on, more holistic ‘generalist’ services provided in communities or on a day patient or outpatient basis than is the case at present. These will include primary care services, chronic disease management, as well as social services maintaining and enhancing independence.

DHSSPS’ Regional Strategy indicates that the Department’s focus going forward will be on tackling chronic diseases, as well as the social and economic disadvantage that gives rise to poor health. The majority of this will be managed within a community setting in partnership with service users. Therefore, services will be focused on supporting, protecting and promoting the quality of life of those least able to protect themselves, which will include: looked after children, vulnerable older people and people with disabilities or any other form of potential barrier to living a full life.

Within the Strategy’s objectives for the development of responsive integrated services, the following objective was set out:

Objective for Developing Responsive Integrated Services		
Objective	Community-Led Services	Contribution to Vision
By 2008,	promote independence for people who require care by facilitating independent living.	Improve the quality of life and independence of people in need so that 40 per cent of all people who received care managed community services and at least 88 per cent of people aged 75 years or older are supported, as necessary, in their own homes. This will also be supported by the use of Direct Payments for social care. This objective will also be supported by a focus on telecare provided in people’s homes.

DHSSPS’ [Primary Care Strategy](#)<sup>1</sup> recognises that the provision of a high quality primary care service has been, and will continue to be, subject to significant pressure, as the demands placed upon NI’s health service continue to grow. With this in mind, there is widespread recognition of the need to consider new ways of working, which will help meet both current and future needs.

Furthermore, the Strategy also recognises that over reliance is placed upon the hospital/acute sector. Therefore, a more responsive and dynamic primary care sector should be implemented which would provide the necessary care close to the homes of patients.

Like the Regional Strategy (as discussed previously), the Primary Care Strategy highlights the increasing growth in the elderly population as a considerable challenge. The over 85 population is expected to almost double over the next twenty years, meaning that major change will also be required in primary care provision in order to respond adequately to the needs of this group alone (as well as other’s suffering from chronic diseases), in seeking to maximise independent living and reduce the reliance on hospital and residential care.

As part of this, there will be a requirement for a much wider development of community-based alternatives to hospital admission, the establishment of flexible and innovative 24-hour crisis response services, more supported living opportunities and access to appropriately skilled and resourced community-based rehabilitation teams. This will also require an even greater emphasis on health promotion, enhanced social wellbeing and disease prevention.

<sup>1</sup> Caring for People Beyond Tomorrow: A Strategic Framework for the Development of Primary Health and Social Care for Individuals, Families and Communities in Northern Ireland

This would provide support to people in making and sustaining lifestyle changes, helping to reduce future levels of chronic illness and where necessary, supporting people to manage their own condition, again with less reliance on the hospital sector and practitioners generally. In this regard, multi-disciplinary care teams will need to be in place with greater specialisation in areas such as diabetes, respiratory illness and heart disease.

Both the Primary Care Strategy and the Regional Strategy recognise the demographic and global challenges, and the resultant need for the development of new approaches to care delivery with a focus on:

- Increased health promotion, disease prevention and early intervention to better manage demand; *and*
- Shifting the balance of care towards the community and promoting the alternatives to hospital admission.

The harnessing of new technologies to enhance health monitoring and empower patients is highlighted in both the Regional and Primary Care Strategies. Remote Monitoring therefore has the potential to play an important role in delivering services locally and facilitating care at home, as appropriate, and in the implementation of these strategies. Furthermore, specific service frameworks including Cardio Vascular and Respiratory Frameworks are currently being developed.

Remote Tele-Monitoring will contribute to ensuring that higher standards of care are made available to people with long-term conditions and should link into and be reflected in these and other service frameworks for Northern Ireland.

For 2008-09 and beyond, the Minister for Health, Social Care and Public Safety indicated an expectation that NI will see continuing and substantial improvement to services in ten priority areas (e.g. ensuring fully integrated care and support in the community; improving health and well-being; and modernising the infrastructure), with resultant progress towards the objectives and targets set out in the Programme for Government 2008-2011 and associated Public Service Agreements (PSAs).

The introduction of remote monitoring also has the potential to make a direct contribution to the achievement of the Department’s Public Service Agreement/ Priorities for Action targets as follows:

<p><b>Priority 4: Ensuring Fully Integrated Care and Support in the Community (specifically under PSA 4.3):</b></p> <p><b>By March 2009:</b></p> <ul style="list-style-type: none"> <li>– Identify at least 1,000 people who had unplanned admission to hospital on two or more occasions during 2007-08, due to a severe or complex chronic condition.</li> <li>– Establish, in collaboration with the European Centre for Connected Health, these patients on a case management programme;</li> <li>– Identify the anticipated onflow during this period;</li> <li>– Reduce the unplanned admissions of these case-managed patients by 10%.</li> </ul> <p><b>By 2011:</b></p> <ul style="list-style-type: none"> <li>– Secure a 50% reduction in unplanned hospital admissions for some 5,000 case-managed patients with severe chronic diseases (e.g. heart disease and respiratory conditions), these being the top 4% of patients who had unplanned admissions on two or more occasions in the year before they were case managed.</li> </ul>
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### 1.3 European Centre for Connected Health

In January 2008 the Minister for Health, Social Care and Public Safety announced his intention to establish the European Centre for Connected Health (ECCH) within the DHSSPS, to promote improvements in patient care through the use of proven technology and to fast track new products and innovation in the health and social care system in Northern Ireland.

The primary purpose of the ECCH is to improve the patient and client experience, providing for better quality and more effective care. By supporting the more efficient delivery of health and care

services, it will also enable the care system to better respond to the future needs of the population. In addition to this, the ECCH aims to work to secure economic gains through the growth of knowledge-based high-value added businesses in Northern Ireland serving European markets.

Furthermore, the DHSSPS recognised that the application of new technology in the health and social care system has a significant role to play in the modernisation of services. Benefits which technological solutions can provide include:

- Improved patient experience through remote monitoring of vital signs;
- Improved service responses;
- Better communication across and between multidisciplinary care teams;
- Improved patient and client access to the information that they require to manage their conditions; *and*
- Better use of resources.

New technology is also playing an increasing role in the improvement of diagnostics and treatment within the secondary care setting. Furthermore, it is increasingly recognised that getting the right information to the right people in a timely manner, can also make a significant contribution to the improvement of patient safety.

#### 1.4 **Background to the Tele-Monitoring Service Pilots**

There had been a growing volume of evidence for the use of technology in the provision of health and social care services. In particular, Home/Remote Tele-Monitoring is regarded as having the potential to offer significant benefits in the management of increasing numbers of the population with a chronic disease in the population.

**Remote Tele-Monitoring** is a clinical practice that involves remotely monitoring patients who are not at the same location as the healthcare provider. In general, a patient will have a number of monitoring devices at home, and these devices will transmit information on their vital signs via the telephone to the remote monitoring service provider and if necessary, to their healthcare provider. Portable devices are a further development of this type of technology. Remote Tele-Monitoring can be used for several clinical conditions which may require the recording of clinical parameters such as: Heart Failure; Constructive Pulmonary Obstructive Disease (COPD); Diabetes; High Risk Pregnancy; Mental Health Chronic Disease Management; Palliative Care; Asthma; and Hypertension.

The initial focus for the recently established ECCH in Northern Ireland was the development and implementation of a Remote Tele-Monitoring Service for Northern Ireland.

Furthermore, a Government target has been set to provide 5,000 people with access to Remote Tele-Monitoring Service by 2011<sup>2</sup>.

In advance of this large scale application, Minister Paul Goggins announced (on 5<sup>th</sup> December 2006) the creation of a £1m pump-priming fund for the development of Telehealth in NI. Specifically, the Minister said that the fund will be used to promote telehealth and telemedicine initiatives across the HPSS, to stimulate new thinking about how technology can be used to further the reform and modernisation of acute and community services.

The pilot projects were intended to demonstrate how remote monitoring could improve patient care. In addition, the intention was to develop the experience of patients, clinicians and managers in the use of technology for the effective management of older people and those with chronic conditions.

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<sup>2</sup> The Terms of Reference for this evaluation indicated that the procurement exercise to secure the main provider for this service commenced in August 2008.

## 1.5 Terms of Reference

The purpose of this project is to independently evaluate the main 8 of the 16 tele-monitoring pilots which were established in 2007/08 with an initial two year funding provision from the DHSSPS in Northern Ireland. Preliminary evaluation of these pilot projects will inform the development of a large-scale tele-monitoring service which is currently being procured.

The purpose of the evaluation project is to:

- Evaluate the impact on patient care in terms of quality, safety, patient experience and utilisation of resources of the investment to date;
- A number of potential benefits associated with the application of new technologies in health and social care provision have been identified. The evaluation should therefore test the extent to which the following benefits are being realised in the pilots and identify any issues or concerns:

- Improvements in the quality of care patients receive and in the quality of their life;
- Inform patient centred case management, intermediate care schemes and medicines compliance, such that patients receive more care at home rather than in a hospital, optimising the potential for independent living and enabling reductions in inpatient admissions to hospital;
- Patients receive more and better targeted proactive support, enabling them to take greater control in the management of their own disease;
- Optimal use of staffing resources; *and*
- Improved quality assurance through auditable improvements in the flow of quality and timely information.

- Identify schemes which are working well and should continue to attract funding and those which are not;
- Provide recommendations to ensure that lessons learned are transferred into the main tele-monitoring project.
- Provide a strategic overview assessment of the impact and benefits of all eight schemes; *and*
- Provide a more detailed assessment of each individual scheme to encompass the analysis of qualitative and quantitative held by Trusts and the assessment of the views and perspectives of clinicians, Trust and Board managers and service users.

In relation to data availability, the Terms of Reference indicated that Boards and Trusts would provide all relevant data to the evaluation team, to include:

- Number of patients on the scheme;
- Conditions being treated;
- Funding allocation and expenditure;
- Details on staff involved; *and*
- Patient feedback.

## 1.6 Key Issues Impacting Upon Terms of Reference

Following the commencement of the assignment, a number of key issues were identified that impacted upon the evaluation, namely:

- The rates of hospital admissions/GP visits, hospital avoidance etc are either not recorded or recorded in a limited fashion;
- The Trust has experienced substantial changes in related service provision during the period of the Tele-monitoring pilot project. The pilot have been operating within dynamic and evolving environments, with patient numbers referred to the tele-monitoring pilots increasing significantly during the pilot period; and

- There are some issues around data collection and interpretation (within and between projects).

### 1.7 Methodology

An overview of the approach undertaken to address the key aims and objectives of the evaluation is outlined below, with further detail provided in the following subsections.

- **Background research** - Before undertaking the main primary research activities, a variety of background research activities were undertaken, including establishing the logical and operational fit of the Project with DHSSPS’ strategy and the context within which it operates. A detailed analysis was also undertaken of all available data relating to the Project’s activity and performance for the period under review.
- **Primary Research** – As part of the main primary research activities the evaluation team undertook:
  - A telephone survey with participating clinicians (n=4);
  - A telephone survey with participating patients (n=11);
  - A face-to-face consultation with the WHSCT’s Tele-monitoring co-ordinator;
  - A face-to-face consultation with Service Provider 1 (the service provider).

### 1.8 Structure of report

The remainder of this report is structured as follows:

Section	Content
2. Project Overview & Activity	Overview of the tele-monitoring pilot, aims and objectives, budget, participation levels.
3. HSC Internal Evaluation	Feedback from patients, clinicians and carers from HSC Internal Evaluations
4. Operation of Pilot	Clinicians’ and patients’ views on the operation of the remote tele-monitoring pilot.
5. Perceived Impact on Organisation and Resource Utilisation	The perceived impact that the tele-monitoring pilot has had on the Trust and Resource utilisation.
6. Perceived Impact on Health and Wellbeing	The perceived impact that the tele-monitoring pilot has had on patients’ health and Wellbeing.
7. Conclusions & Recommendations	Identification of the key conclusions arising from the evaluation, and recommendations for the way forward.



## 2 PROJECT OVERVIEW & ACTIVITY

This report presents the evaluation of the Western Health and Social Care Trust ('WHSCCT') tele-monitoring service pilot project.

### 2.1 Project Implementation

Staffing for the WHSCCT pilots has been evolving (up to February 2009):

- The WHSCCT Telehealth Coordinator only came into post in January 2009. Prior to this, the Trust did not have a champion for telemonitoring to drive the agenda forward with Consultants and Nurses, in order to get buy-in.
- A Case Manager has recently been employed in Londonderry, who will be responsible for reassessing the caseload against the criteria/ parameters put in place for use within the pilot scheme.
- Case Managers have been recruited and commenced employment in the last two months;
- Respiratory Care Managers are due to be employed, however only 3 have been selected at present;
- General Care Managers are to be appointed later in the year (2009).
- The Trust now has 8 Diabetic Nurse Specialists in post (Hospital and Community).

Western Health & Social Care Trust does not have access to specialist teams and consequently district nursing staff has to work with the pilot schemes. Due to professional accountability, district nurses do not feel that telemonitoring provides them with them enough information to accurately and appropriately respond to 'red alerts'.

The Trust appointed a Service Provider to facilitate the provision of tele-monitoring services for patients of the Trust. The Service Provider contract was for a 14-month period (1 February 2008 to 31 March 2009), and the service and budget agreement included all labour, transport and other supporting services necessary for the Service Provider to meet the terms of the agreement.

As noted, the goal of tele-health was to monitor the patient's illness with an in-home monitoring device that would ultimately help their doctor/nurse make changes to their medical care as needed, and allow the patient to better control their illness, help them feel better, and minimise complications. In order to achieve this, the pilot project consisted of the following key elements:

#### **Training of Health Professionals**

- Health professionals are trained on use of the service;
- Health professionals are given access to the Service Provider system server which contains the relevant patient information (client contact details, summary of condition, medications and vital signs).

Initially, the Service Provider were solely responsible for training the nursing and other Trust/ GP staff, however the Trust has found it more effective to incorporate an introductory element, which is delivered by the Trust Telehealth Coordinator in order to set the context for training in relation to remote telemonitoring.

**Patient Selection**

Patient selection is (in January 2009) stated to be:

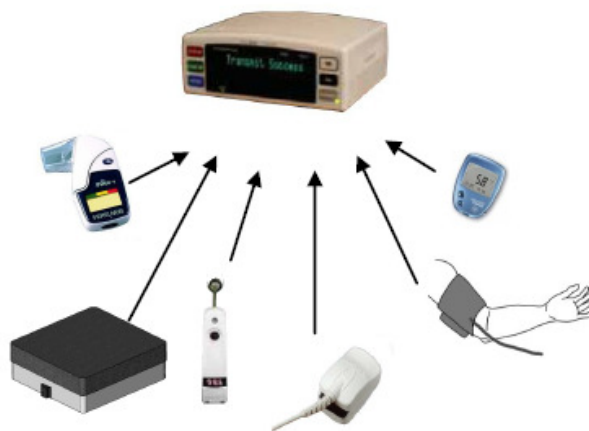
Selection criteria	And/or
Have telephone line Ability/carer to use telehealth equipment Ability to hear, answer and talk on a phone	Be frequent users of GP surgeries or at least have one unplanned event in the last 24 months of: <ul style="list-style-type: none"> <li>• Unplanned admission to hospital;</li> <li>• Rapid Response</li> <li>• Ambulance service</li> <li>• A&amp;E visit</li> </ul>

Plus the patient must have One Long term Chronic condition. Patients with Co-morbidies are still eligible.

- To establish if a patient would benefit from tele-monitoring a specialist assessment was completed as part of their care;
- Participant patients are advised that tele-monitoring support would be provided on a time limited basis;
- Once the patient had agreed, and signed a consent form, a referral form is sent to the Service Provider.

**Installation Procedure**

- The Service Provider arranged an appointment with patient and/or carer to install a tele-monitoring unit in their home;
- The Service Provider informed the clinician team of the intended date and time of installation;
- The Service Provider Support Officer installed the equipment, carry out patient training, transmit a set of readings and pre set questions;
- As noted, each participant patient received a tele-monitoring unit (the unit provided to COPD/CHF patients is featured below). For COPD/CHT patients, the tele-monitoring unit was required to be close to both an electric point and an outgoing telephone point/line within the Patient’s home;



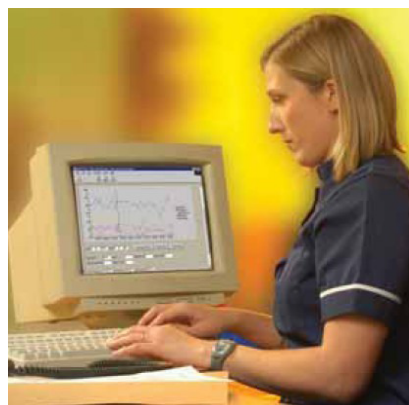
- For diabetes only patients, a separate portable tele-monitoring device (featured below) was provided which download the patient’s blood glucose readings to a secure IT system. These patients were able to take their unit anywhere and insert the connection into any telephone socket to download the readings.



- The clinician (i.e. nurse/health professional) decided which readings an individual patient would need to take and how often they would have to take them;
- The clinician developed specific high/low alert limits appropriate for each individual patient's current condition.
- The unit could take weight, blood pressure, blood sugar, peak flow, temperature, oxygen saturation and heart rate readings;
- The tele-monitoring unit had a free phone number so the patient did not incur any phone call charges. Furthermore, to ensure that the Patient was not unduly inconvenienced or had to incur significant costs, the units provided were designed to draw on only minimal electricity as it switched off when the patient was done with their daily health check;

### Monitoring Of Vital Signs

- The tele-monitoring unit switched on at a programmed time and asked the patient to take their readings;
- Furthermore, the unit had a 'voice' which asked the patient some questions relating to their illness, to which the patient had to press a yes or no button on the unit to answer;
- If the patient missed their allotted time to take their readings, they received a call from an advisor from The Service Provider who was responsible for checking the readings. This advisor was there to help and support the patient if they were having any difficulties taking their readings;
- The tele-monitoring unit sends the readings down the telephone line to the computer/central point in the Service Provider advisor's offices and also to the patient's clinician's computer.



- The Service Provider's advisor then carried out a non-clinical triage of each patient, through a review of the patient's readings (a sample screen shot is provided below);

Status	Type	Patient	Phone	Active Patients		Weight	SpO2	Blood glucose	Last contact	Trend	Note
				Systolic / Diastolic							
<input type="checkbox"/>	E14 Diabetes Mellitus										
		helen Smith		118 / 84	62.2	99.0	4.4				
		Herman Pickle	12345678	110 / 82	85.3	99.0					
		stephanie stanforth		133 / 102	81.6	98.0					
<input type="checkbox"/>	I50 Heartfailure										
		Barbara Trent		156 / 110	86.7	98.0	5.6				
		Matt Walsh		152 / 86	85.4	97.0					
<input type="checkbox"/>	J44 COPD										
		Mike Worden	555666	118 / 77		98.0	6.3				

- If an alert status was assigned to the individual patient’s transmitted data, as determined by the patient’s alert limits and other parameters, they notified the patient’s nurse/doctor. Their health professional then determined if any changes to the patient’s medical care were necessary;
- It should be noted that alert status of the data is not a clinical assessment of the patient’s medical condition. It was the responsibility of the health professional to review ‘red alert’ data and make a clinical judgment of the patient’s condition and respond accordingly;
- Throughout the period of time that the patient used the tele-monitoring unit, they were advised to attend any planned hospital or GP appointments as normal. The patient was advised that the tele-monitoring unit was not an emergency service, and that they should tell their nurse or doctor if they felt unwell (e.g. experiencing chest pain, difficulty breathing, or any other urgent symptom);
- If the patient experienced any problems with the tele-monitoring unit, they were advised to call The Service Provider, whose number was manned 24 hours/7 days a week;
- Staffing structure/ratios – The Service Provider contract with the Trust established that it had to ensure that it had appropriate staffing levels at all times in order to meet to meet its contractual commitment.

**Skills Input**

- A Tele-Monitoring coordinator was appointed, who assumed day-to-day management of the project.

**2.2 Project Activity**

The Trust has indicated that there have been 25 patients targeted by the pilot scheme currently across chronic diseases as follows:

- Newtownstewart- **5 patients were targeted, of which 2 patients are now deceased and 1 declined, leaving a total of 2 patients;**
- Strabane- **14 patients targeted, of which 2 have been taken off** (1 was due to technical difficulties and 1 was unable to monitor herself), leaving a **total of 12 patients;**
- Londonderry- **6 patients** on the scheme currently.

Therefore, the Trust currently has 20 patients on the scheme.

2.2.1 Referrals

	Referrals From January 08 to March 09															
	2008												2009			
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
<b>Grand Total</b>	<b>6</b>	<b>7</b>	<b>8</b>						<b>4</b>			<b>1</b>		<b>9</b>	<b>5</b>	<b>40</b>

The level of referrals is shown for January 2008 to 11 March 2009.

A new pilot was also due to start in Altnagelvin specifically in relation to pregnant women. However, ICT problems between the Trust systems and the Service Provider IT system firewalls have prevented this commencing and by result, the Trust has 7 patients awaiting registration.

### 3 HSC INTERNAL EVALUATION

#### 3.1.1 Evaluation Questionnaire – Patient

12 patients (5 COPD, 6 Diabetes, 2 CHF and 8 other) returned questionnaires to Trust staff in 2009.

Question to patient	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
<b>Patient Benefits</b>					
1. The monitoring system assisted me in managing my health on a day to day basis	3	9			
2. The remote monitoring system has reduced the number of visits I made to my GP	4	5	1	1	1
3. I believe my own monitoring of my condition has reduced the number of nurse/ community team/health professional visits	2	2	2		6
4. I believe that during the monitoring period, the remote monitoring system prevented my admission to hospital or need to attend A&E Services (and/or GP Out of Hours)		3	7	1	1
5. The remote monitoring system has enabled me to better manage my own condition and become more involved in my health care	3	8	1		
<b>Equipment</b>					
6. The monitoring system was easy for me to use	9	3			
7. I consider the installation was prompt, efficient and tidy	9	3			
8. I believe the monitoring questions encouraged me to think about my symptoms	6	4			2

Comments were:
<p>“whilst monitoring enables better management, I find that it is sometimes worrying if readings are abnormal but realizes the benefit of detection”</p> <p>“Does not understand readings on machine therefore feels she is not as involved”</p> <p>“Disagree with prevented administration to hospital or GP. Always want to attend own GP with any concerns.”</p>

All of the patients were asked to take more than one reading:

Reasons for taking more than one reading	Number of Patients
Asked to do so	11
Reassurance	2
Other reason	2

Comments were:
<p>“Washing machine whistles when monitor is ready”</p> <p>“there is a poor signal in the house”</p>

2 patients have been admitted to hospital as a result of their condition:

	Number of Patients
No times	10
Once	2
Twice	
<b>Total</b>	<b>12</b>

### 3.1.2 Evaluation Questionnaire – Professional Worker

12 questionnaires were returned from professional workers (responsible for 5 COPD patients, 5, for Diabetes, 3 for CHF and 10 other). Feedback was:

Quality	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1. Introduction of remote monitoring has decreased the number of hospital admissions relating to the patient’s chronic condition		3	4		5
2. Introduction of remote monitoring has decreased the number of GP visits relating to the patient’s chronic condition	1	2	5		4
3. Introduction of remote monitoring has decreased the number of nurse visits relating to the patient’s chronic condition		1	2		9

A large number of professional workers disagreed that remote monitoring had reduced the number of hospital admissions, visits to GPs, or nurse visits. This reflected a variety of reasons including the multiple conditions which patients had, and the fact that visits were infrequent in the first instance.

Comments were:
<p>“Patient usually visits GP once a month; telehealth has not reassured patient regarding symptoms”</p> <p>“Has increased GP visits and contact via the telephone. District nurse did not visit prior to introduction of monitoring”</p>

### 3.1.3 Evaluation Questionnaire – Carers

10 questionnaires were returned from carers. Feedback was:

Question to Carer	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
<b>Patient Benefits</b>					
1. I consider remote monitoring has improved the level of care given to the person I care for.	1	6	1		2
2. I consider remote monitoring has helped prevent the person I care for being admitted to hospital.	1	4		1	4
3. When assisting the person to operate the remote monitoring equipment, I found it easy to use.	3	2			5
4. Remote Telemonitoring gave me reassurance about the condition of the person I care for and supported me in my care for that person.	1	6			3

Comments were:
“Feel at times the machine can be unpredictable, even though instructions are followed correctly”

### 3.2 Conclusion

In conclusion, the remote tele-monitoring system is considered to have been beneficial:

- All patients agree that the monitoring system has assisted them in managing their health on a day to day basis.
- 75% of patients were of the view that the system had reduced the number of visits they had made to their GP.
- This compared to the clinicians, with only 25% stating that it had reduced GP visits, and 25% also stating that it has reduced the number of hospital admissions.
- The feedback for carers is overwhelmingly positive.



## 4 OPERATION OF PILOT

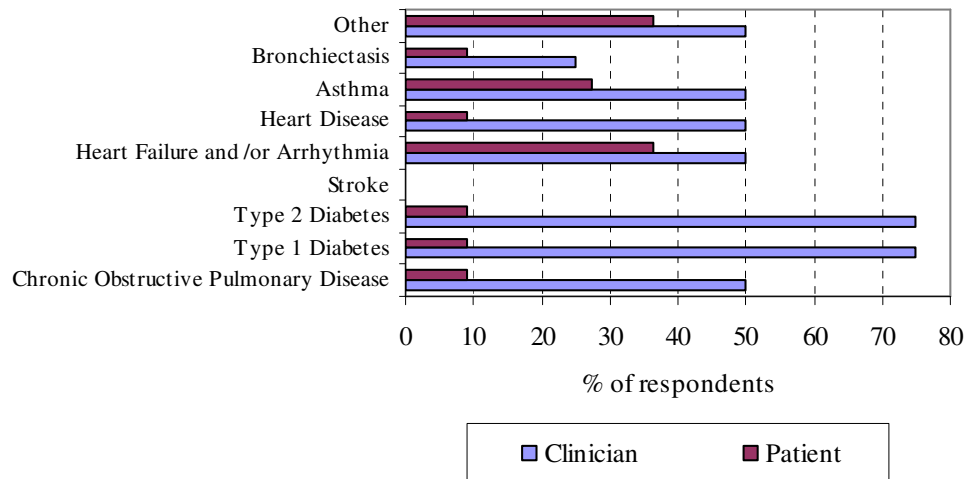
Section 4 considers clinicians’ and patients’ views on the operation of the tele-monitoring pilot, including the patient selection and recruitment processes, the criteria that were utilised during the pilot projects, the ease of use of the equipment, and the level of support from the Service Provider.

The findings below are taken from the individual consultations with patients and clinicians. Detailed questions and findings are included in Appendix 1 (Clinical Questionnaire Statistical Analysis) and Appendix 2 (Patient Questionnaire Statistical Analysis). The relevant question from each of the Appendices is referenced in the figures below.

### 4.1 Profile of Respondents

Of the 4 clinicians included in the consultation process, 3 (75% N=4) are responsible for Type 1 Diabetes and Type 2 Diabetes.

**Figure 4.1: Illnesses Responsible for (Q1 – Patient / Q1 – Clinician)**

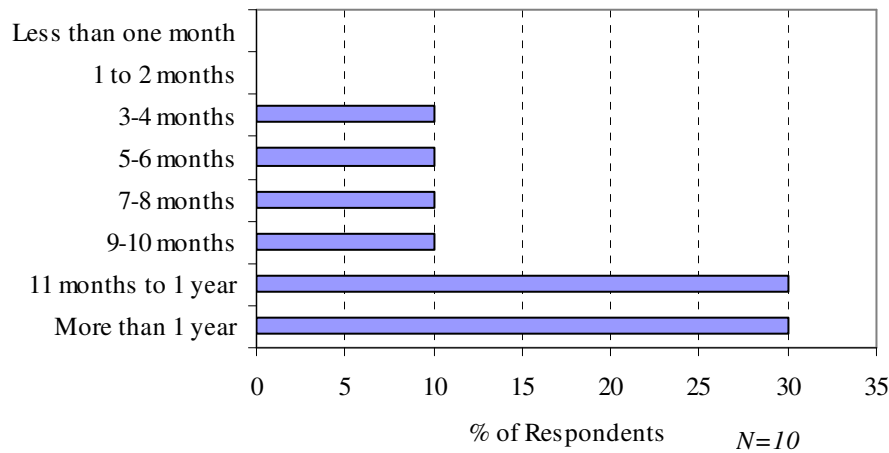


Over one-third (36%, N=11) of patients consulted are using tele-monitoring equipment to monitor Heart Failure/Arrhythmia or to monitor other conditions (36%, N=11) such as blood pressure, breathing problems or weight/cholesterol.

Patients have been using the equipment from between one month to over one year:

- The majority of patients (60%, N=10) have been using the tele-monitoring equipment for a period of 11 months or more;
- 10% (N=10) have been using it for 3-4 months
- 10% (N=10) have been using the equipment for a period of 5-6 months;
- 10% (N=10) have been using it for 7-8 months; and
- 10% (N=10) have been using it for 9-10 months.

**Figure 4.2: Duration of use of tele-monitoring equipment (Q2 – Patient)**



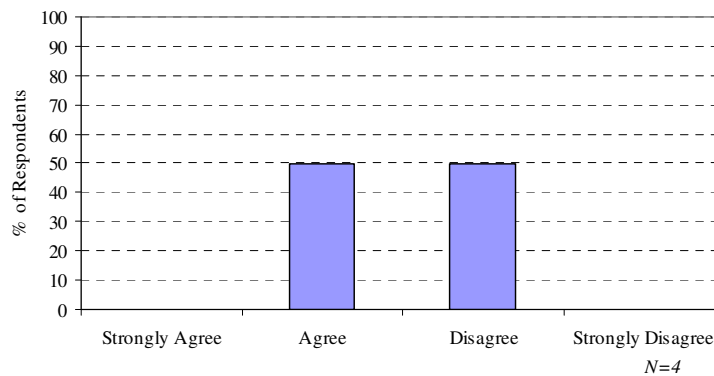
**4.2 Responsibility for Patient Selection**

75% (N=4) of clinicians stated that GPs/nurses were responsible for selecting and/or recruiting Patients to participate in the Pilot. The remaining 25% stated that the clinician was responsible.

**4.3 Appropriateness of Patients Selected**

**Clinicians had various views on whether or not patients that were selected or recruited to participate in the Pilot were appropriate to participate** - 50% (N=4) ‘agreed’ that the patients that were selected or recruited to participate in the Pilot were appropriate to participate, whilst 50% disagreed.

**Figure 4.3: Appropriate Patient Recruitment/Selection (Q2b - Clinician)**



Clinicians reported that the selection of patients has become more appropriate than at the beginning of the programme.

Due to the Telehealth Coordinator only having been appointed in January 2009, it was indicated that the criteria for the selection of patients/ users did not exist prior to this. As a result, it was noted that the appropriateness for patients utilising telemonitoring equipment was not adequately considered i.e. patients were put on solely on the basis of their diagnosis, rather than the ability/ suitability of the patients having been considered.

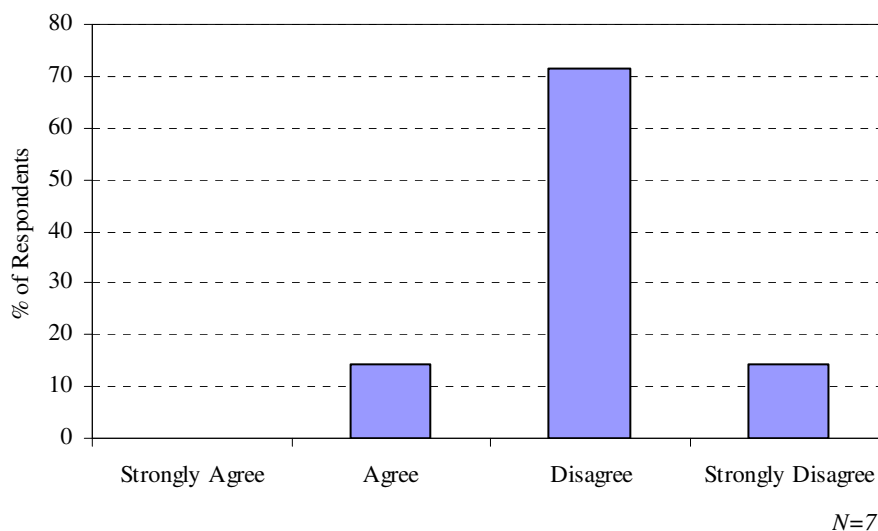
Since appointment, the Telehealth Coordinator has developed condition-specific parameters (similar to the Kaiser Permanente Criteria) which were approved by the Western Trust Local Design Group.

The Telehealth Coordinator has also developed a referral pack for nursing staff in relation to COPD and Diabetes and left copies in each specific area/ GP practice.

#### 4.4 Appropriateness of Tele-Monitoring

Three-quarters of clinicians (75%, N=4) ‘disagreed’ that tele-monitoring is appropriate for all patients with the primary condition that they have responsibility for. Clinicians reported that the appropriateness of the tele-monitoring treatment will depend on the severity of the patient conditions and individual patient attitude.

**Figure 4.4: Appropriate for Primary Condition (Q3a – Clinician)**



Clinicians provided some characteristics of patients that tele-monitoring is appropriate for or not appropriate for:

<i>Characteristics</i>	<i>Appropriate For and why?</i>	<i>Not Appropriate For and why?</i>
<i>Care management</i>		<ul style="list-style-type: none"> <li>Level 3 – it depends on the patient’s ability to use technology</li> </ul>
<i>Other</i>		<ul style="list-style-type: none"> <li>Anxious people</li> <li>Limited manual dexterity</li> </ul>

A GP practice in Limavady has expressed an interest in getting involved through the medium of nursing homes. On the basis that GPs have to do an annual assessment of patients within nursing homes, it was felt that the use of telemonitoring in nursing homes may ease the burden and dedicate resources more effectively, particularly on the basis that nursing home patients have traditionally been regarded as frequent attendees within the A&E setting.

#### 4.5 Appropriate Timescale for Patients’ use of Tele-Monitoring

Clinicians provided views on the most appropriate timescale for the following types of patients to use tele-monitoring equipment:

- COPD; and
- Diabetes.

4.5.1 COPD

- All (100%, N=1) clinicians stated that patients with all levels of COPD should use the tele-monitoring equipment ‘to end of life.’ (Q6a – Clinician)

*Diabetes*

- All (100%, N=1) clinicians stated that patients with Diabetes Type 1 or Type 2 should use the tele-monitoring equipment ‘to end of life’. (Q6b – Clinician)

4.6 Improvements to Patient Selection

Clinicians suggested some improvements that could be made to the Patient selection process, including:

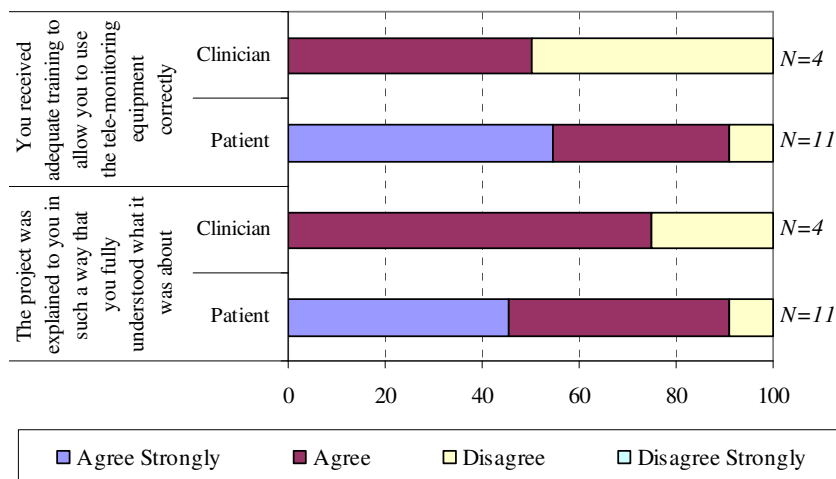
- More guidelines for district nurses;
- Need clear guidance on what patients it is appropriate for, what conditions, what period of time, and who evaluates the results;
- Must have specialist knowledge of conditions;
- GP could overlook the process.

4.7 Satisfaction with Project Implementation

4.7.1 Information and Training

- Three-quarters of clinicians (75%, N=4), and the vast majority of patients (90%, N=11) were in agreement that the project was explained to them in such a way that they fully understood what it was about;
- Half of clinicians (50%, N=4) ‘agreed’ and the vast majority of patients (91%, N=11) ‘strongly agreed’ or ‘agreed’ that they received adequate training to allow them to use the tele-monitoring equipment. 50% of clinicians ‘disagreed’ with this.

**Figure 4.5: Implementation of the tele-monitoring project (Q 3a – Patient / Q7a – Clinician)**



Comments from clinicians included:

*“Some training was provided but not enough. I felt under pressure to get patients involved regardless of whether they are appropriate or not.”*

*“There were training delays and IT difficulties, this is now mostly resolved.”*

Clinician Respondent

As demonstrated above, patients have positive opinions towards the implementation of the tele-monitoring equipment. Comments include:

*“The nurse explained the purpose of the equipment; it was installed efficiently and I was shown how to use it.”*

*“The nature of the scheme was fully explained to me. Installation was on time and I was shown how to use it properly.”*

Patient Respondents

**4.7.2 Processes relating to Ordering Equipment**

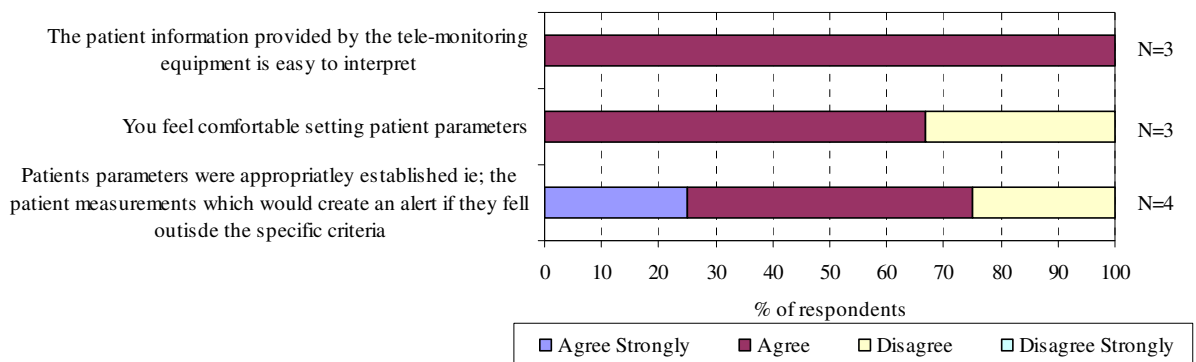
All clinicians (100%, N=3) ‘agreed’ that the way in which tele-monitors were ordered for placement was straightforward and efficient. **(Q7a – Clinician)**

**4.7.3 Fitting of Equipment**

All patients (100%, N=11) either ‘strongly agreed’ (45%) or ‘agreed’ (55%) that the equipment was installed in their house in an efficient manner. **(Q 3a – Patient)**

**4.7.4 Issues around Patient Parameters**

**Figure 4.6: Implementation of the tele-monitoring project (Q7a – Clinician)**



Generally, clinicians were positive about aspects of the Project that related to patients’ parameters. Key points to note include:

- All clinicians (100%, N=3) ‘agreed’ that the patient information provided by the tele-monitoring equipment is easy to interpret;
- Three-quarters of clinicians (75%, N=4) ‘strongly agreed’ or ‘agreed’ that the patients parameters were appropriately established i.e. the patient measurements which would create an alert if they fell outside the specific criteria; and

- Two-thirds of clinicians (67%, N=3) ‘agreed’ that they feel comfortable setting patient parameters, 29% disagreed that they were comfortable setting patient parameters.

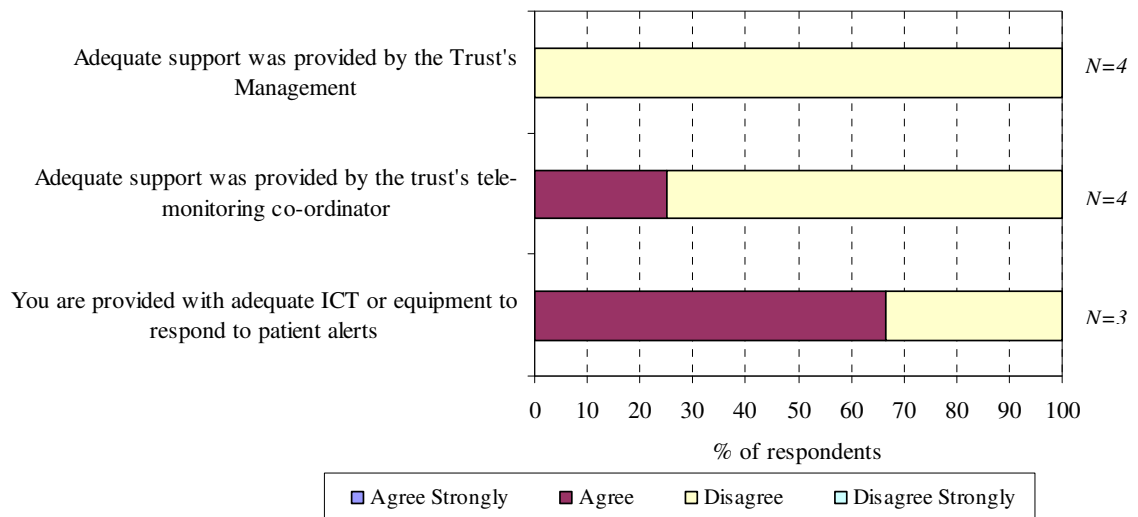
Clinicians reported that there are some instances where they are not comfortable setting patient’s parameters and feel that GPs should have input into deciding parameters. Comments from clinicians included:

*“I do not feel I have the knowledge or skill to set blood pressure parameters, the GP would need to do this.”*

Clinician Respondent

**4.7.5 Level of Support Offered**

**Figure 4.7: Implementation of the tele-monitoring project (Q7a – Clinician)**



**Clinicians’ were negative about support provided during the implementation of the tele-monitoring project, thus reflecting the delays in appointing the Tele-Monitoring Coordinator:**

- Three-quarters of clinicians (75%, N=4) ‘disagreed’ that adequate support was provided by the Trust's tele-monitoring co-ordinator;
- All clinicians (100%, N=4) ‘disagreed’ that adequate support was provided by the Trust's Management; and
- Two-thirds (67%, N=3) ‘agreed’ that they are provided with adequate ICT or equipment to respond to patient alerts.

Clinicians reported that they have not had sufficient contact with the Trust tele-monitoring management.

*“The tele-monitoring co-ordinator is new to the Trust but is now very good; there is no involvement from other management of the Trust.”*

Clinician Respondent

Difficulties were highlighted in terms of the ICT systems utilised as part of the telemonitoring service pilots.

For example, the Newtownstewart GP Practice, based in a rural location and working from a GP ICT network, has to log out of the Trust network to access the telemonitoring/ Service Provider system.

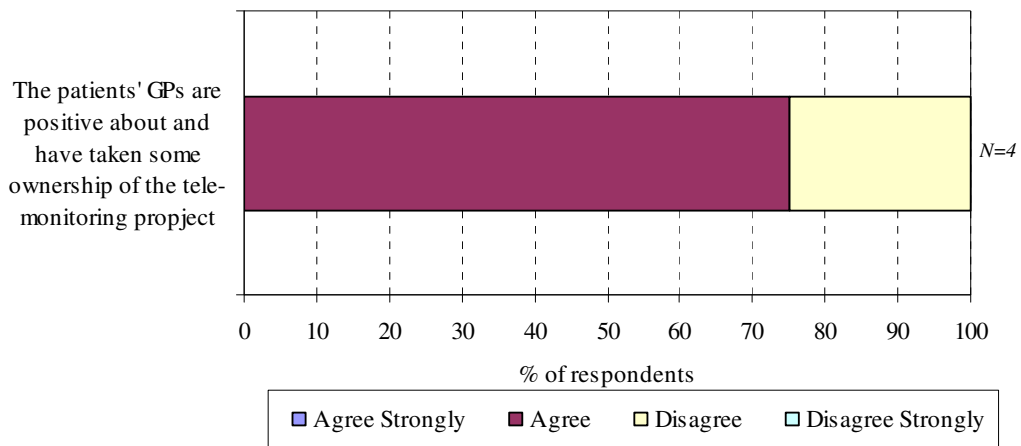
Similar difficulties have been established at the site of the new pilot in Lisnakea i.e. although nurses can get into the Service Provider system, this takes in excess of 10 minutes to reach the appropriate Service Provider Icon on the computer system and thus nurses do not have time to do this for all their patients.

In addition, a new pilot was due to start in Altnagelvin specifically in relation to pregnant women. However, ICT problems between the Trust systems and the Service Provider IT system firewalls have prevented this commencing and by result, the Trust has 7 patients awaiting registration.

**4.7.6 Degree of GP Ownership**

Three-quarters of clinicians (75%, N=4) ‘agreed’ that patients’ GPs are positive about and have taken some ownership of the tele-monitoring project. However, 25% of clinicians ‘disagreed’ that this was the case.

**Figure 4.8: Implementation of the tele-monitoring project (Q7a – Clinician)**



Comments from clinicians included:

*“Most GPs have been keen on the project; some have seen the benefits of the data.”*

Clinician Respondents

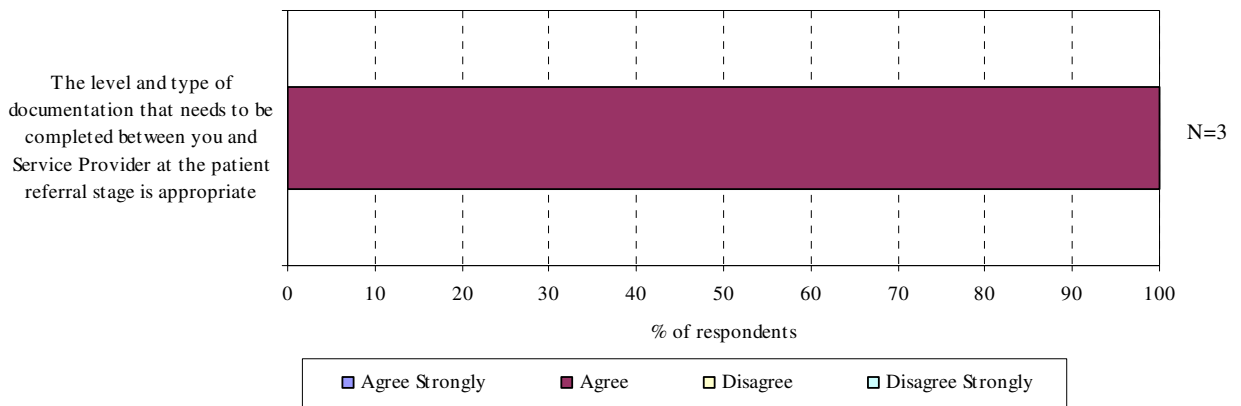
**4.8 Satisfaction with the Service provided by the Service Provider**

As part of the remote tele-monitoring service, a contract was awarded to a Service Provider who provided a triage service.

**4.8.1 Documentation at Patient Referral Stage**

All clinicians (100%, N=3) stated that the level and type of documentation that needs to be completed between them and the Service Provider at the patient referral stage is appropriate.

**Figure 4.9: Clinicians’ views on the level and type of documentation at the patient referral stage (Q8a – Clinician)**

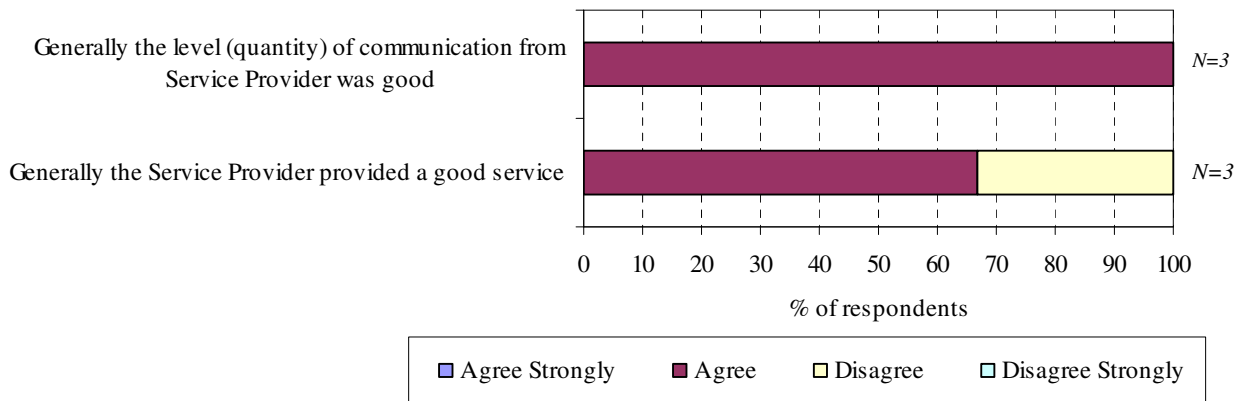


**4.8.2 The Support provided by the Service Provider**

**Clinicians’ agree that the Tele-Health service and communication was good:**

- Two-thirds of clinicians (67%, N=3) ‘agreed’ that in general ‘the Service Provider provided a good service’. However, one clinician (33%, N=3) disagreed that a good service was provided; and
- All clinicians (100%, N=3) ‘agreed’ the level (quantity) of communication from the Service Provider was good.

**Figure 4.10: Clinicians’ views on Telehealth service and communication (Q8a – Clinician)**

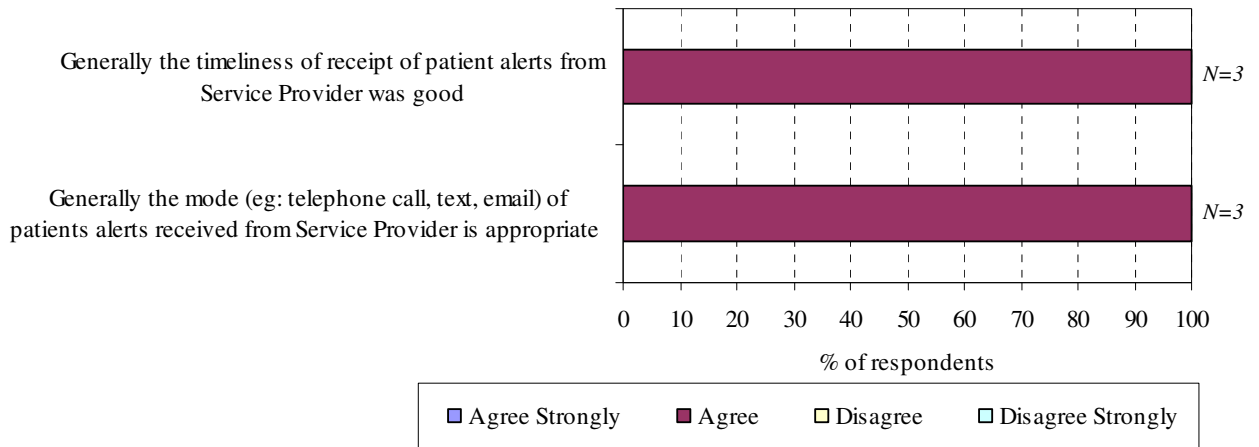


**4.8.3 Mode & Timeliness of Patient Alerts**

- All (100%, N=3) clinicians ‘agreed’ that the quality of monitoring information provided by the Service Provider is good; and
- All (100%, N=3) clinicians ‘agreed’ that the timeliness of monitoring information provided by the Service Provider is good.



**Figure 4.11: Clinicians’ views on the mode and timeliness of patient alerts (Q8a – Clinician)**



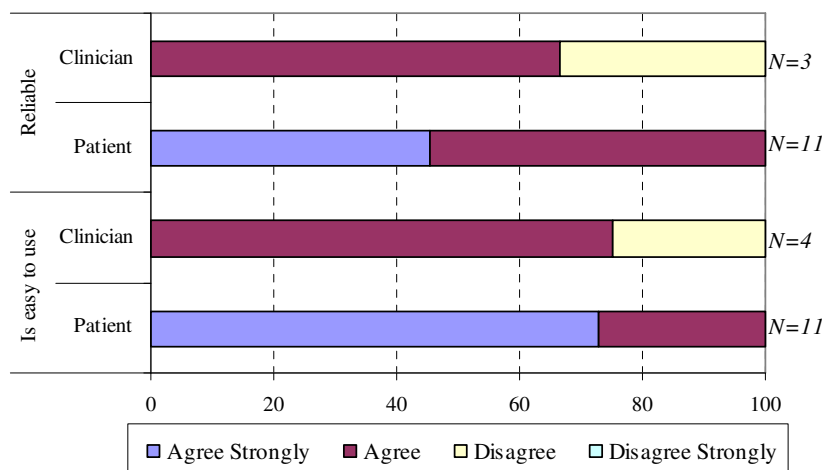
**4.9 Satisfaction with the Tele-Monitoring Equipment and/or Software**

**4.9.1 Reliability and Ease of Use**

**Patients and clinicians are largely positive about the ease of use and reliability of the tele-monitoring equipment:**

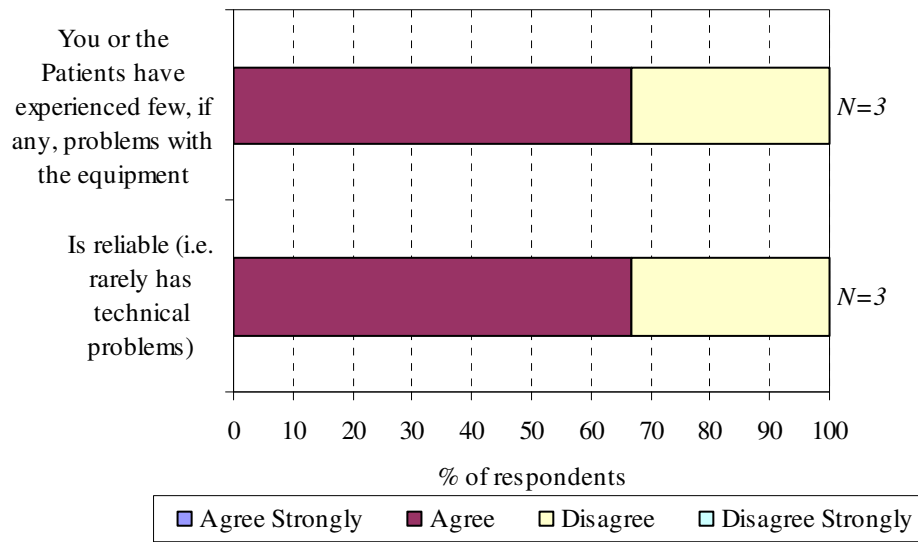
- The vast majority of clinicians (75%, N=4) and patients (100%, N=11) are in agreement that the equipment is easy to use;
- Two-thirds of clinicians (67%, N=3) and 90% (N=11) of patients were in agreement that the equipment is reliable, whereas 33% of clinicians disagreed.

**Figure 4.12: Opinions on the tele-monitoring equipment (Q4a – Patient / Q9a – Clinician)**



Furthermore 67% of clinicians noted that there were few problems with the equipment and that the equipment was reliable.

**Figure 4.13: Clinicians’ views on aspects the tele-monitoring equipment (Q9a – Clinician)**

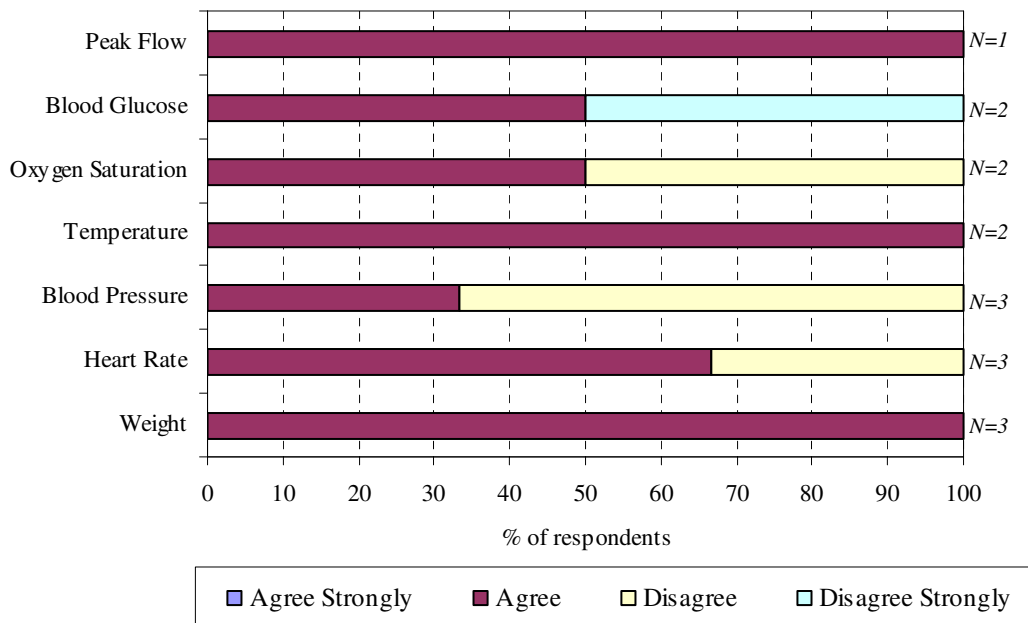


**4.9.2 Accuracy of Readings**

**Clinicians’ and patients are both mainly positive about the accuracy of tele-monitoring equipment readings** - The majority of clinicians ‘agreed’ that the tele-monitoring equipment provided accurate readings.

90% (N=10) of patients either strongly agreed or agreed that the equipment provides accurate readings, a small minority (10%) disagreed with this statement. **(Q4a – Patient)**

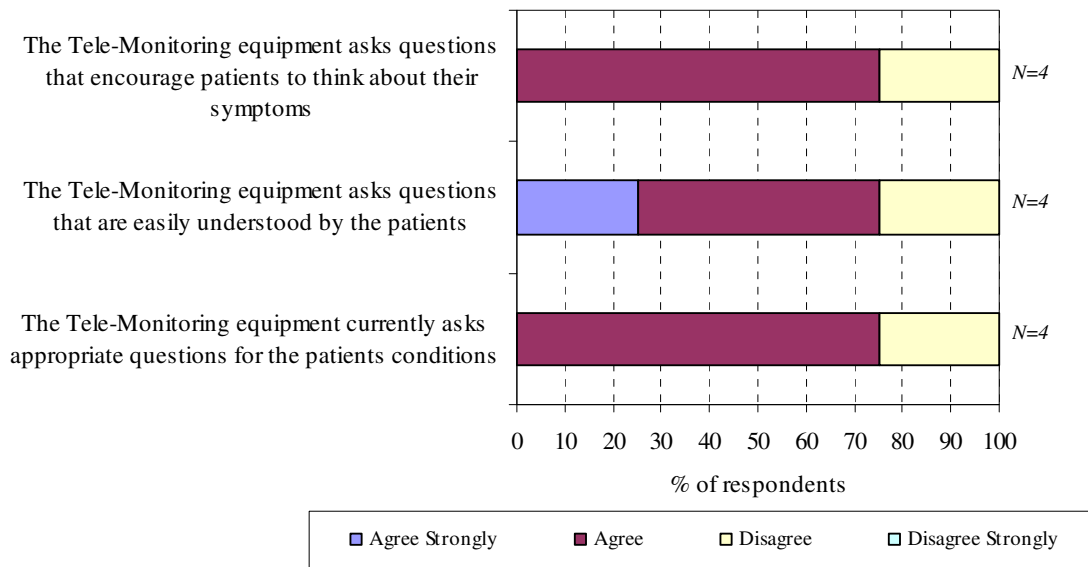
**Figure 4.14: Clinicians’ views on accuracy of tele-monitoring equipment readings (Q9c – Clinician)**



**4.9.3 Equipment – Clinicians’ Views on Questions Asked**

The clinicians had mixed views as to the questions asked to patients whilst they used the tele-monitoring equipment.

**Figure 4.15: Clinicians’ views on aspects the tele-monitoring equipment (Q4a – Patient / Q9a – Clinician)**



- Three-quarters (75%, N=4) of clinicians ‘agreed’ that the tele-monitoring equipment currently asks appropriate questions for the patients conditions;
- Three-quarters (75%, N=4) of clinicians are in agreement that the tele-monitoring equipment asks questions that are easily understood by the patients; and
- Three-quarters (75%, N=4) of clinicians are in agreement that the tele-monitoring equipment asks questions that encourage patients to think about their symptoms.

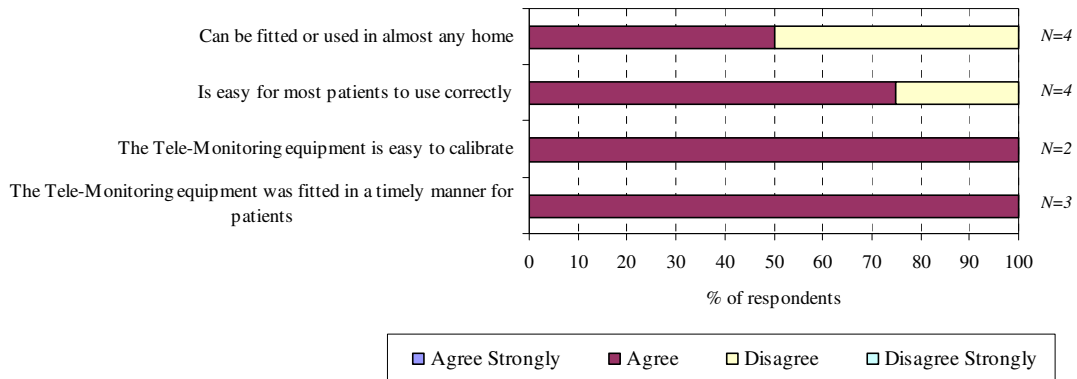
Clinicians reported that some patients have had difficulty with the equipment.

**4.9.4 Other aspects of Equipment – Clinicians’ Views**

**Clinicians’ views vary on aspects the tele-monitoring equipment:**

- Half (50%, N=4) of clinicians ‘agreed’, whilst 50% ‘disagreed’ that the tele-monitoring equipment can be fitted or used in almost any home;
- All (100%, N=4) clinicians ‘agreed’ that the tele-monitoring equipment is easy to calibrate;
- Three-quarters (75%, N=4) ‘agreed’ that the tele-monitoring equipment was easy for most patients to use correctly. One clinician (25%, N=4) disagreed with this statement; and
- All (100%, N=4) clinicians ‘agreed’ that the Tele-Monitoring equipment was fitted in a timely manner for patients.

**Figure 4.16: Clinicians’ views on aspects the tele-monitoring equipment (Q9a – Clinician)**



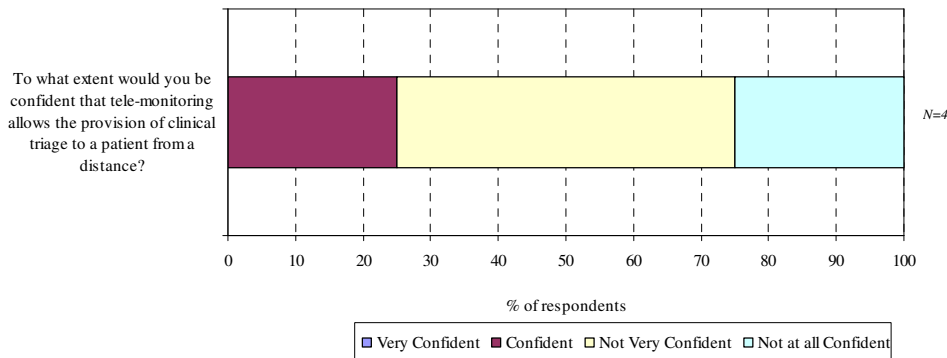
Clinicians reported that some patients have had difficulty with the equipment.

**4.10 Views relating to Clinical Triage**

**4.10.1 Satisfaction with clinical triage**

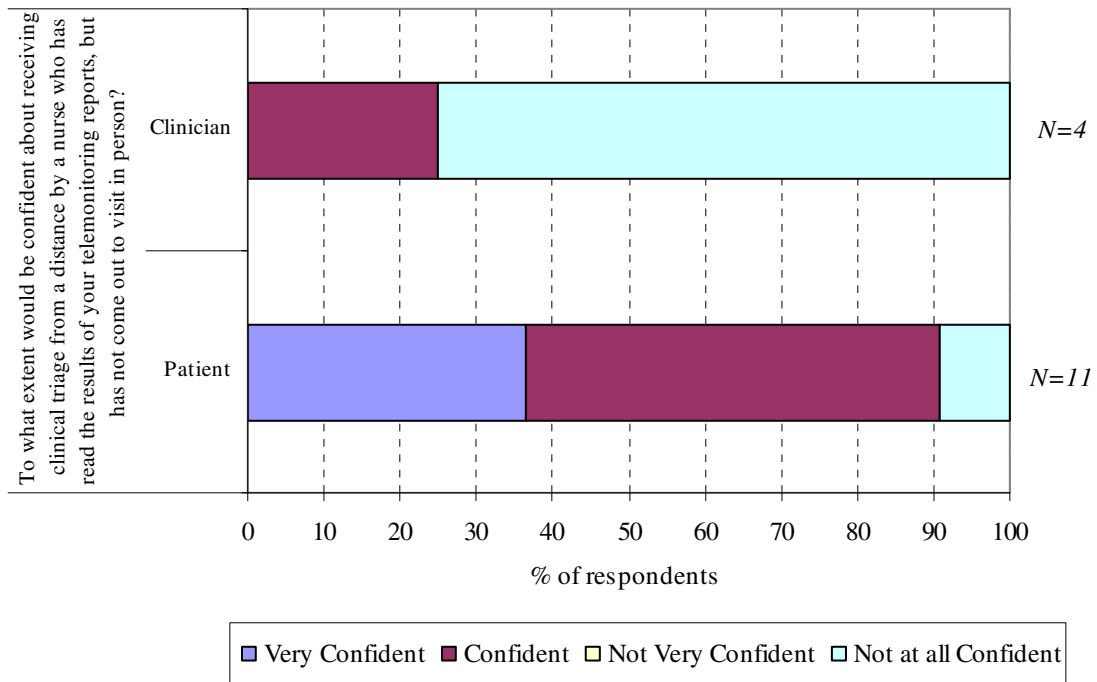
**Clinicians are not confident that tele-monitoring allows the provision of clinical triage to a patient from a distance** – Three-quarters (75%, N=4) of clinicians are ‘not very confident’ or ‘not at all confident’ that tele-monitoring allows the provision of clinical triage to a patient from a distance; 25% are confident.

**Figure 4.17: Tele-monitoring - Clinical triage to a patient from a distance (Q18a – Clinician)**



**Clinicians are generally not confident that tele-monitoring allows the provision of clinical triage to a patient from a distance by a nurse who has not met a Patient in person** - The vast majority of clinicians (75%, N=4) are ‘not at all confident’ that tele-monitoring allows the provision of clinical triage to a patient from a distance by a nurse who has not met a Patient in person. One clinician (25%, N=4) feels confident that tele-monitoring does allow the provision of clinical triage to a patient from a distance by a nurse who has not met a Patient in person. 91% (N=11) of patients however are confident about receiving clinical advice from a nurse that has not visited them in person.

**Figure 4.18: Tele-monitoring - Clinical triage to a patient from a distance by a nurse who has not met a Patient in person (Q11a – Patient / Q19a – Clinician)**



Comments include:

*“It is vital that the district nurse knows the patients personally, this is also beneficial to the patient, and it is reassuring for them.”*  
 Clinician Respondents

*“I am happy to take advice over the phone.”*  
*“I am very confident about taking advice in this manner.”*  
*“I am confident as long as the nurse knows how to deal with the situation.”*  
 Patient Respondents

It was noted that Trust clinicians would prefer 24/7 Clinical and Technical Triage (i.e. the Service Provider only offer Technical Triage currently). However, it was noted that the staff to undertake clinical triage must be carefully selected i.e. newly qualified nurses cannot be used for clinical triage, as clinical judgement and experience is a key attribute. In addition, good communication skills are required, as well as 2+ years of experience as a qualified nurse.

Clinical triage would take the pressure off the specialist nurse. Such a system would be more acceptable across the Trust.

**4.11 Factors Liked Least and Most**

**Clinicians and patients recorded what they like most about the Tele-monitoring project, which included:**

Clinicians	Patients
<ul style="list-style-type: none"> <li>Looking at how people can manage their own condition;</li> <li>It has potential to manage long term conditions;</li> <li>There is enthusiasm for it;</li> <li>It will play a role in certain areas.</li> </ul>	<ul style="list-style-type: none"> <li>Provides reassurance and ‘peace of mind’;</li> <li>Provides continuous monitoring of conditions</li> <li>Provides quick and effective communication with health sector personnel.</li> </ul>

**Clinicians and patients recorded what they like least about the Tele-monitoring project, which included:**

Clinicians	Patients
<ul style="list-style-type: none"> <li>District nurses do not have the skill – need specialist nursing teams;</li> <li>More could have been invested in IT, personnel and training;</li> <li>It makes people dwell too much on their condition;</li> <li>There is no difference to the overall healthcare patients receive.</li> </ul>	

A number of the Trust localities are in the process of reconsidering how resources could be best used in relation to their specific areas. For example:

- Newtownstewart- prepared to reconsider the way the service is delivered i.e. the practice nurse may undertake monitoring and thus receive ‘red alerts’ with support from the district nurses;
- Aberfoyle GP Practice- considering the possibility of a case manager moving in to help manage the caseload. The Trust Telehealth Coordinator is due to undertake an awareness session with this practice;
- Strabane- District Nurses carry on monitoring patients, however it was noted that the Trust Telehealth Coordinator will need to meet with GPs on an individual basis to gain further buy-in.

It was indicated that the Service Provider is not providing a medicines compliance service and thus, Trust Home Help teams are still doing this.

**Clinicians reported changes to the Trust’s resources that were suggested that would have improved the rollout of the pilot:**

- More specialised nurses in the ‘chronic areas’.

**4.12 Clinician and Patients’ Recommendations**

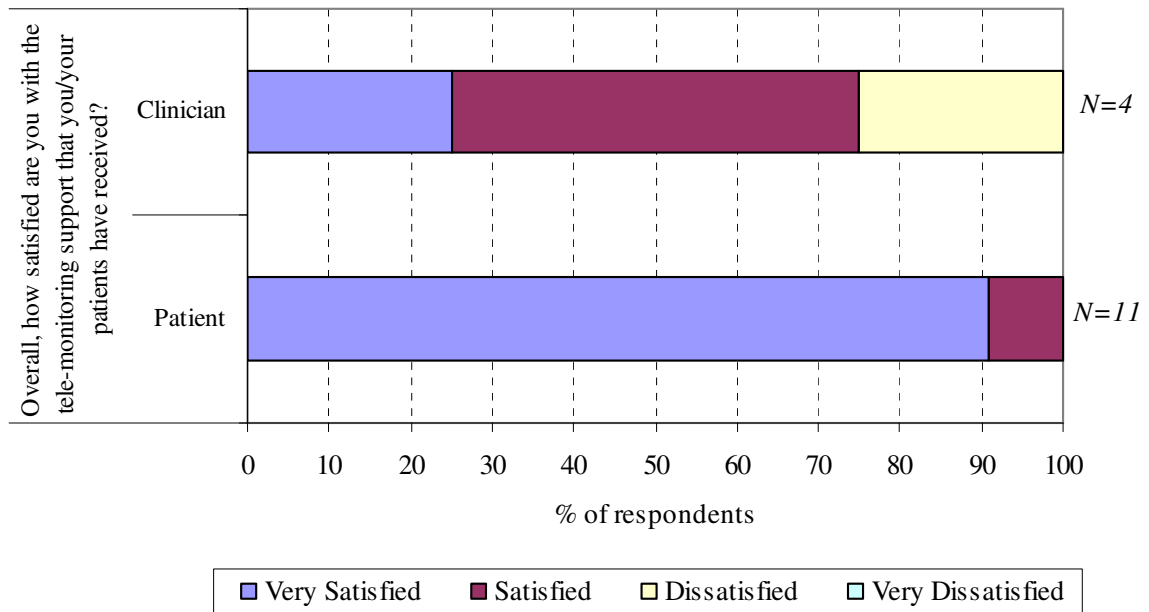
Clinicians and patients recorded recommendations for improvements on how the tele-monitoring pilot is delivered and on its content, which included:

Clinicians	Patients
<ul style="list-style-type: none"> <li>Improvements in IT from the Trust;</li> <li>The patient selection process needs to be clearly defined.</li> </ul>	

**4.13 Overall Satisfaction**

Three-quarters (75%, N=4) and all patients (100%, N=11) stated that they were ‘very satisfied’ or ‘satisfied’ with the tele-monitoring support that patients received.

**Figure 4.19: Satisfaction with tele-monitoring support received (Q15a – Patient / Q9a – Clinician)**



**4.14 Conclusion and Operation of Pilot**

In conclusion, clinicians and patients are, generally, satisfied with the way tele-monitoring operates in practice.

Almost all clinicians are satisfied with the way that tele-monitoring operates in practice – the quality of information is perceived as being good, the timeliness of alerts is good and clinicians generally feel comfortable in setting clinical parameters. Initial teething problems have largely been addressed. Clinicians also reported that the Co-Ordinator was only appointed well into the pilot phase.

Whilst some improvements were suggested relating to the flexibility and adaptability of equipment, clinicians were generally content with the accuracy of the readings and ease of use of the equipment.

With regards to the support received from the Service Provider of the triage service, clinicians were generally positive. Two-thirds of clinicians agreed agree that the Service Providers provide a good service. However, there are differences in perception between clinicians and patients in respect of the use of clinical triage – three out of the four clinicians are not confident that clinical triage is suitable for monitoring patients from a distance where the nurse has not met the patient in person. This compares to 91% of patients who are satisfied with clinical triage.

Clinicians noted the need to have a structured patient selection process and that tele-monitoring should be directed at those with the highest capacity to benefit. The patient selection process is all important, with clinicians confirming that tele-monitoring is not appropriate for all patients and that patient selection should be dependent on the severity of the disease as well as issues relating to patient dexterity etc.

Clinicians were generally positive about the GP's ownership of the pilot. 75% of clinicians were also of the view that patient parameters are appropriately set.



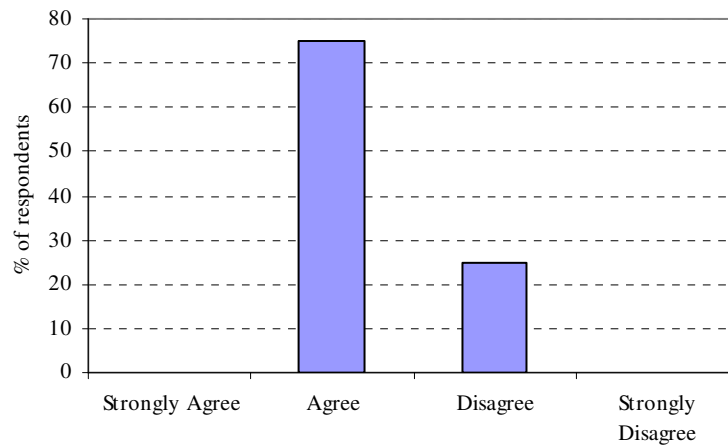
**5 PERCEIVED IMPACT ON ORGANISATION AND RESOURCE UTILISATION**

Section 5 considers the perceived impact of the tele-monitoring pilots on the Trust itself, i.e. the Organisation and the Resource Utilisation.

**5.1 Patient-Centered**

The majority of clinicians feel that the tele-monitoring pilot project was a patient centred service.

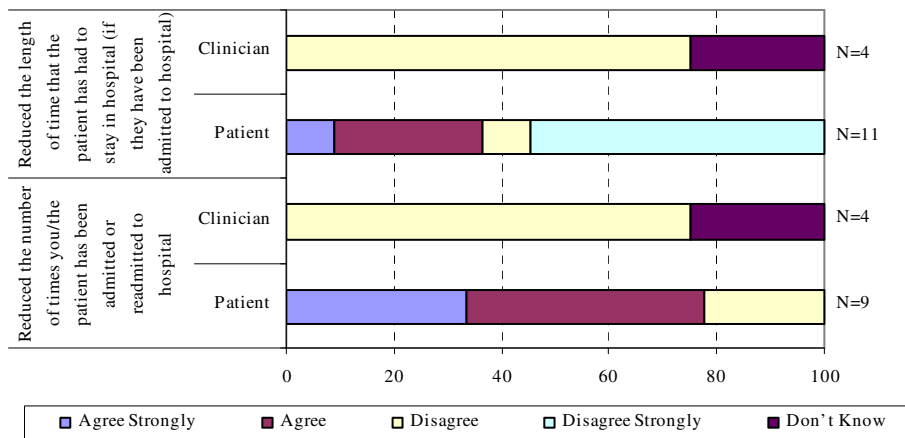
**Figure 5.1: Tele-monitoring pilot project a patient centred service (16a – Clinician)**



**5.2 Perceptions Admission to Hospital**

Patients and clinicians views vary greatly in relation to the impact that the tele-monitoring project has made on the number of times that the patients has been admitted to (or stayed in) hospital.

**Figure 5.2: Perceived impact on visits that patients have made to or received from health sector personnel (Q5a – Patient / Q10a – Clinician)**



- All clinicians (N=4) ‘disagreed or didn’t know’, compared to 78% (N=9) of patients that either strongly agreed or agreed that tele-monitoring has reduced the number of times that the participant patients have been admitted or readmitted to hospital.
- All clinicians (N=4) ‘disagreed or didn’t know’, and 64% (N=11) of patients either ‘strongly disagreed’ or ‘disagreed’ that tele-monitoring has reduced the length of time that participant patients have had to stay in hospital (if they have been admitted to hospital since they got the tele-monitoring equipment).

### 5.3 Perception on Referral to A&E

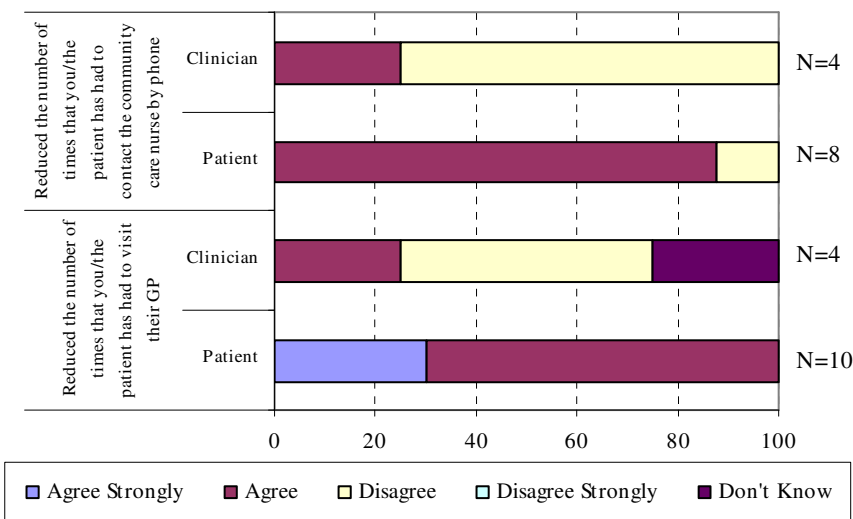
Three-quarters (75%, N=4) of clinicians ‘disagreed’ that tele-monitoring has reduced the number of times that the participant patients have self-referred themselves to A&E, the remaining 25% stated that they did not know. (Q10a – Clinician)

### 5.4 Perception on GP visits and Community Care Nurse Contact

There were differences in opinion as to the impact on reductions on GP and community nursing contact:

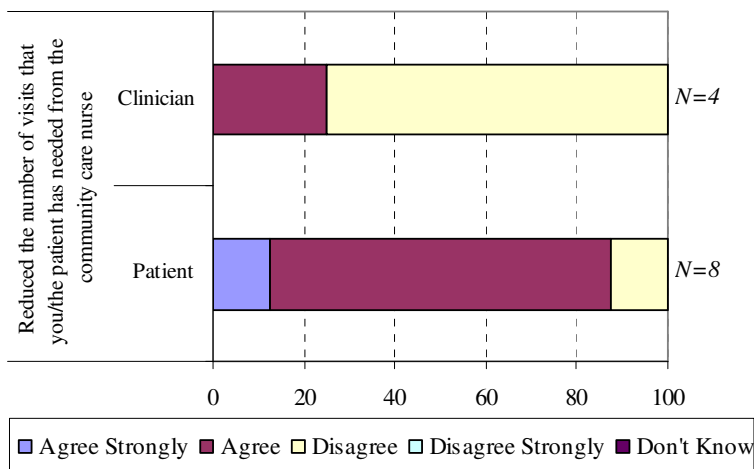
- Three-quarters of clinicians (75%, N=4) ‘disagreed’ that tele-monitoring has reduced the number of visits that participant patients have needed. However, there is a marked difference in the opinion of patients; the vast majority of patients (88%, N=8) either strongly agreed or agreed that this is the case; and
- One-quarter of clinicians (25%, N=4), agree, compared to all (100%, N=10) of patients who are in agreement that tele-monitoring reduced the number of times that the patient has had to visit their GP.

**Figure 5.3: Perceived impact on visits that patients have made to or received from health sector personnel (Q5a – Patient / Q10a – Clinician)**



Three-quarters of clinicians (75%, N=4) ‘disagreed’ that tele-monitoring has reduced the number of visits that participant patients have needed. However, there is a marked difference in the opinion of patients; the vast majority of patients (88%, N=8) either strongly agreed or agreed that this is the case. This possibly shows the level of comfort which patients receive from the service. This difference of opinion is again shown in the differing views on the level of interaction with the community care nurse.

**Figure 5.4: Impact on visits that patients have made to or received from health sector personnel (Q5a – Patient / Q10a – Clinician)**



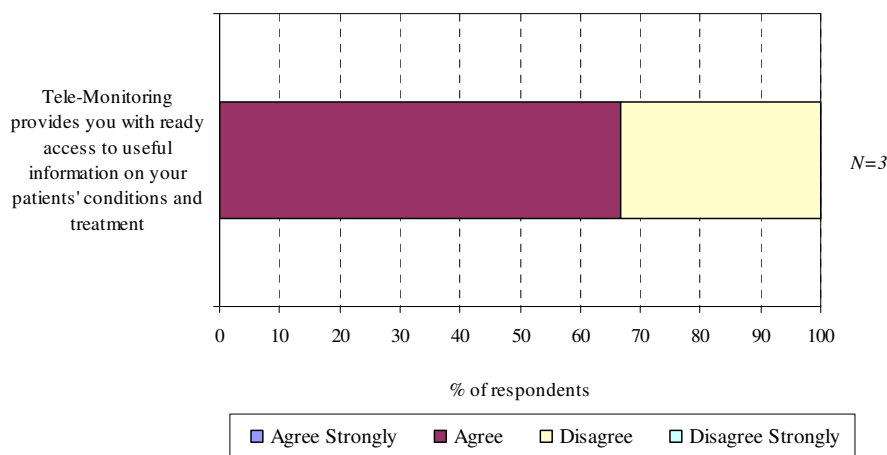
**5.5 Impact on the Trust**

**5.5.1 Access to Information**

**Clinician’s views vary regarding the impact that the tele-monitoring pilot project has had on the Trust.**

The majority of clinicians (67%, N=3) ‘agree’ that tele-monitoring provides them with ready access to useful information on your patients' conditions and treatment, the remaining 33% disagreed.

**Figure 5.5: Impact tele-monitoring has had on clinician’s Trust (Q17a – Clinician)**



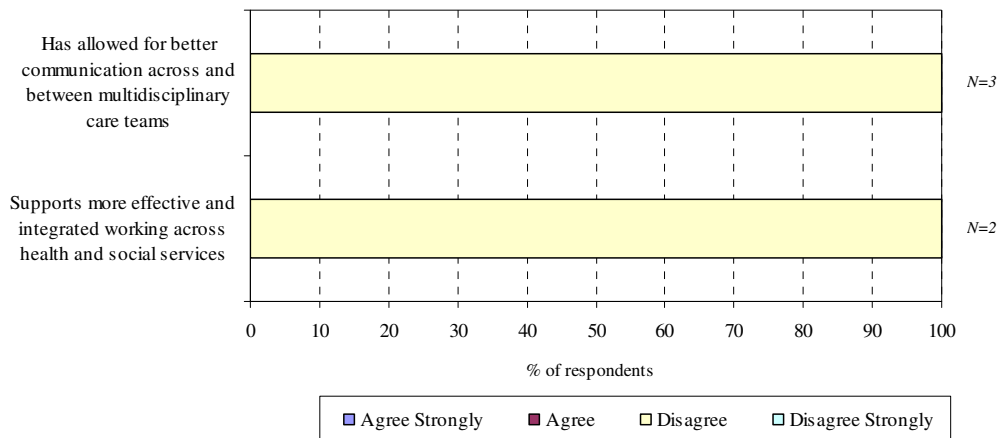
**5.5.2 Promotion of Effective and Integrated Working or Better Communication**

Conversely, none of the clinicians agreed that the tele-monitoring project:

- Supported more effective and integrated working across health and social services (100%, N=2);

- Allowed for better communication across and between multidisciplinary care teams (100%, N=3).

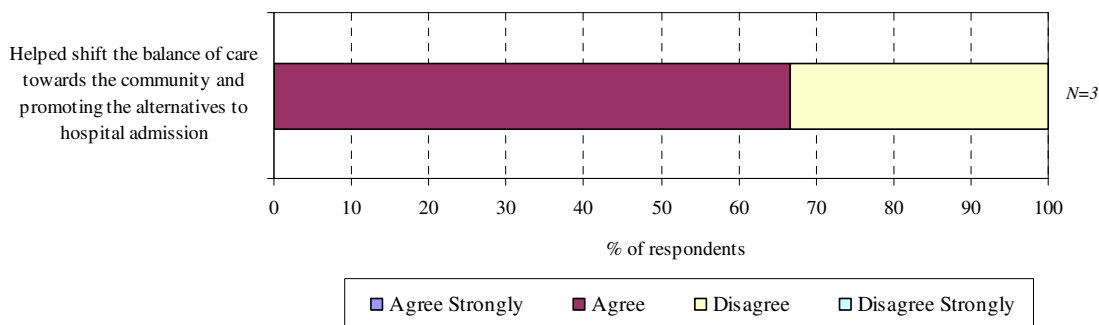
**Figure 5.6: Impact tele-monitoring has had on clinician’s Trust (Q17a – Clinician)**



**5.5.3 Promotion of Alternative to Hospital Admission**

Two-thirds of clinicians (67%, N=3) ‘agreed’ that tele-monitoring has helped shift the balance of care towards the community and promoting the alternatives to hospital admission. The remaining 33% ‘disagreed’ with this statement.

**Figure 5.7: Perceived impact tele-monitoring has had on clinician’s Trust (Q17a – Clinician)**



**5.5.4 Perceived impact on Resources and Service Provision**

There were mixed views as to the impact on tele-monitoring on resources.

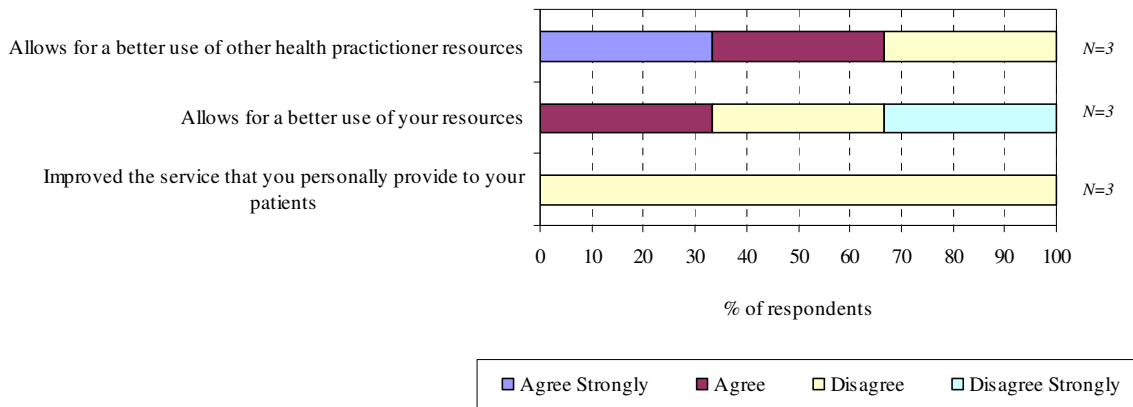
The majority of clinicians ‘disagree’ or ‘strongly disagree’ that tele-monitoring:

- Allows for a better use of your resources (67%, N=3); and
- Improved the service that you personally provide to your patients (100%, N=3)

However, the majority agree that tele-monitoring:

- Allows for a better use of other health practitioner resources (67%, N=3)

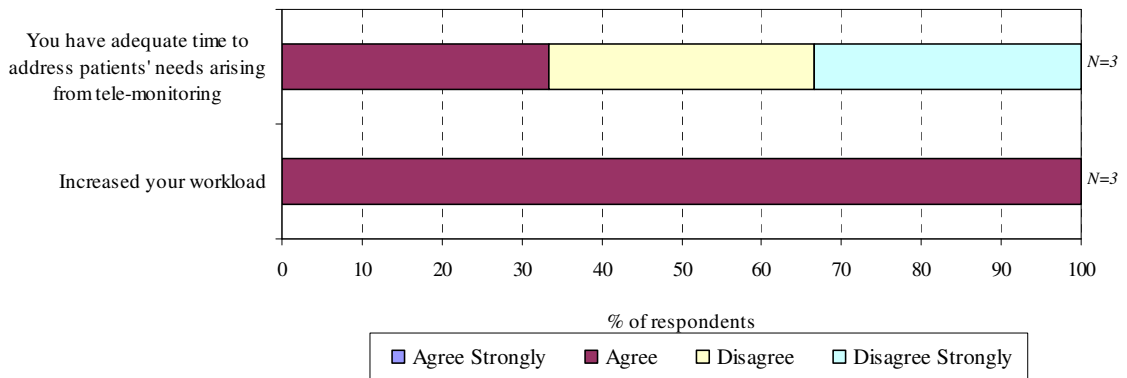
**Figure 5.8: Perceived impact tele-monitoring has had on clinician’s Trust (Q17a – Clinician)**



**5.5.5 Perceived impact on Clinicians’ Workload**

The majority of clinicians ‘agree’ that tele-monitoring has increased their workload (100%, N=3). However, the majority (67%), N=3) disagree or strongly disagreed that they have adequate time to address patients' needs arising from tele-monitoring.

**Figure 5.9: Perceived impact tele-monitoring has had on clinician’s Trust (Q17a – Clinician)**



Comments include:

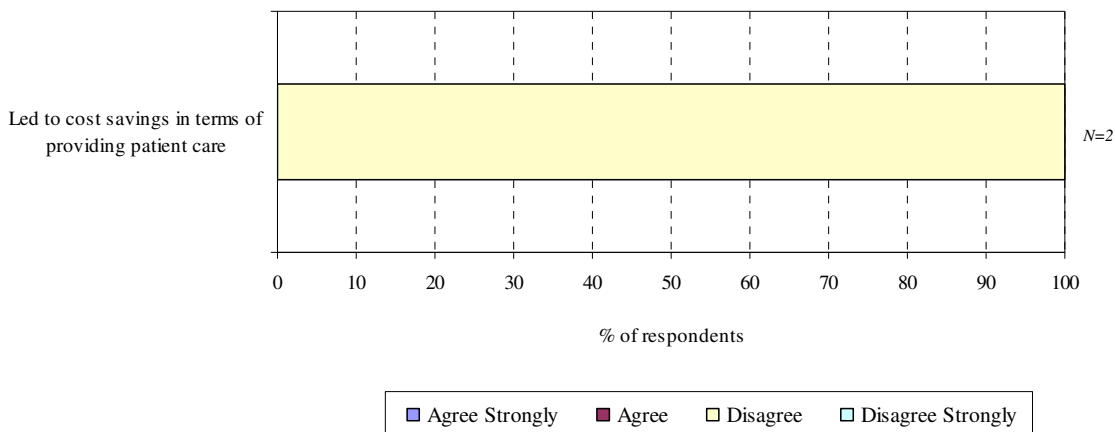
*“The nurse has to check the stats more frequently and contact patients if there are problems with them.”*

Clinician Respondents

**5.5.6 Perceived impact on Costs**

All (100%, N=2) ‘disagree’ that tele-monitoring has led to costs savings in terms of providing patient care.

**Figure 5.10: Perceived impact tele-monitoring has had on clinician’s Trust (Q17a – Clinician)**

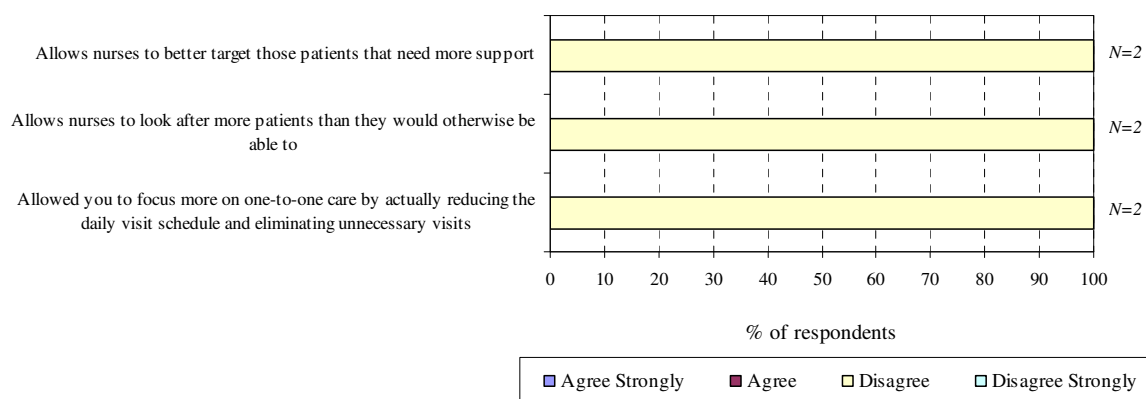


**5.5.7 Perceived impact on Nursing Care**

All clinicians ‘disagree’ that tele-monitoring:

- Allowed them to focus more on one-to-one care by actually reducing the daily visit schedule and eliminating unnecessary visits (100%, N=2);
- Allows nurses to look after more patients than they would otherwise be able to (100%, N=2); and
- Allows nurses to better target those patients that need more support (100%, N=2).

**Figure 5.11: Perceived impact tele-monitoring has had on clinician’s Trust (Q17a – Clinician)**

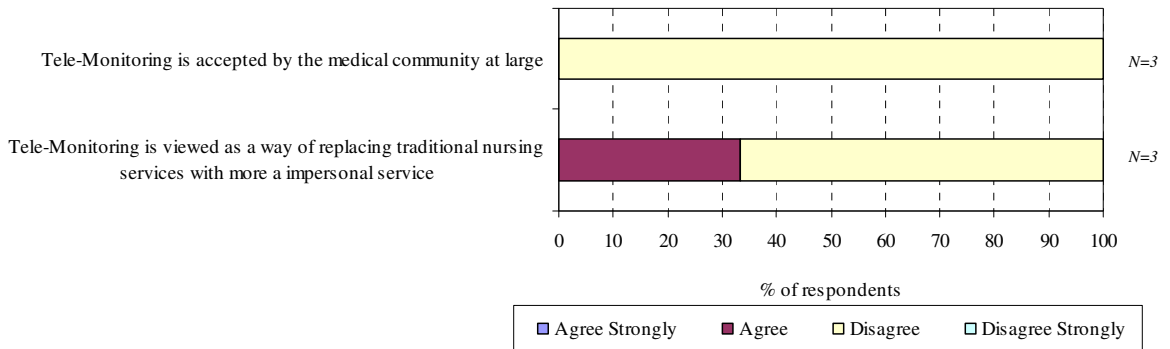


**5.5.8 Degree to which Tele-Monitoring is Accepted**

The majority of clinicians ‘disagree’ that tele-monitoring:

- Is viewed as a way of replacing traditional nursing services with more a impersonal service (67%, N=3); and
- Is accepted by the medical community at large (100%, N=3).

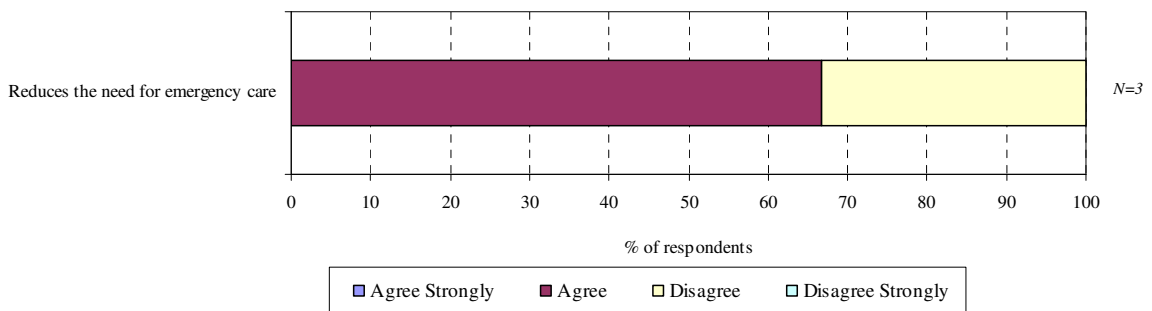
**Figure 5.12: Impact of tele-monitoring on the Trust (Q17a – Clinician)**



**5.5.9 Perceived impact on Need for Emergency Care**

Two-thirds (67%, N=3) of clinicians ‘agreed’ that tele-monitoring reduces the need for emergent care.

**Figure 5.13: Perceived impact tele-monitoring has had on clinician’s Trust (Q17a – Clinician)**

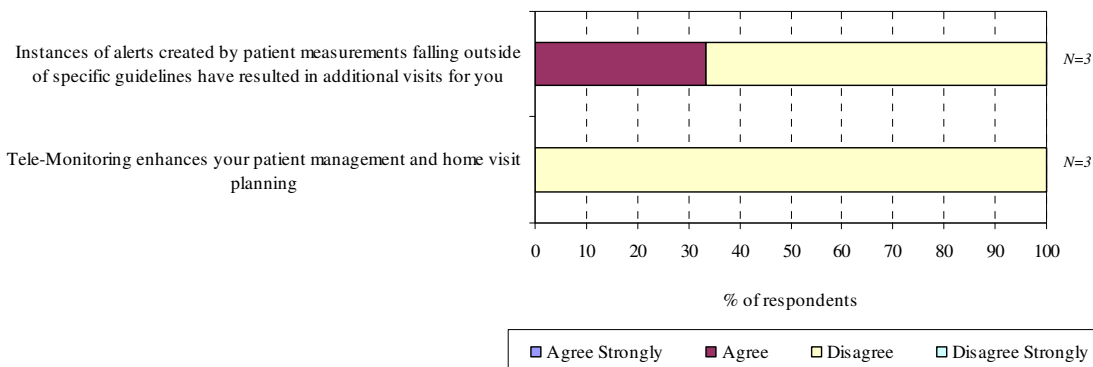


**5.5.10 Perceived impact on Patient Management and Visits**

Clinicians ‘disagree’ that tele-monitoring does not enhance patient management:

- All (100%, N=3) clinicians ‘disagreed’ that tele-monitoring enhances patient management and home visit planning;
- Two-thirds (67%, N=3) ‘disagreed’ that instances of alerts created by patient measurements falling outside of specific guidelines have resulted in additional visits for them. The remaining 33% agreed with this statement.

**Figure 5.14: Perceived impact tele-monitoring has had on clinician’s Trust (Q17a – Clinician)**



**5.6 Conclusion on Organisation and Resource Utilisation**

In general, there were differences in perceptions amongst clinicians and patients as to the impact of remote tele- monitoring on the Trust and on resource utilisation, with none out of the four clinicians reporting a positive impact, in terms of a reduction in hospital admittance, and reduced hospital stays, as compared to the majority of patients.

Only one out of four clinicians was of the view that remote tele-monitoring had contributed to reduced visits to GPs and contact with the community care nurses. This compares to the patient feedback, with over 60% of patients reporting that the pilot has had a positive impact on utilization of Trust resources, including 100% who agree that there has been a reduction in GP visits.

The majority of clinicians did agree that the projects had a positive impact on further developing a patient-centred case management approach, with three out of the four clinicians reporting remote tele-monitoring pilot project to be a patient centred service. Generally, however, clinicians reported that patients continued to get the same, high, level of care regardless of the remote tele-monitoring scheme. None of the clinicians reported that remote tele-monitoring had led to an improvement in the service that they personally provided to the patient and that it allows nurses to better target those patients that need more support.

All clinicians were of the view that remote tele-monitoring increased their workloads.



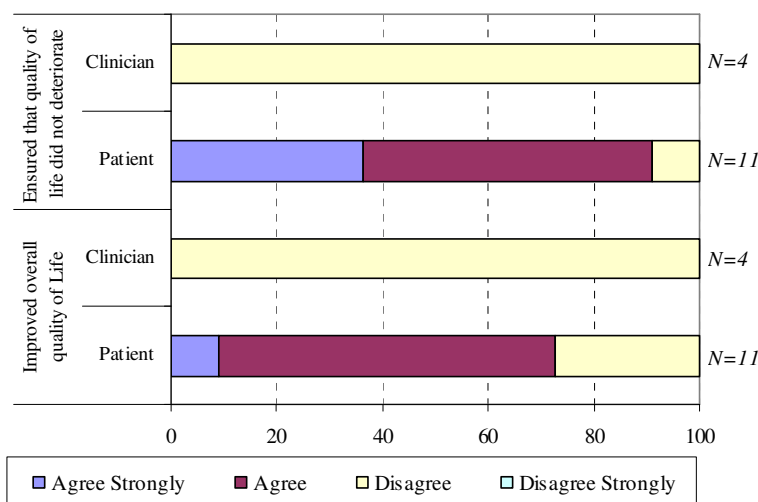
## 6 PERCEIVED IMPACT ON HEALTH AND WELLBEING

Section 6 considers the perceived impact that the tele-monitoring project has had on patients' health and wellbeing.

### 6.1 Perceived Impact on Quality of Life

Clinicians and patients report varying impacts on life and wellbeing, with the patients being mainly positive and the clinicians being totally negative about the perceived impact on patients' quality of life.

**Figure 6.1: Perceived impact on life and wellbeing (Q6a – Patient / Q11a – Clinician)**



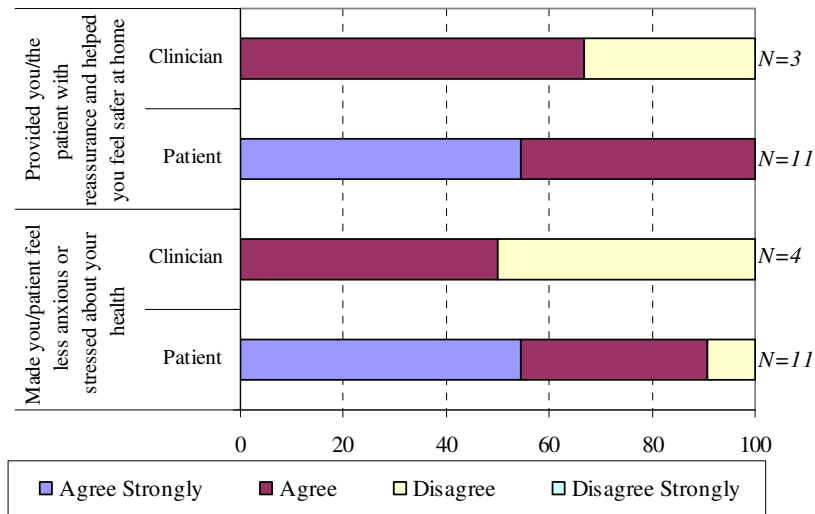
- All clinicians (100%, N=4) disagreed, compared to the majority of patients (73%, N=11) in agreement that tele-monitoring has improved their overall quality of life and
- Similarly, all clinicians (100%, N=4) disagreed; whereas the vast majority of patients (91%, N=11) are in agreement that tele-monitoring has ensured that their quality of life did not deteriorate.

### 6.2 Perceived impact on Levels of Stress and Anxiety

Clinicians and patients were in agreement that tele-monitoring makes patients less anxious and providing reassurance:

- Half of clinicians (50%, N=4) and patients (91%, N=11) are in agreement that the tele-monitoring project made patients feel less anxious or stressed about their health i.e. has provided them with 'peace of mind';
- Similarly, the majority of clinicians (67%, N=3) and patients (90%, N=11) are in agreement that the tele-monitoring project provided patients with reassurance and helped them feel safer at home.

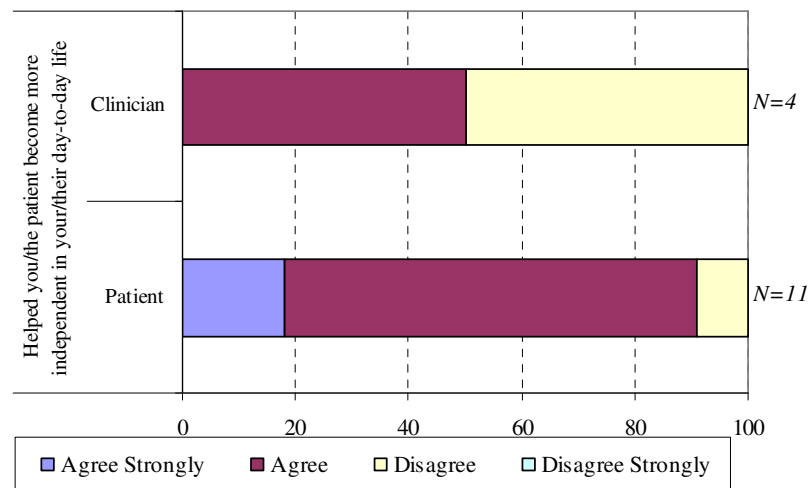
**Figure 6.2: Perceived impact on life and wellbeing (Q6a – Patient / Q11a – Clinician)**



**6.3 Perceived impact on Patients’ Independence**

Half of clinicians (50%, N=4) and the vast majority (91%, N=11) of patients are in agreement that tele-monitoring has allowed them to become more independent.

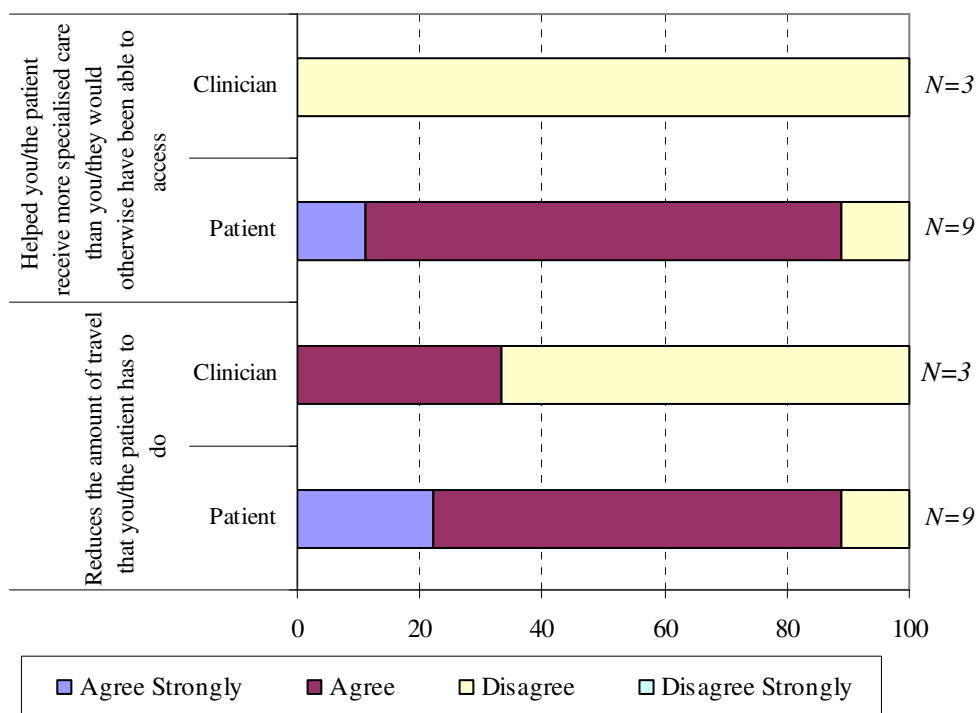
**Figure 6.3: Perceived impact on life and wellbeing (Q6a – Patient / Q11a – Clinician)**



**6.4 Perceived impact on Specialist Care and Travel**

Opinions again differ in relation to the impact that the project has had on the level of specialised care that patients receive as a result of the project, with patients being mainly positive and clinicians being mainly negative.

**Figure 6.4: Perceived impact on patients  
(Q9a – Patient / Q14a – Clinician)**

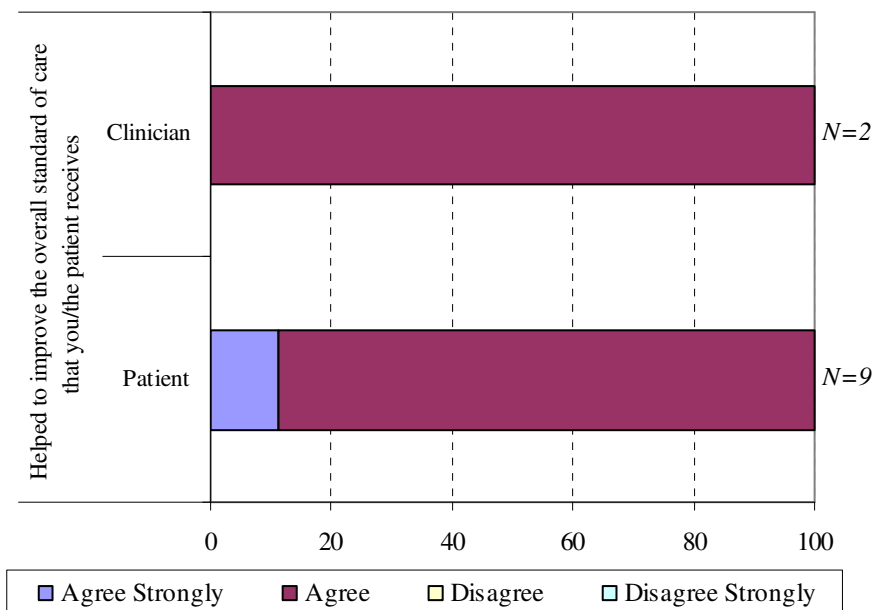


- Two-thirds of clinicians (67%, N=3) ‘disagreed’, compared to the majority (89%, N=9) of patients who were in agreement that the tele-monitoring project reduces the amount of travel that they have to do to visit health professionals relating to their chronic conditions;
- The majority of patients (90%, N=10) ‘strongly agreed’ or ‘agreed’ that the tele-monitoring project saves them time; **(Q9a – Patient)** and
- All clinicians (100%, N=3) ‘disagreed’, compared to the vast majority (89%, N=9) of patients who were in agreement that tele-monitoring helps patients receive more specialised care than they would otherwise have been able to access e.g.: because of geography, transport issues or infirmity.

### 6.5 Perceived impact on Overall Care Received

There was more agreement amongst clinicians and patients on the overall positive impact on the standard of care that patients receive. All clinicians (100%, N=2) ‘agreed’, and all (100%, N=9) patients which were in agreement, that tele-monitoring helps to improve the overall standard of care that patients receive.

**Figure 6.5: Perceived impact on patients  
(Q9a – Patient / Q14a – Clinician)**



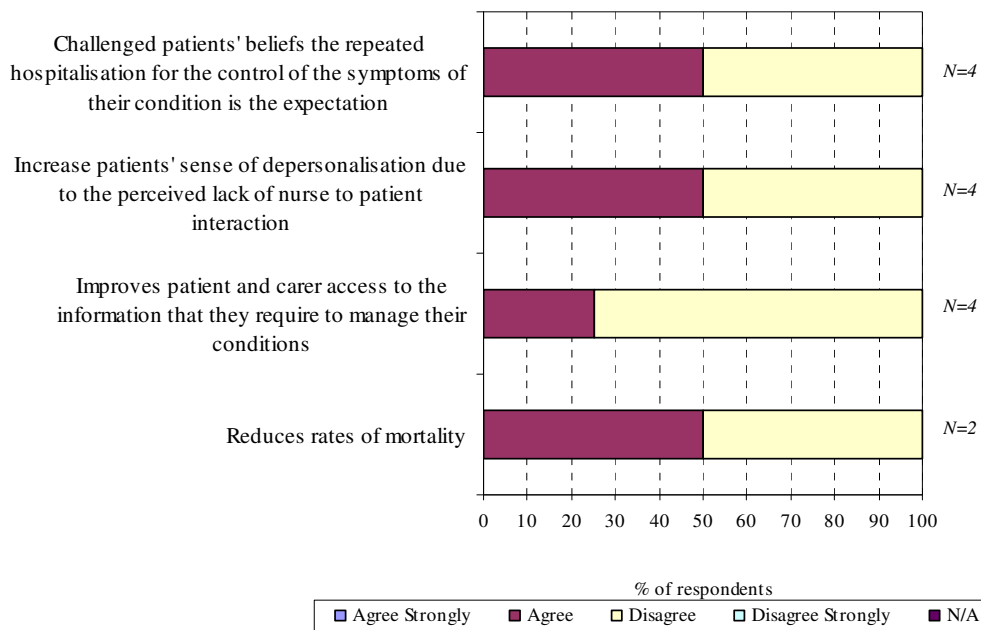
**6.6 Perceived impact on Patients’ Beliefs, Mindsets and Mortality**

Tele-monitoring has had varying impact on aspects of the patient's health relating to the Patients' Chronic conditions.

Half of clinicians agree (50%, N=2), and half disagree that it reduces rates of mortality, increased patients' sense of depersonalisation due to the perceived lack of nurse to patient interaction, and challenge patients' beliefs that repeated hospitalisation for the control of the symptoms of their condition is the expectation.

However, three-quarters of clinicians (75%, N=4) ‘disagreed’ that the tele-monitoring project improves patient and carer access to the information that they require to manage their conditions, although 25% agreed with this statement.

**Figure 6.6: Perceived impact on patient's health relating to the Patients' Chronic conditions (Q14a – Clinician)**



**Comments include:**

*“There is no difference on whether a patient requires healthcare treatment; I would say that the patient received the same standard of care before the scheme.”*

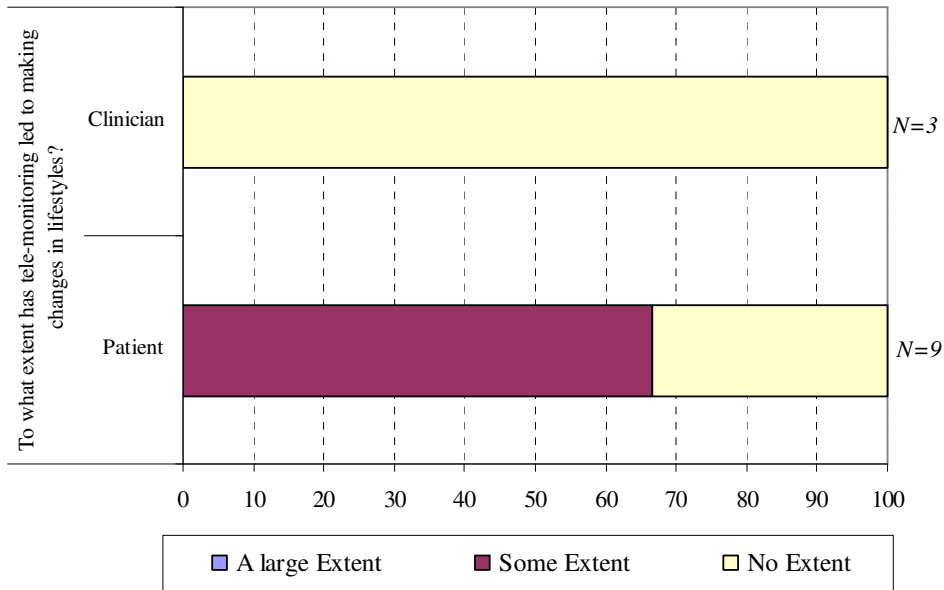
*“It could help to see a belief in ‘treat early and treat at home’.”*

Clinician Respondents

**6.7 Perceived impact on Patients’ Lifestyles**

All clinicians (100%, N=3) reported that tele-monitoring had no impact on patients’ lifestyles, whilst two-thirds (67%, N=9) of patients reported that tele-monitoring has changed patients lifestyles to some extent.

**Figure 6.7: Changes to patient lifestyle  
(Q10a – Patient / Q15a – Clinician)**

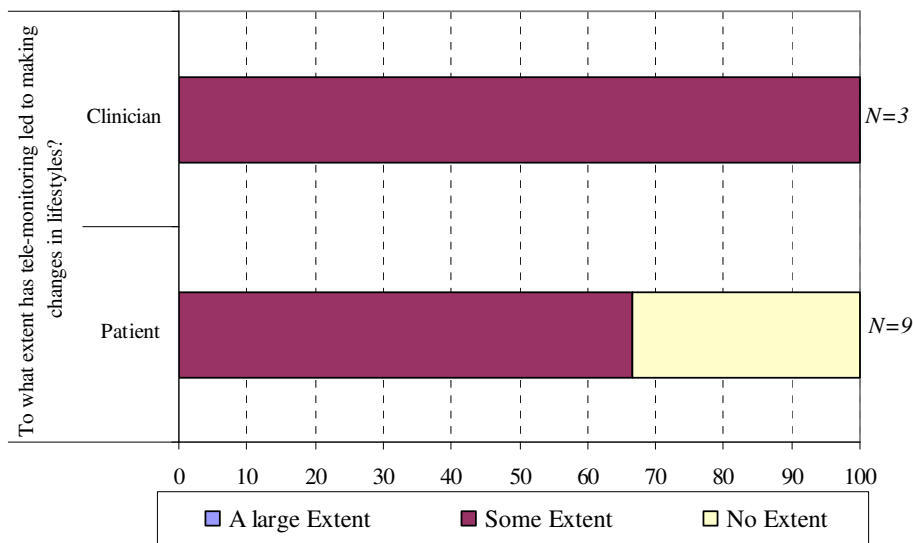


### 6.8 Perceived impact on Patients’ Health

Clinicians and patients report positive impacts on patients’ health:

- Half of clinicians (50%, N=6) and the vast majority of patients (89%, N=19) are in agreement that the tele-monitoring project has helped patients manage their illness better; **(Q7a – Patient / Q12a – Clinician)**
- Half of clinicians (50%, N=6) and two-fifths of patients (40%, N=10) are in agreement that the tele-monitoring project led to improvements in their health **(Q7a – Patient / Q12a – Clinician)**

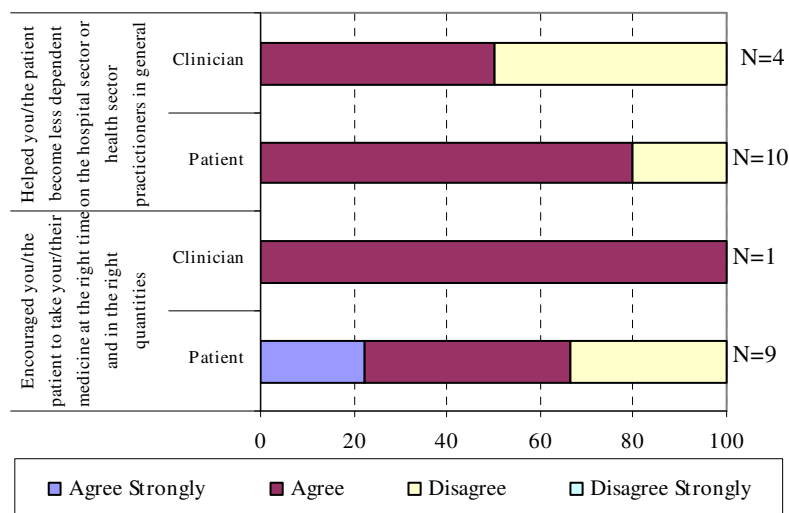
**Figure 6.8: Perceived impact on patient health**



**6.9 Perceived impact on Patients’ Medicine Compliance and Reliance on Health Sector**

- One clinician (N=1) and two-thirds of patients (66%, N=9) are in agreement that the project has encouraged patients to take their medicine at the right times and in the right quantities;
- Half of clinicians (50%, N=4) agree, whereas the majority of patients (80%, N=10) agree that the tele-monitoring project has helped them become less reliant on the hospital sector or health sector practitioners in general.

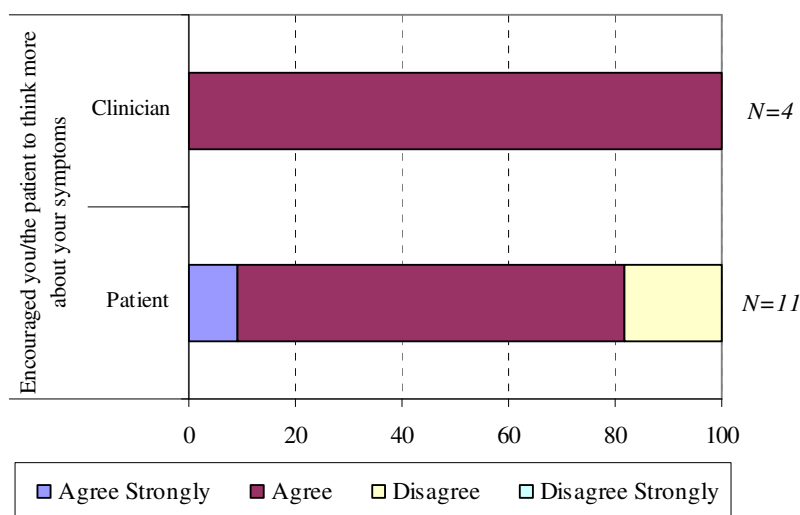
**Figure 6.9: Perceived impact on patient health (Q7a – Patient / Q12a – Clinician)**



### 6.10 Perceived impact on Patients' Awareness of their Symptoms

Encouragingly, all clinicians (100%, N=4) and the vast majority of patients (82%, N=11) are in agreement that tele-monitoring has encouraged patients to think more about their symptoms.

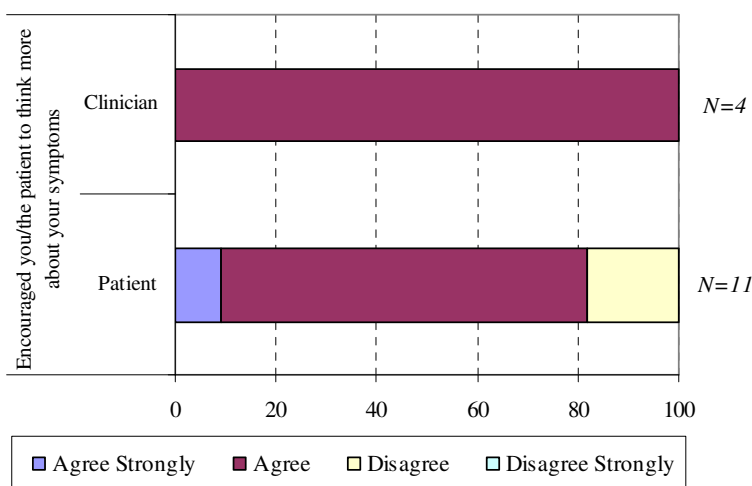
**Figure 6.10: Perceived impact on patient health (Q7a – Patient / Q12a – Clinician)**



### 6.11 Perceived impact on Patients' Families and Carers

All clinicians (100%, N=4) and patients (100%, N=11) are in agreement that the tele-monitoring project has been of benefit to their family and carers.

**Figure 6.11: Perceived impact on family and carers (Q8a – Patient / Q13a – Clinician)**



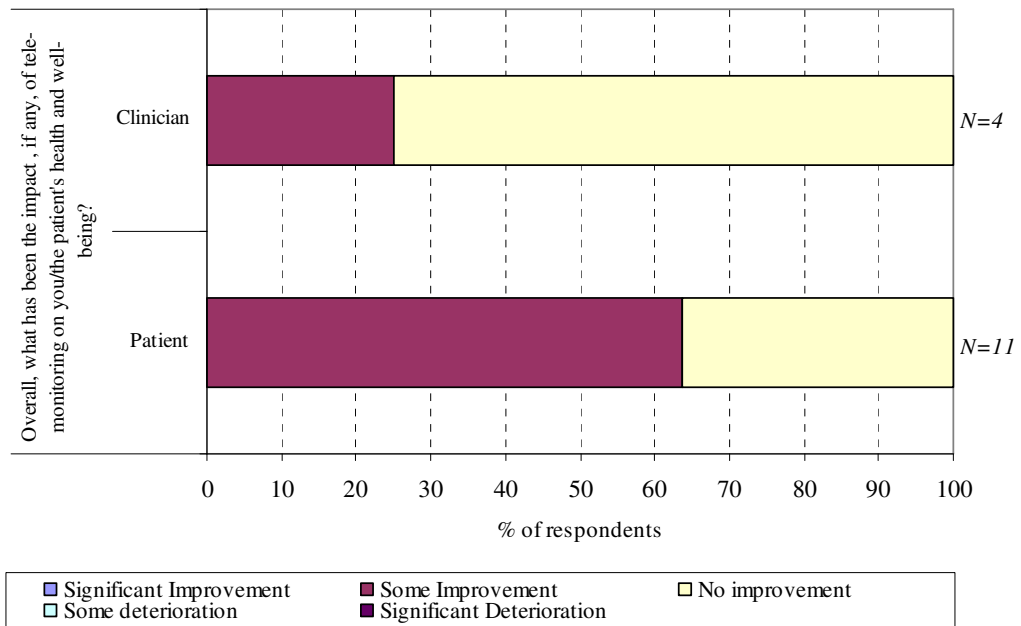


## 6.12 Overall Impact on Patient Health and Wellbeing

**Clinicians and patients report varying impact of tele-monitoring on the patient’s overall health and wellbeing:**

- Three-quarters (75%, N=4) of clinicians state that overall there has been ‘no improvement’ in their patients health and well being; the remaining 25% state there has been ‘some improvement’. This compares to just over three-fifths (64%, N=11) of patients who stated that overall tele-monitoring has led to a ‘some improvement’ in their overall health and wellbeing.

**Figure 6.12: Perceived impact of tele-monitoring on patient health and wellbeing (Q14a – Patient / Q23a – Clinician)**



## 6.13 Conclusion on Health and Wellbeing

Patients and clinicians are positive about the benefits that patients have derived from the Remote Tele-Monitoring’ pilot projects, including impact upon quality, safety and patient experience. In terms of quality of care, 50% of clinicians and all patients, consider that the scheme has helped to improve the overall standard of care that patients receive. Patients report their satisfaction with the continuous monitoring with this making them feel safer and more content - 100% of patients and two out of three clinicians report that remote tele-monitoring has provided reassurance to the patient and their carers and made them feel safer at home.

Patients are positive about the benefits from the Remote Tele-Monitoring’ pilot projects, including impact upon quality of life and general health and well-being. Over 70% of patients report that remote tele-monitoring has led to an overall improvement in their quality of life and ensured that their quality of life did not deteriorate. In addition, over 65% of patients and all of the clinicians agree that the pilot has led to patients making changes to their lifestyle and to an overall improvement in patient health and well being.

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## 7 CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Conclusions

This section sets out the Conclusions from the evaluation of the Remote Monitoring pilot project.

In terms of the external evaluation, patients are almost overwhelmingly positive about the benefits they have derived from the Remote Tele-Monitoring' pilot project, including impact upon their quality of life and general health and well-being. A significant majority of clinicians also consider that the pilots have had a positive impact in terms of quality of patient life. Similarly, a large majority of patients report that participating in the remote tele-monitoring pilots has enabled them to reduce their reliance on hospital and nursing staff, including through a reduction in hospital admissions, although this view is not held by the clinicians. There is, a concern by the clinicians, as to the impact that remote tele-monitoring has had on the clinicians' workloads. The majority of the clinicians believe that the pilot had achieved buy-in from GPs within the community. Finally, in terms of the actual operation of the pilots, similar trend emerged: patients are positive as to how the remote tele-monitoring pilots had worked in practice, including their confidence in the triage service provided. Clinicians, too, report positive experiences, although concern as to their comfort with triage nursing. There were also recommendations in terms of improvements in equipment adaptability and flexibility, as well as to the patient selection process.

The experiences of patients and clinicians are largely mirrored within the internal evaluations. Specific findings are set out below.

#### 7.1.1 Impact on patient care in terms of quality, safety and patient experience

Patients and clinicians are positive about the benefits that patients have derived from the Remote Tele-Monitoring' pilot projects, including impact upon quality, safety and patient experience. In terms of quality of care, 50% of clinicians questioned, and 100% of patients, consider that the scheme has helped to improve the overall standard of care that patients received. Only one out of four clinicians are confident that clinical triage is suitable for monitoring patients from a distance where the nurse has not met the patient in person. This compares to 91% of patients who are satisfied with clinical triage. Patients report their satisfaction with the continuous monitoring with this making them feel safer and more content - 100% of patients and two out of three of clinicians report that remote tele-monitoring has provided reassurance to them and their carers and made them feel safer at home.

#### 7.1.2 Impact on patient care in terms of utilisation of resources

Only one out of four clinicians was of the view that remote tele-monitoring had contributed to reduced visits to GPs and contact with the community care nurses. This compares to the patient feedback, with over 60% of patients reporting that the pilot has had a positive impact on utilization of Trust resources, including 100% who agree that there has been a reduction in GP visits. This corresponds to the overall view of patients that the pilots have led to improvements in their health and well-being.

#### 7.1.3 Impact on Staffing Resources

Around 50% of clinicians felt that remote tele-monitoring had a positive impact on organization effectiveness; all clinicians were of the view that it increased their workload.

Impact on staffing resources is also impacted by the patient selection process – inappropriate patient selection, for example, of those where disease severity will continue to warrant high intensity of specialist community care, with little impact upon resources.

Clinicians have not benefitted from the support by the Trust or the Tele-monitoring Co-ordinators. The Co-Ordinator was only appointed late into the pilot phase.

Whilst three out of four of clinicians were of the view that patient parameters are appropriately set, it was acknowledged that, for new clinicians joining the scheme, there can be a tendency to set narrow parameters with resultant increased alerts.

#### **7.1.4 Improvements in the quality of care patients receive**

Generally, clinicians reported that patients continued to get the same, high, level of care regardless of the remote tele-monitoring scheme. None of the clinicians reported that remote tele-monitoring had led to an improvement in the service that they personally provided to the patient.

#### **7.1.5 Improvements in the quality of patient life**

Patients are positive about the benefits from the Remote Tele-Monitoring' pilot projects, including impact upon quality of life and general health and well-being. 73% of patients report that remote tele-monitoring has led to an overall improvement in their quality of life and ensured that their quality of life did not deteriorate, although clinicians did not disagree with this view. In addition, over 67% of patients agreeing and all of the clinicians agreeing that the pilot has led to patients making changes to their lifestyle.

#### **7.1.6 Impact on informing patient centred case management, intermediate care schemes and medicines compliance, optimising the potential for independent living and enabling reductions in inpatient admissions to hospital**

The Project has had a positive impact on further developing a patient-centred case management approach, with three out of four clinicians reporting remote tele-monitoring pilot project to be a patient centred service. 75% of clinicians were of the view that there was GP commitment to the project.

Clinicians suggested that the project empowers patients to better manage their illness. For example, the survey indicates that the project has had a positive impact on patients' medicine compliance, 66% of patients reporting that remote tele-monitoring project encourages patients to take their medicine at the right times and in the right quantities. Two out of the four clinicians and 91% of patients report that the scheme has helped patients to become more independent in their day to day life, with this having a positive impact on their quality of life and general well-being.

63% of patients agree that the remote tele-monitoring pilot has reduced the number of times that the patient has been admitted (or readmitted) to hospital. This view was not shared with clinicians. There are similar differences in perception as to the impact on the length of time in hospital – over 36% of patients are of the view that tele-monitoring has reduced the length of time that they have had to stay in hospital, as compared to none of the four clinicians.

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**7.1.7 Extent to which patients receive more and better targeted proactive support, enabling them to take greater control in the management of their own disease**

Clinicians were less positive about the extent to which patients receive more and better targeted proactive support under tele-monitoring. None of clinicians considered that tele-monitoring enables them to focus more on one-to-one care by eliminating unnecessary visits and allows them to look after more patients than would otherwise have done. None of the clinicians agree that it allows them to better target those patients who need more support.

However, over 91% of patients and three out of four clinicians report that remote tele-monitoring has enabled patients to manage their illnesses better and encourages them to think more about their symptoms.

**7.1.8 Extent to which there is improved quality assurance through auditable improvements in the flow of quality and timely information.**

All of the clinicians are generally satisfied with the way that tele-monitoring operates in practice – the quality of information is perceived as being good, the timeliness of alerts is good and clinicians generally feel comfortable in setting clinical parameters. Initial teething problems have largely been addressed.

Whilst some improvements were suggested relating to the flexibility and adaptability of equipment, clinicians were generally content with the accuracy of the readings and ease of use of the equipment.

With regards to the support received from the Service Provider of the triage service, clinicians were generally positive. Two out of three clinicians agree that the Service Provider provides a good service.

**7.1.9 Schemes which are working well and should continue to attract funding**

The tele-monitoring pilot reviewed as part of this evaluation would appear to have worked well, with positive benefits reported in terms of quality of patient life and reduced utilization of Trust resources.

Accordingly, it is the evaluator's view that the scheme should be considered for further funding.

The patient selection process is, however, all important, with clinicians confirming that tele-monitoring is not appropriate for all patients and that patient selection should be dependent on the severity of the disease as well as issues relating to patient dexterity etc.

Clinicians' concerns over increased workloads should also be addressed going forward.

**7.2 Recommendations to ensure that lessons learned are transferred into the main tele-monitoring project**

Recommendations following the evaluation of the remote tele- monitoring pilot project are:

- Appropriate Patient selection - the focus should be on identifying those patients with the best capacity to benefit from remote tele-monitoring, with the findings disseminated throughout all of the Trusts.

- 
- Resource Utilisation – there should be a baseline assessment of the resource utilization of clinicians as they are introduced into the remote tele-monitoring scheme, so as to enable a quantitative assessment of the impact of tele-monitoring on their respective workloads. There should also be a forum, facilitated by the Tele-Monitoring Coordinators by which difficulties faced by clinicians, and solutions identified, are shared across all of the clinicians within the Trusts. This increased level of communication will be critical to ensuring the clinicians are both supported and bought in to the tele-monitoring service. This will also ensure a Regional rather than a localized response to remote tele-monitoring.
  - Flexibility of the product offering – the emphasis in selecting peripheral products for use in tele-monitoring should be on ensuring that these offer flexibility to meet the needs of the wide variety of patient characteristics and illnesses and to enforce the principle that “one size does not fit all”.
  - Triage - the benefits of the clinical triage service should be assessed, the role and responsibilities of those charged with the clinical triage service, and their potential to support clinicians, particularly as the latter seek to manage their workloads.

**DHSSPS/ECCH  
Telemonitoring Service Pilots  
Clinician Questionnaire**

**Q1. What conditions/illnesses do you have responsibility for?**

(PARA 4.1)

	%	N =
Constructive Pulmonary Obstructive Disease (COPD)	50%	4
Heart Failure and/or arrhythmia	50%	4
Heart Disease	50%	4
Type 1 Diabetes	75%	4
Type 2 Diabetes	75%	4
Asthma	50%	4
Bronchiectasis	25%	4
Other	50%	4

**Q2b. To what extent would you agree that the patients that were selected or recruited to participate in the Pilot were appropriate to participate?**

(PARA 4.3)

Strongly Agree	Agree	Disagree	Strongly Disagree	N =
-	50%	50%	-	4

**Q3a. To what extent would you agree that tele-monitoring is appropriate for all patients with the primary condition that you have responsibility for?**

(PARA 4.4)

Strongly Agree	Agree	Disagree	Strongly Disagree	N =
-	25%	75%	-	4

**Q6. Approximately, what is the most appropriate timescale for the following types of patients to use tele-monitoring equipment? (NB. The respondent may only be able to respond for one of these conditions, if at all).**

(PARA 4.5.1)

6a	COPD			
	<i>Mild</i>	<i>Moderate</i>	<i>Severe</i>	<i>Very Severe</i>
Less than two month	-	-	-	-
2-3 months	-	-	-	-
4-6 months	-	-	-	-
7-12 months	-	-	-	-
More than 1 year	-	-	-	-
To end of life	100%	100%	100%	100%
N =	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>

6b	Congestive Heart Failure (CHF)			
	Level I	Level II	Level III	Level IV
	Mild	Moderate	Severe	Very Severe
Less than two month	-	-	-	-
2-3 months	-	-	-	-
4-6 months	-	-	-	-
7-12 months	-	-	-	-
More than 1 year	-	-	-	-
To end of life	-	-	-	-
N =	-	-	-	-

(PARA 4.5.1)

6c	Diabetes	
	Type 1	Type 2
Less than two month	-	-
2-3 months	-	-
4-6 months	-	-
7-12 months	-	-
More than 1 year	-	-
To end of life	100%	100%
N =	1	1

6c	Stroke		
	Mild	Moderate	Severe
Less than two month	-	-	-
2-3 months	-	-	-
4-6 months	-	-	-
7-12 months	-	-	-
More than 1 year	-	-	-
To end of life	-	-	-
N =	-	-	-

**Q7a. To what extent would you agree with the following statements about how the tele-monitoring project was implemented?**

	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
The Project was explained to you in such a way that you fully understood what it was about (PARA 4.7.1)	-	75%	25%	-	4
You received adequate training to allow you to use the tele-monitoring equipment (PARA 4.7.1)	-	50%	50%	-	4
The way in which tele-monitors were ordered for placement was straightforward and efficient (PARA 4.7.2)	-	100%	-	-	3
Patients' parameters were appropriately established i.e. the patient measurements which would create an alert if they fell outside the specific criteria (PARA 4.7.4)	25%	50%	25%	-	4

You feel comfortable setting Patients' parameters (PARA 4.7.4)	-	67%	33%	-	3
The patient information provided by the tele-monitoring equipment is easy to interpret (PARA 4.7.4)	-	75%	25%	-	4
You are provided with adequate ICT or equipment to respond to Patient alerts (PARA 4.7.5)	-	67%	33%	-	3
Adequate support was provided by the Trust's Telemonitoring Coordinator (PARA 4.7.5)	-	25%	75%	-	4
Adequate support was provided by the Trust's Management (PARA 4.7.5)	-	-	100%	-	4
The Patients' GPs are positive about and have taken some ownership of the Telemonitoring Project (PARA 4.7.6)	-	75%	25%	-	4

**Q8a. To what extent would you agree with the following statements about the service provided by the Service Providers Care (NB. delete as appropriate) during the tele-monitoring project?**

For Specific Pilots	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
Generally the Service Provider provided a good service (PARA 4.8.2)	-	67%	33%	-	3
Generally the level (quantity) of communication from the Service Provider was good (PARA 4.8.2)	-	100%	-	-	3
Generally the mode (e.g. telephone call, text, e-mail) of Patient alerts received from the Service Provider is appropriate	-	100%	-	-	3
Generally the timeliness of receipt of Patient alerts from the Service Provider was good	-	100%	-	-	3
Generally the quality of monitoring information provided by the Service Provider is good (PARA 4.8.3)	-	100%	-	-	3
Generally the timeliness of monitoring information provided by the Service Provider is good (PARA 4.8.3)	-	100%	-	-	3
The level and type of	-	100%	-	-	3



documentation that needs to be completed between you and the Service Provider at the Patient referral stage is appropriate (PARA 4.8.1)					
<b>For Service Provider 1 only</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>N =</b>
The Service Provider 1 appropriately screens alerts before making contact with you	-	50%	50%	-	2

**Q9a. To what extent would you agree with the following statements about the tele-monitoring equipment and/or software?**

<b>The Tele-Monitoring Equipment .....</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>N =</b>
Is easy to calibrate (PARA 4.9.4)	-	100%	-	-	3
Was fitted in a timely manner for Patients (PARA 4.9.4)	-	100%	-	-	2
Is easy for most Patients to use correctly (PARA 4.9.1)	-	75%	25%	-	4
Can be fitted or used in almost any home (PARA 4.9.4) / (PARA 4.9.1)	-	50%	50%	-	4
Currently asks appropriate questions for the Patients' conditions (PARA 4.9.3)	-	75%	25%	-	4
Asks questions that are easily understood by the Patients (PARA 4.9.3)	25%	50%	25%	-	4
Asks questions that encourage patients to think about their symptoms (PARA 4.9.3)	-	75%	25%	-	4
Is reliable (i.e. rarely has technical problems) (PARA 4.9.1)	-	67%	33%	-	3
You or the Patients have experienced few, if any, problems with the equipment (PARA 4.9.1)	-	67%	33%	-	3

**Q9c. To what extent would you agree with the following statements about the tele-monitoring equipment and/or software? (PARA 4.9.2)**

It Provides accurate readings for:	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
Weight	-	100%	-	-	3
Heart rate	-	67%	33%	-	3
Blood pressure	-	33%	67%	-	3
Temperature	-	100%	-	-	2
Oxygen saturation	-	50%	50%	-	2
Blood Glucose	-	34%	33%	33%	3
Peak flow	-	100%	-	-	1
Other	-	-	-	-	-
Other	-	-	-	-	-

**Q10a.** To what extent would you agree with the following statements about the impact that tele-monitoring has had on the number or frequency of visits that your patients have made to or received from health sector personnel relating to the Patients' Chronic conditions ?

Tele-Monitoring has.....	Strongly Agree	Agree	Disagree	Strongly Disagree	Don't know	N =
Reduced the number of times that the participant patients have been admitted or readmitted to hospital (PARA 5.2)	-	-	75%	-	25%	4
Reduced the number of times that the participant patients have self-referred themselves to A&E (PARA 5.3)	-	-	75%	-	25%	4
Reduced the length of time that participant patients have had to stay in hospital (if they have been admitted to hospital since they got the telemonitoring equipment) (PARA 5.2)	-	-	75%	-	25%	4
Reduced the number of times that participant patients have had to visit their GP (PARA 5.4)	-	25%	50%	-	25%	4
Reduced the number of times that participant patients have had to contact their Community Care Nurse by phone (PARA 5.4)	-	25%	75%	-	-	4
Reduced the number of visits that participant patients	-	25%	75%	-	-	4

have needed from their Community Care Nurse (PARA 5.4)						
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**Q11a.** To what extent would you agree with the following statements about the impact that tele-monitoring has had on your patients' life and wellbeing relating to the Patients' Chronic conditions?

Tele-Monitoring has.....	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
Improved Patients' overall Quality of Life (PARA 6.1)	-	-	100%	-	4
Ensured that their Quality of Life did not deteriorate (PARA 6.1)	-	-	100%	-	4
Made them feel less anxious or stressed about their health i.e. has provided them with 'peace of mind' (PARA 6.2)	-	50%	50%	-	4
Provided them with reassurance and helped them feel safer at home (PARA 6.2)	-	67%	33%	-	3
Helped them become more independent in their day-to-day life (PARA 6.3)	-	50%	50%	-	4

**Q12a.** To what extent would you agree with the following statements about the impact that tele-monitoring has had on your patients' health relating to the Patients' Chronic conditions?

Tele-Monitoring has.....	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
Led to improvements in their health (PARA 6.8)	-	50%	25%	25%	4
Helped them manage their illness better (PARA 6.8)	-	75%	25%	-	4
Encouraged them to take their medicine at the right times and in the right quantities (PARA 6.9)	-	100%	-	-	1
Helped them become less reliant on the hospital sector or health sector practitioners in general (PARA 6.9)	-	50%	50%	-	4
Encouraged them to think more about their symptoms (PARA 6.10)	-	100%	-	-	4

**Q13a.** To what extent would you agree with the following statements about the impact that tele-monitoring has had on the patients' family or carers relating to the Patients' Chronic conditions?

Tele-Monitoring has.....	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
Has been of benefit to the families and/or carers	-	100%	-	-	3

(PARA 6.11)					
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**Q14a. To what extent would you agree with the following statements about the impact that tele-monitoring has had on patients relating to the Patients' Chronic conditions?**

Tele-Monitoring .....	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
Reduces the amount of travel that they have to do to visit health professional relating to their chronic conditions (PARA 6.4)	-	33%	67%	-	3
Helps them receive more specialised care than they would otherwise have been able to access e.g. because of geography, transport issues or infirmity (PARA 6.4)	-	-	100%	-	3
Helps to improve the overall standard of care that they receive (PARA 6.5)	-	50%	50%	-	4
Reduces rates of mortality (PARA 6.6)	-	50%	50%	-	2
Improves patient and carer access to the information that they require to manage their conditions. (PARA 6.6)	-	25%	75%	-	4
Will increase patients' sense of depersonalisation due to the perceived lack of nurse to patient interaction. (PARA 6.6)	-	50%	50%	-	4
Has challenged patients' beliefs that repeated hospitalization for the control of the symptoms of their condition is the expectation. (PARA 6.6)	-	50%	50%	-	4

**Q15a. To what extent has tele-monitoring led to patients making changes in their lifestyles?**

(PARA 6.7)

A large Extent	Some Extent	No Extent	N =
-	100%	-	3

**Q15b. If changes have occurred, have these been positive or negative changes?**

Positive	Negative	N =
-	-	-

**Q16a. To what extent would you agree that the tele-monitoring pilot project was a patient centred service?**

(PARA 5.1.1)

Strongly Agree	Agree	Disagree	Strongly Disagree	N =

-	75%	25%	-	4
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**Q17a. To what extent would you agree with the following statements about the impact that tele-monitoring has had on you or the Trust?**

Tele-Monitoring .....	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
Provides you with ready access to useful information on your patients' conditions and treatment (PARA 5.5.1)	-	67%	33%	-	3
Supports more effective and integrated working across health and social services. (PARA 5.5.2)	-	-	100%	-	2
Has allowed for better communication across and between multidisciplinary care teams. (PARA 5.5.2)	-	-	100%	-	3
Has helped shift the balance of care towards the community and promoting the alternatives to hospital admission. (PARA 5.5.3)	-	67%	33%	-	3
Has improved the service that you personally provide to your patients (PARA 5.5.4)	-	-	100%	-	3
Allows for a better use of your resources (PARA 5.5.4)	-	34%	33%	33%	3
Allows for a better use of other health practitioner resources (PARA 5.5.4)	33%	33%	34%	-	3
Has increased your workload (PARA 5.5.5)	-	100%	-	-	3
You have adequate time to address patients' needs arising from tele-monitoring (PARA 5.5.5)	-	33%	33%	34%	3
Has led to cost savings in terms of providing patient care (PARA 5.5.6)	-	-	100%	-	2
Allowed you to focus more on one-on-one care by actually reducing the daily visit schedule and eliminating unnecessary visits. (PARA 5.5.7)	-	-	100%	-	2
Allows nurses to look after more Patients than they would otherwise be able to (PARA 5.5.7)	-	-	100%	-	2
Allows nurses to better target those Patients that need more support (PARA 5.5.7)	-	-	100%	-	2
Is viewed as a way of replacing traditional nursing services with more impersonal service. (PARA	-	33%	67%	-	3

<b>5.5.8)</b>					
Is accepted by the medical community at large ( <b>PARA 5.5.8)</b>	-	-	100%	-	<b>3</b>
Reduces the need for emergent care ( <b>PARA 5.5.9)</b>	-	67%	33%	-	<b>3</b>
Enhances your patient management and home visit planning ( <b>PARA 5.5.10)</b>	-	-	100%	-	<b>3</b>
Instances of alerts created by patient measurements falling outside of specific guidelines have resulted in additional visits for you. ( <b>PARA 5.5.10)</b>	-	33%	67%	-	<b>3</b>

**Q18a. To what extent would you be confident that tele-monitoring allows the provision of clinical triage to a patient from a distance?**

(**PARA 4.10.1)**

Very Confident	Confident	Not Very Confident	Not at all Confident	N =
-	25%	50%	25%	<b>4</b>

**Q19a. To what extent would you be confident that tele-monitoring allows the provision of clinical triage to a patient from a distance by a nurse who has not met a Patient in person?**

(**PARA 4.10.1)**

Very Confident	Confident	Not Very Confident	Not at all Confident	N =
-	25%	-	75%	<b>4</b>

**Q23a. Overall, what has been the impact, if any, of tele-monitoring on your patients' health and wellbeing?**

(**PARA 6.12)**

Significant improvement	Some improvement	No improvement	N =
-	25%	75%	<b>4</b>

**Q24a. Overall, how satisfied are you with the tele-monitoring support that your patients have received?**

(**PARA 4.13)**

Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	N =
25%	50%	25%	-	<b>4</b>

**DHSSPS/ECCH  
Telemonitoring Service Pilots  
Patient Questionnaire**

**Q1. What conditions/illnesses is the tele-monitoring equipment being used to monitor?**

**(PARA 4.1)**

	<b>%</b>	<b>N =</b>
Constructive Pulmonary Obstructive Disease (COPD)	9%	<b>11</b>
Heart Failure and/or arrhythmia	36%	<b>11</b>
Heart Disease	9%	<b>11</b>
Type 1 Diabetes	9%	<b>11</b>
Type 2 Diabetes	9%	<b>11</b>
Asthma	27%	<b>11</b>
Bronchiectasis	9%	<b>11</b>
Other	36%	<b>11</b>

**Q2. Approximately, for how many months have you been using the tele-monitoring equipment?**

**(PARA 4.1)**

	<b>%</b>
Less than one month	-
1 to 2 months	-
3-4 months	10%
5-6 months	10%
7-8 months	10%
9-10 months	10%
11 months to 1 year	30%
More than 1 year	30%
<b>N =</b>	<b>10</b>

**Q3a. To what extent would you agree with the following statements about how the tele-monitoring project was implemented?**

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>N =</b>
The Project was explained to you in such a way that you fully understood what it was about <b>(PARA 4.7.1)</b>	45%	45%	10%	-	<b>11</b>
You received adequate training to allow you to use the tele-monitoring equipment correctly <b>(PARA 4.7.1)</b>	55%	36%	9%	-	<b>11</b>
The Equipment was installed in your house in an efficient manner <b>(PARA 4.7.3)</b>	45%	55%	-	-	<b>11</b>

**Q4a. To what extent would you agree with the following statements about the tele-monitoring equipment?**

<b>The Tele-Monitoring Equipment .....</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>N =</b>
Is easy to use <b>(PARA 4.9.1)</b>	73%	27%	-	-	<b>11</b>
Reliable <b>(PARA 4.9.1)</b>	45%	55%	-	-	<b>11</b>

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Provides accurate readings ( <b>PARA 4.9.2</b> )	50%	40%	10%	-	<b>10</b>
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**Q5a. To what extent would you agree with the following statements about the impact that tele-monitoring has had on the number or frequency of visits that you have made to or received from health sector personnel?**

Tele-Monitoring has.....	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
Reduced the number of times that you have been admitted or readmitted to hospital (PARA 5.2)	27%	36%	18%	19%	11
Reduced the length of time that you have had to stay in hospital (if you have been admitted to hospital since you got the telemonitoring equipment) (PARA 5.2)	9%	27%	9%	55%	11
Reduced the number of times that you have had to visit your GP (PARA 5.4)	30%	70%	-	-	10
Reduced the number of times that you have had to contact by phone your Community Care Nurse (PARA 5.4)	-	87%	13%	-	8
Reduced the number of visits that you have needed from your Community Care Nurse (PARA 5.4)	13%	75%	12%	-	8

**Q6a. To what extent would you agree with the following statements about the impact that tele-monitoring has had on your life and wellbeing?**

Tele-Monitoring has.....	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
Improved your overall Quality of Life (PARA 6.1)	9%	64%	27%	-	11
Ensured that your Quality of Life did not deteriorate (PARA 6.1)	36%	55%	9%	-	11
Made you feel less anxious or stressed about your health (PARA 6.2)	55%	36%	9%	-	11
Has provided you with 'peace of mind'	55%	45%	-	-	11
Provided you with reassurance and helped you feel safer at home (PARA 6.2)	55%	45%	-	-	11
Helped you become more independent in your day-to-day life (PARA 6.3)	18%	73%	9%	-	11

**Q7a. To what extent would you agree with the following statements about the impact that tele-monitoring has had on your health?**

Tele-Monitoring has.....	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
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Led to improvements in your health (PARA 6.8)	40%	50%	10%	-	<b>10</b>
Helped you manage your illness better (PARA 6.8)	27%	64%	9%	-	<b>11</b>
Encouraged you to take your medicine at the right time and in the right quantities (PARA 6.9)	22%	44%	34%	-	<b>9</b>
Helped you become less reliant on the hospital sector or health sector practitioners in general (PARA 6.9)	-	80%	20%	-	<b>10</b>
Encouraged you to think more about your symptoms (PARA 6.10)	9%	73%	18%	-	<b>11</b>

**Q8a. To what extent would you agree with the following statements about the impact that tele-monitoring has had on your family or carers?**

Tele-Monitoring has.....	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
Has been of benefit to your family and/or carers (PARA 6.11)	56%	44%	-	-	<b>9</b>

**Q9a. To what extent would you agree with the following statements about the impact that tele-monitoring has had on you?**

Tele-Monitoring .....	Strongly Agree	Agree	Disagree	Strongly Disagree	N =
Saves you time (PARA 6.4)	20%	70%	10%	-	<b>10</b>
Reduces the amount of travel that you have to do (PARA 6.4)	22%	67%	11%	-	<b>9</b>
Helped you receive more specialised care than you would otherwise have been able to access e.g. because of geography, transport issues or infirmity (PARA 6.4)	11%	78%	11%	-	<b>9</b>
Helped to improve the overall standard of care that you receive (PARA 6.5)	11%	89%	-	-	<b>9</b>

**Q10a. To what extent has telemonitoring led to making changes in your lifestyle?**

(PARA 6.7)

A large Extent	Some Extent	No Extent	N =
-	67%	33%	<b>9</b>

**Q11a. To what extent would you be confident about receiving clinical advice from a Nurse who has read the results of your tele-monitoring reports, but has not come out to visit you in person?**

(PARA 4.10.1)

Very Confident	Confident	Not Very	Not at all	N =

		<b>Confident</b>	<b>Confident</b>	
36%	55%	9%	-	<i>11</i>

**Q14a. Overall, what has been the impact, if any, of tele-monitoring on your health and wellbeing?**

**(PARA 6.12)**

<b>Significant improvement</b>	<b>Some improvement</b>	<b>No Change</b>	<b>Some Deterioration</b>	<b>Significant Deterioration</b>	<b>N =</b>
-	64%	36%	-	-	<i>11</i>

**Q15a. Overall, how satisfied are you with the tele-monitoring support that you received?**

**(PARA 4.13)**

<b>Very Satisfied</b>	<b>Satisfied</b>	<b>Dissatisfied</b>	<b>Very Dissatisfied</b>	<b>N =</b>
91%	9%	-	-	<i>11</i>