

# Designing and delivering scalable telemonitoring and telecare through partnership

## The challenge

Northern Ireland has a population of approximately 1.8 million people. Around two thirds of people aged 75 years or older in Northern Ireland are living with one or more chronic diseases. 69% of health and social care spend, 60% of all GP visits and 72% of acute hospital bed days are related to chronic disease.

Increasing demand and the rising cost of care, along with a declining health budget in Northern Ireland, has meant that the health service has to find better and more efficient ways to ensure that high quality services continue to be provided. Telemonitoring is a prime example of this innovation.

## What we did

In March 2011 the TF3 Consortium was chosen to provide a Telemonitoring Service to the Northern Ireland health and social care system. The award of the 6 year contract was led by the Centre for Connected Health and Social Care (part of the NI Public Health Agency) who worked in partnership with, and on behalf of, the five Health and Social Care Trusts. The award of the contract represents an investment of £18m by the Department of Health, Social Services and Public Safety in the management of long term conditions. The procurement of this large scale, 'end-to-end', managed clinical service has the capacity to support over 3,500 patients a year. TF3, a consortium of Tunstall Healthcare, Fold Telecare and S3 Group, are delivering this large scale telemonitoring service, for patients with heart and respiratory conditions, diabetes and those who have suffered a stroke. The service also includes telecare support, to assist clients with conditions such as dementia, epilepsy or who are at risk of falls, helping to safeguard them and maintain their independence.



Telemonitoring is a leading example of the application of connected health, and means that people who have been diagnosed with conditions such as diabetes, heart failure, chronic obstructive pulmonary disease, transient ischemic attack or a stroke can have their vital signs monitored from their own home. Not only does Telemonitoring NI help patients manage their condition; it provides healthcare professionals with information to enable them to make appropriate decisions about patient care, meaning there is less need for hospital admission, allowing for better use of resources. Telemonitoring also helps carers by ensuring they are better informed and supported.

**Dr Eddie Rooney, Chief Executive of the Public Health Agency**



## Highlights

- 6 year contract 2011- 2017
- 12 condition categories
- 3,500 patients per annum
- £18m investment
- End-to-end clinical service
- Integrated health and care delivery
- 1.4m monitored days to date - telemonitoring
- 2.3m monitored days to date - telecare

**FOLD**  
TeleCare

**S3**  
GROUP

**HSC** Public Health  
Agency

**TF3**  
consortium

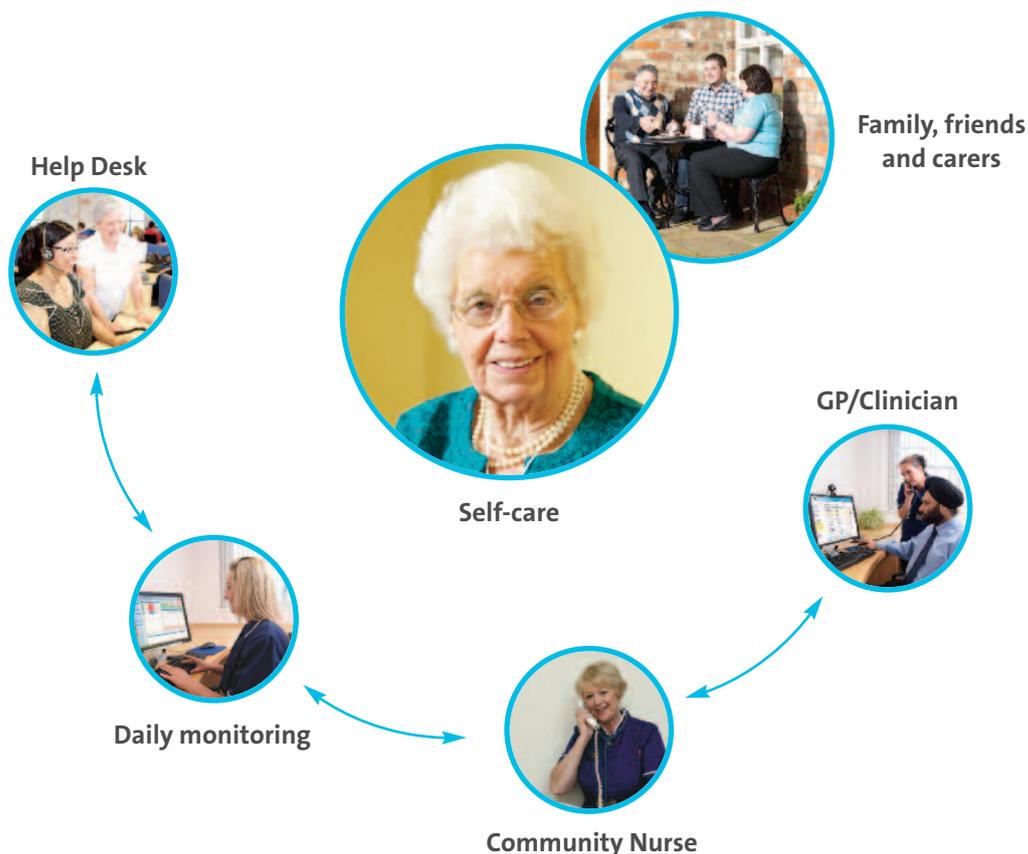
**Tunstall**

# Elements of the telemonitoring managed service provided by TF3

The development of telemonitoring is an important element in the modernisation of the Northern Ireland health and social care delivery system, which enables improved management of care leading to earlier interventions and improved quality of life. Telemonitoring NI is an end-to-end managed service involving people, process and technology, from referral to discharge, all delivered through stringent service level agreements.



- **Clinically led service** – ensuring the timely handling of alerts, the provision of targeted support and information to patients and the appropriate escalation and safe handover of care to health and social care professionals
- **Online forms** – set of tools accessible through a web portal which are optimised to match the service support required by healthcare professionals, eg ability to refer a patient seamlessly into the operational service
- **Service desk** – service management tool set providing a single point of contact, coordination of services, consent management, installation management and asset management
- **Training** – a structured training programme for health professionals based on the train-the-trainer approach
- **Installation** – installation of home telehealth systems with peripherals, questions trees and parameters tailored to the individual's condition
- **Patient portal** – supports agenda for self care by enabling and encouraging patients themselves to view their monitored data and learn more about their condition
- **Telecare** – in addition to monitoring chronic conditions, the telemonitoring service allows for the addition of a full range of telecare services to be provided as part of the integrated managed service. (See page 6 for further information.)



# The patient pathway

## STEP ONE

### Patient identification and approval

- Clinical care pathways enable clinicians to identify the right cohort of patients suitable for telemonitoring service
- Each Healthcare Trust has specific patient selection processes and associated goals
- The selection process includes a preliminary patient assessment

## STEP TWO

### Patient enrolment

- HSC clinicians access an online web portal to create a referral and create a patient's care plan
- The TF3 Service Desk team receives and validates the referral
- A submitted referral triggers patient appointments, obtaining consent, installation and training etc

## STEP THREE

### Patient self-management support

- Patients are enrolled onto the service and start to monitor their vital signs at home
- Readings are taken with relevant peripherals and transmitted to the monitoring centre
- Qualitative patient feedback will be captured via condition specific health interviews/questionnaires

## STEP FOUR

### Patient monitoring services

There are two types of monitoring provided:

- Track and Trend – Data recorded by service but clinical monitoring is by the patient's own care team
- Triage Service – The patient is monitored and triaged by the TF3 clinical triage team

## STEP FIVE

### Escalation of issues

If a patient's data record is outside of the parameters set in the care plan, a nurse will contact the patient to check on their health and decide whether there is a need for intervention or escalation.

There are three types of escalation:

- Local Response – the clinical triage nurse escalates to the local care team
- Out of Hours Service – over the weekend the clinical triage nurse escalates to the Out of Hours Service
- Emergency Response – clinical triage nurse escalates directly to emergency services

## STEP SIX

### Self-management and education

- The patient portal allows patients and family members to review their progress. They can look at trends, comparisons and get health tips
- Patients can receive reminders and messages as well as information on events related to their condition
- Patients gain a greater understanding over time of their condition through the patient portal and become empowered to manage their condition proactively

## STEP SEVEN

### Patient review, discharge and outcomes

- At referral all patients have a planned review date set based on the reason for the referral and the condition(s)
- Clinicians review and decide whether to extend or discharge patients
- On discharge, the patient is assessed as to whether the clinical goals for the referral were achieved

# Telehealth service operation

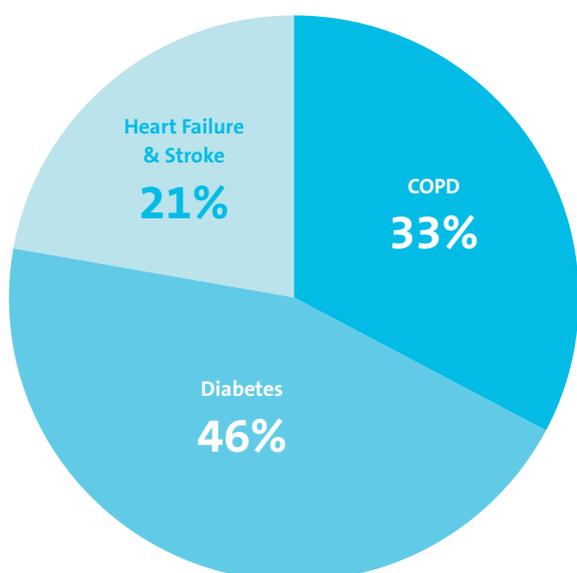
## Service Level Agreements (SLA)

- Ensuring acceptable service levels
- Ensuring timely triaging of clinical alerts according to severity
- Timely processing of referrals and installation of equipment
- Ensuring and promoting patient safety
- Ensuring sufficient time for local responders to manage escalations within normal working hours

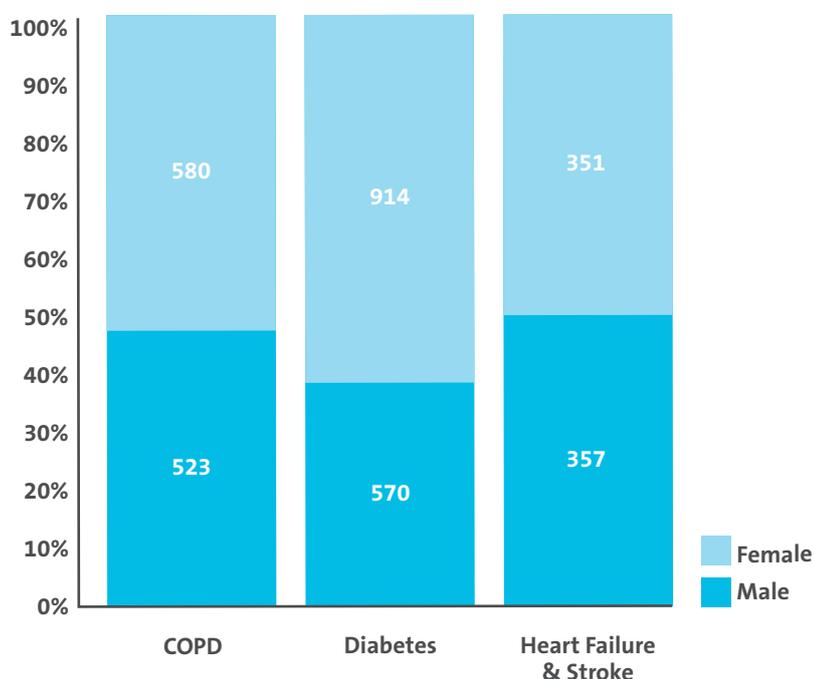
Example SLA – “Complete the triage process within 2 working hours of receipt of monitoring data significantly outside the monitoring plan.”

## Patient referral demographics

Referrals by condition



Referrals by gender and condition



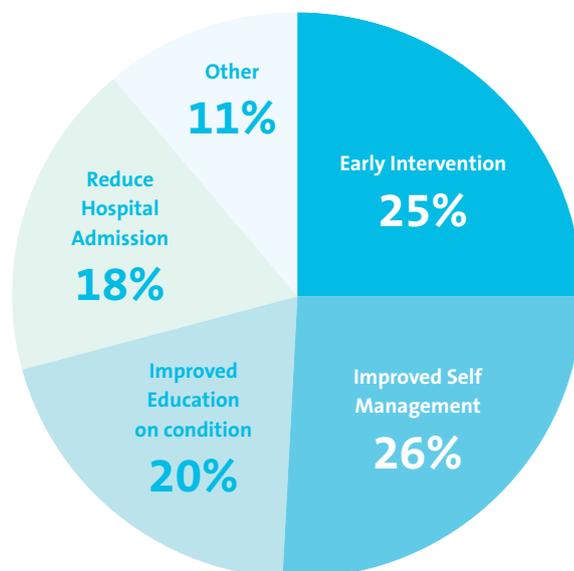
Average age of patient by condition category

	Diabetes	HF & Stroke	COPD
Average Age	47	65	71

Average length of monitoring by condition category

	Avg. Days
Diabetes	350
Heart Failure & Stroke	450
COPD	700

Reason for referrals



# Lessons learned

## In the beginning

- Focus on service definition not technology selection
- Focus on understanding the patient journey through the service
- Invest effort in the service design phase – if you haven't explicitly defined it and designed it, problems will arise
- Don't expect informal processes and practices built up in delivering a pilot to directly translate into processes for large scale service delivery. Large scale, mainstream services need to be designed.
- Commence clinical engagement as early as possible in the service design process. Don't underestimate the time it takes to engage and achieve consensus on the clinical care pathway design.
- Plan for service growth, scale and mainstreaming at the outset – if you don't it won't happen.

## Programme delivery

- Choose SLAs wisely and ensure they encourage the clinical practice that you want to see happen.
- Expect higher alert activity than at service start.
- Invest time to build relationships between the clinical triage team and the patient care team.
- Put in place processes for reviewing care plans, parameter setting and use of default parameters.
- Establish mechanisms to support clinical collaboration and encourage clinicians to champion their telemonitoring success stories and disseminate good practice. Hold clinical forums to enable this.
- Plan for ongoing clinical engagement following operational service commencement. A time for bedding in and evaluating effectiveness is required to accommodate local experiences as they accumulate. It is a journey rather than a destination.

## Results

TF3 has so far provided over 1.4 million monitored patient days (to July 2015). The telemonitoring service provides more and better targeted proactive support to patients, which enables them to:

- Have greater control
- Learn more about their condition
- Live more independent lives

It also provides timely information to professionals to inform patient-centred case management, enabling:

- Improvements in the quality of care and quality of life for patients
- Reductions in inpatient admissions
- Optimised use of staffing resources

A survey of 100 patients in 2014 showed that:

- 98% found the triage nurse helpful
- 95% of patients agree that the service has assisted them with better self-management
- 95% believe the service has improved their health
- 86% believe that they have reduced HCP visits
- 84% believe that they have reduced GP visits
- 79% believe that they have reduced A&E visits

## Case Study

Mr H is 71 and has emphysema, a long-term, progressive disease of the lungs that causes shortness of breath. He monitors his vital signs each morning using the telemonitoring service. The information is monitored centrally and if readings show signs of deterioration to an unacceptable level, Mr H's local healthcare professional is alerted.



Taking my readings is such a simple process but one that gives me huge benefits as it is an early warning system to me and also for the specialist nurses in charge of my care. Without telemonitoring I would be running back and forward to the GPs' surgery all the time to have things checked out. It means any changes in my condition are dealt with immediately and this has prevented me from being admitted to hospital. It also gives me more control over managing my own condition and as a result I have less upheaval in my life, and I'm less of a cost to the health care system. Most importantly, it gives me peace of mind and one less thing to worry about at my age.

# Telecare

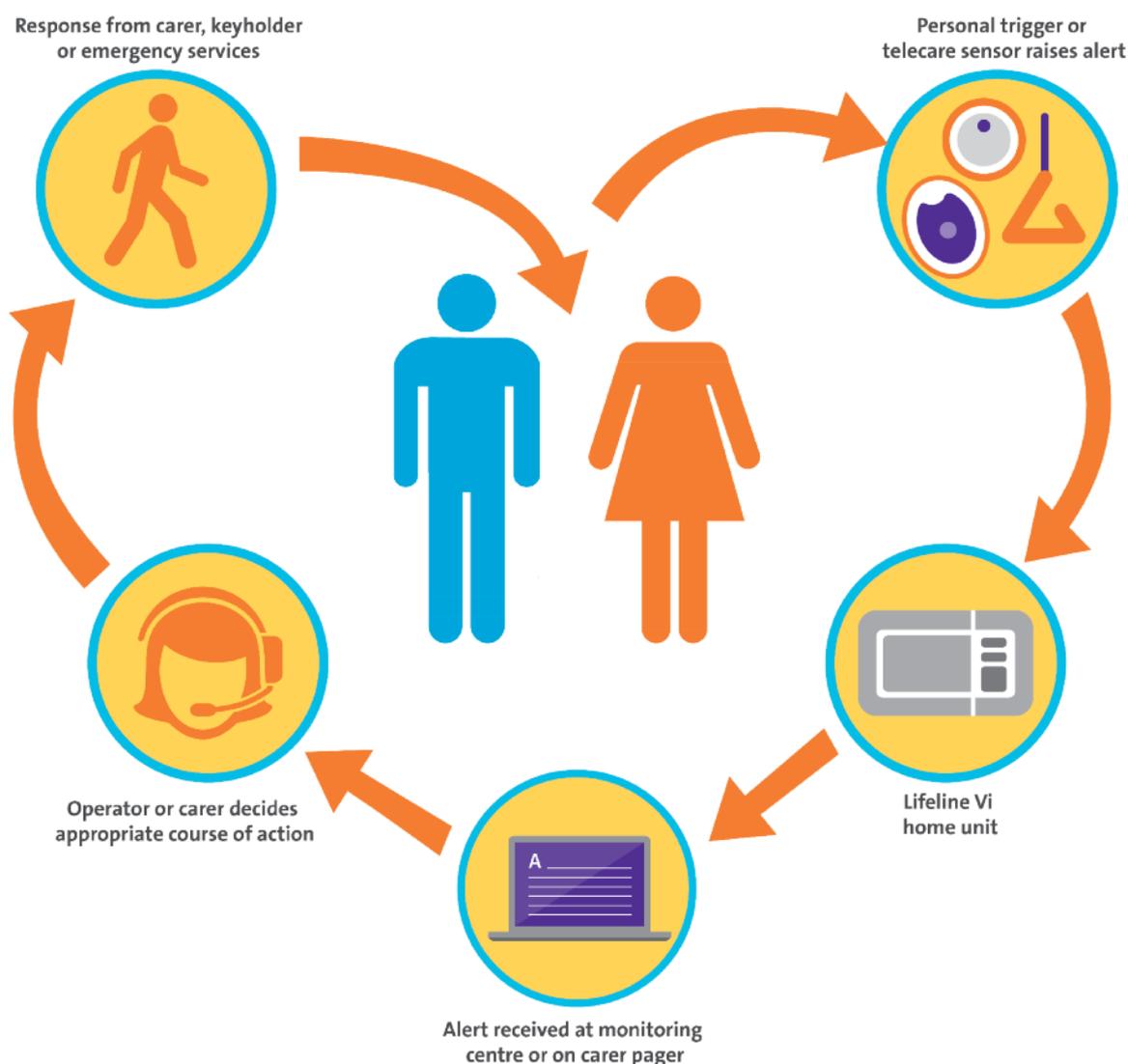
In addition to telemonitoring, TF3 also provides a telecare service, supporting more than 3,000 people (August 2015). Together these services provide health and social care professionals and clients with the basis for a "fit-for-purpose" integrated and connected health and care solution for Northern Ireland, delivering improved outcomes and more efficient care.

## How telecare works

Telecare works by helping to manage risk and provide reassurance, helping individuals to stay in their own home. Unobtrusive sensors are placed around the home, which automatically raise an alert via a Lifeline home unit if an event is detected, such as smoke, gas, flood, fall or fire. Sensors are chosen according to the individual's need, and care packages can be easily adjusted over time as those needs change. Alerts are received at the monitoring centre where trained operators follow appropriate protocols.

## Telecare systems can be used to:

- Give the user the means to summon help from anywhere in their home, 24 hours a day using a discreet, wearable alarm
- Monitor a person's movements in and out of a room, a chair or bed, to raise an alert if they become less active than usual
- Raise an alert in the event of a fire, flood, build up of carbon monoxide or gas, or extremely high or low temperatures
- Detect if someone has a fall or an epileptic seizure
- Provide reassurance in the event of an unexpected visitor with the bogus caller button
- Support carers, alerting them to events and providing 24 hour a day support

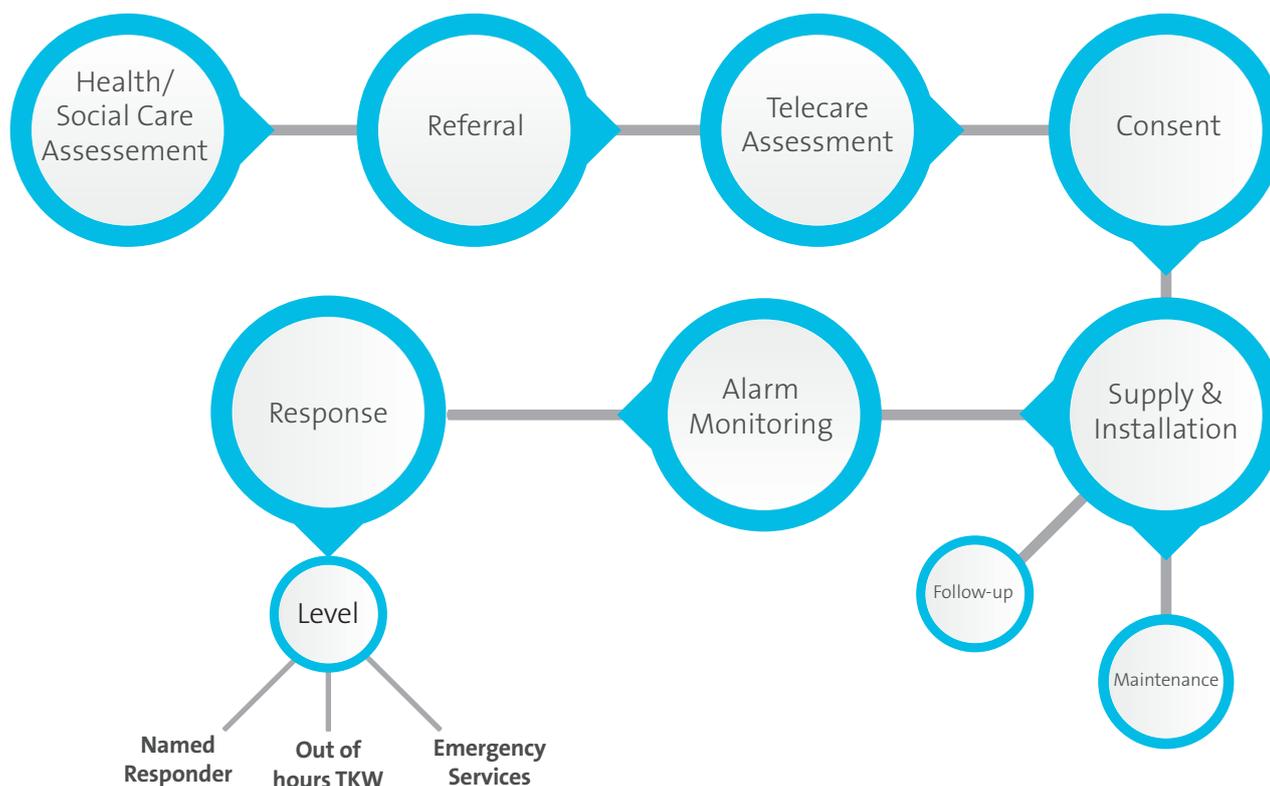


# Telecare service operation

## The referral process

Referrals are made to the telecare service by health and social care professionals working in a number of disciplines, including mental health, primary care, learning and physical disability, and older people. The service supports clients with a range of needs, including people with epilepsy, dementia, cognitive impairment and those who are at risk of falls or bogus callers. The service can also be used to facilitate early discharge from hospital.

## Telecare delivery model



## Service Level Agreements

- Timely processing of referrals and installation of equipment
- All calls must be answered by a trained operator
- **98.5%** of these calls should be answered within **60 seconds**
- Ensure an appropriate response is initiated upon receiving a telecare alert



Telemonitoring NI is a flagship service for Tunstall and TF3, we are really proud to provide key services such as telehealth and telecare to meet the complex needs of the people in Northern Ireland in both health and social care. Telemonitoring NI enables individuals to be at the centre of their care, and is an inspiring example of connected healthcare.

**Simon Arnold**, Chief Customer Officer, Tunstall Group

# Outcomes

TF3 has provided in excess of 2.3 million monitored days to telecare users. The service enables timely intervention, helping to minimise the consequences of incidents, resulting in improved outcomes. Management of risks such as falls and accidents in the home helps to delay or avoid admission

to residential care or hospital, and can help to reduce the length of stay following a hospital admission. The service also provides peace of mind for people who may feel anxious about living alone, or worried about crime or intruders by providing a source of constant support.

“ As an occupational therapist my job is to maintain people’s independence and to enable them to continue to live within their own familiar environment. Telecare is a fantastic tool that helps me to achieve this by managing all sort of different risks. It so often makes the difference between someone being able to remain at home and independent, or having to go into residential care. The technology is also a great support to carers, alleviating stress and worry

**Mary Stobie**, Occupational Therapist, Northern Health and Social Care Trust



For more information visit [telemonitoringni.info](http://telemonitoringni.info)

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