

# Improving effectiveness and efficiency of a Community Diabetes Nursing service through the use of remote Telemonitoring



Western Health  
and Social Care Trust

# Background

- Ageing population
- Increasing prevalence chronic disease
- More people living alone
- Increasing demands on over-stretched NHS resources



- The roll-out of telemonitoring follows funding of £ 18M from the Dept of Health.
- The Centre of Connected Health and Social Care(CCHSC), part of the Public Health Agency, piloted the scheme in 2008 with Fold .
- Since 2011 CCHSC has been working in partnership with Business consortium TF3 to deliver the innovation.
- The service is now being delivered by the TF3 consortium in partnership with the Health and Social Care Trusts.



# European Centre Connected Health



- Initial target 5000 patients throughout NI by 2011
- Objectives
  - To improve the quality of care for patients with long-term condition by appropriate and timely early intervention
  - To empower the patient and their carer to manage their own condition by providing them with information, education and support
  - To use the resources of the Health Service more effectively and efficiently
  - Provide health professionals with better more timely information to enable them to look after vulnerable individuals in the most appropriate way.

# Remote Telemonitoring

A clinical practice that involves remotely monitoring patients who are not at the same location as the healthcare provider.

A patient may have a number of monitoring devices at home, and these devices will transmit information on people's vital signs via telephone to the remote monitoring service provider and if necessary to their healthcare provider.



# Telemonitoring infrastructure

- Client devices
- Central systems
- Communication network
- Care team activities



# Personnel

- Telemonitoring coordinator
  - Kareen McCauley
- Diabetes Nurse Specialists
  - Hilary Caskey, AnnMarie McDaid, Liz Williams



# Increasing workload

	2010	2011
Patient contact Oct - Dec	1644	2290
Referrals Sept - Nov	206	287





# Objectives

- Efficiency
  - Reduce requirement for clinic attendance
  - Reduce frequency clinic DNA's
  - Keep clinic waiting times to a minimum
  - Minimise need for home visits
  - Utilise existing resources
  - Reduce frequency of unesscary hospital admissions



# Objectives

- Effectiveness
  - Utilise blood glucose monitoring to adjust treatment in a timely manner
  - Involve the person with diabetes in care planning through explanation and education to improve self-management.

# Aims

- Improve glycaemic control
  - Promote self responsibility
  - Enhance self management skills
- Improve efficiency and effectiveness of nursing team
- Meet organisation objectives



# Patient Groups

- Patients treated with insulin
  - a. Poor glycaemic control
  - b. Elderly housebound
  - c. New to insulin therapy
  - d. New diagnosis Type 1 Diabetes



# Initiating Telemonitoring

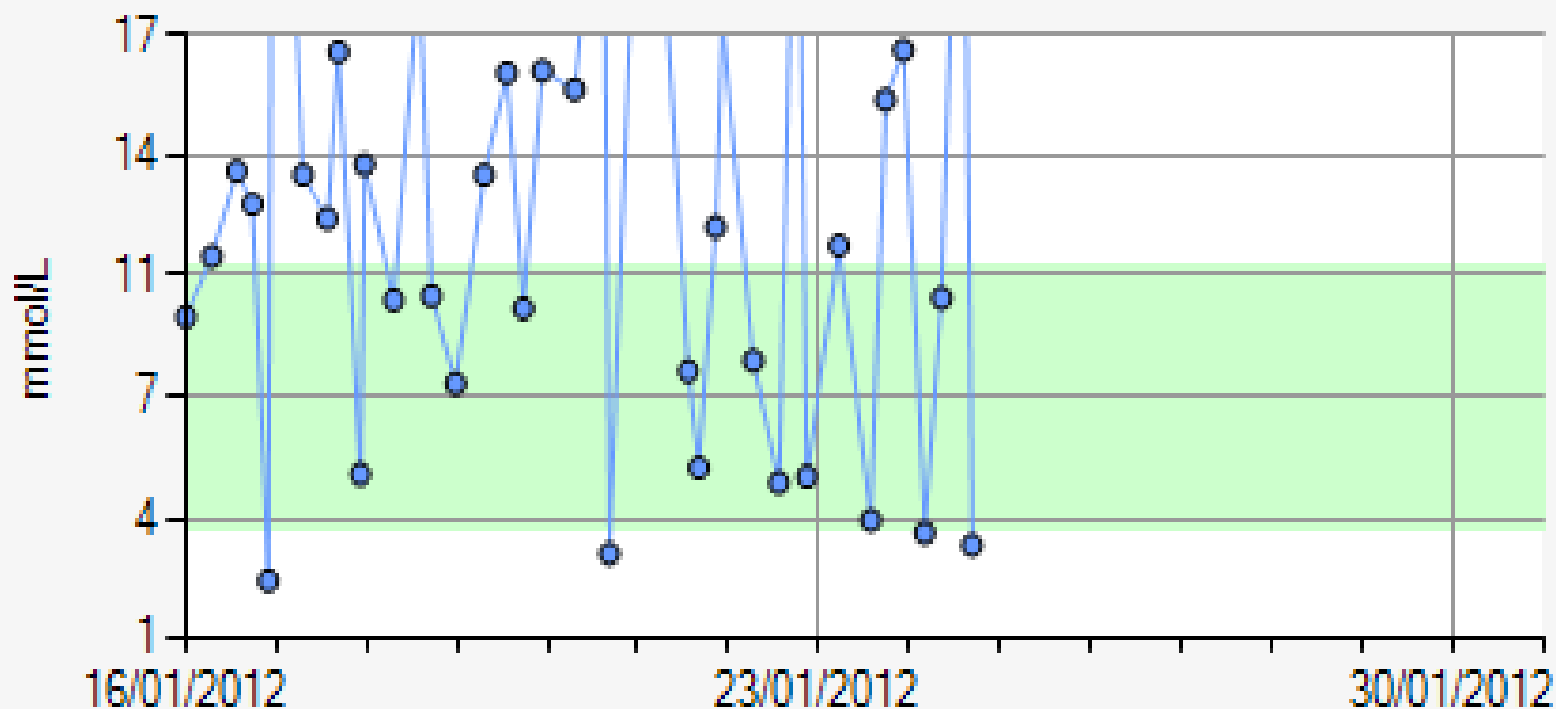
- DSN identifies patient as being suitable for telemonitoring.
- Verbal information on telemonitoring given to patient/carer.
- Patient gives verbal consent.
- On-line telehealth referral made.
- Telehealth provider contacts patient/carer re suitable time to install equipment.
- DSN informed of installation date.
  
- Monitoring commences immediately after installation.
- Patient uploads data from glucose meter weekly at a suitable time before scheduled Telemonitoring clinic.
- DSN decides on frequency of review.(May change due to alert from patient/carer or inter-current illness)



<u>Date</u> dd/mm/yyyy	Time (GMT+0:00) hh:mm	Time Slot	Blood Glucose Value mmol/l	Notes
16/01/2012	00:15	Night	9.5	
16/01/2012	07:08	Before breakfast	11.1	
16/01/2012	13:42	After lunch	13.4	
16/01/2012	17:50	Before dinner	12.5	
16/01/2012	22:02	Bedtime	2.6	
16/01/2012	23:17	Bedtime	25.4	
17/01/2012	02:26	Night	24.7	
17/01/2012	07:14	Before breakfast	13.3	
17/01/2012	13:42	After lunch	12.1	
17/01/2012	16:38	Before dinner	16.6	
17/01/2012	22:26	Bedtime	5.4	
17/01/2012	23:32	Bedtime	13.6	
18/01/2012	07:15	Before breakfast	9.9	
18/01/2012	14:02	After lunch	18.8	
18/01/2012	17:17	Before dinner	10.1	
18/01/2012	23:41	Bedtime	7.7	
19/01/2012	07:14	Before breakfast	13.3	
19/01/2012	13:16	After lunch	16.0	



# Glucose



Target Area    Self Reported    Uploaded



# Glucose LogBook Report

17/01/2012 - 31/01/2012

Date	Data	Before breakfast	After breakfast	Before lunch	After lunch	Before dinner	After dinner	Bedtime	Night
24/01/2012	Blood Glucose	10.0 mmol/l 08:25			27.6 mmol/l 13:51	3.5 mmol/l 16:27			3.8 mmol/l 03:55
23/01/2012	Blood Glucose				4.2 mmol/l 13:41	15.3 mmol/l 17:33		16.6 mmol/l 22:19	11.4 mmol/l 05:09
22/01/2012	Blood Glucose	8.3 mmol/l 06:28			5.2 mmol/l 13:19	25.3 mmol/l 18:08	5.3 mmol/l 20:43		
21/01/2012	Blood Glucose	19.4 mmol/l 06:33			8.1 mmol/l 13:16	5.6 mmol/l 16:05	11.9 mmol/l 20:33	17.3 mmol/l 22:24	
20/01/2012	Blood Glucose	15.6 mmol/l 07:15			23.3 mmol/l 14:41	3.3 mmol/l 16:25		17.8 mmol/l 22:00	
19/01/2012	Blood Glucose	13.3 mmol/l 07:14			16.0 mmol/l 13:16	9.7 mmol/l 17:37		16.1 mmol/l 22:38	
18/01/2012	Blood Glucose	9.9 mmol/l 07:15			18.8 mmol/l 14:02	10.1 mmol/l 17:17		7.7 mmol/l 23:41	
17/01/2012	Blood Glucose	13.3 mmol/l 07:14			12.1 mmol/l 13:42	16.6 mmol/l 16:38		5.4 mmol/l 22:26  13.6 mmol/l 23:32	24.7 mmol/l 02:26



# Telemonitoring Activity

- 99 referrals made to Telehealth since April 2009
- 55 actively being monitored end November 2011



# Housebound

- Average return distance from base 15 miles – maximum 30 miles.
- Prior to Telemonitoring average home visit frequency was once every 3 weeks.
- Visits reduced to once every 5 months.
- Potential average annual saving in mileage £52/pt. Translated to the 18 patients in this group equates to approx £ 1000.00

However face-to-face contact ,in the form of a home visit, provides irreplaceable support for patients/carers, and allows the DSN to complete a more holistic assessment , including injection technique/sites/insulin storage/lifestyle, and many other issues.

# Twice daily Insulin Therapy

37 patients	range	average
age	39-84 yrs	65
Duration telemonitoring	5-30 mths	18 mths
Hba1c before	6.3 % – 13.3 %	9.4%
HbA1c after	6.5 % - 10.5%	7.1%



# Basal Bolus Insulin therapy

<b>18 patients</b>	<b>range</b>	<b>average</b>
age	16 – 72 yrs	47.5 yrs
duration	4-24 mths	14 mths
HbA1c before	7.5 – 12.1%	9.2 %
HbA1c after	7.3% - 12.1%	8.7%



# Basal Bolus Insulin therapy

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age	16 – 72 yrs	47.5 yrs
duration	4-24 mths	14 mths
HbA1c before	7.5 – 12.1%	9.2 %
HbA1c after	7.3% - 12.1%	8.7%

# Failed

- 3 patients referred had cancelled prior to installation.
- 2 patients had the equipment installed but never uploaded after installation.
- 14 patients had telemonitoring discontinued as they were non-compliant with uploading readings.



# Local Case Studies



## Case Study - Michael and Marie Farren

Michael Farren, and his wife Marie (now in care), Michael's mother, who had been told that a number of hospital admissions before, before taking care of Marie in Michael's primary care. This is what she had to say about taking care of Marie.

### Before taking care of Marie

Before taking care of Marie, I was a nurse and I had been working for 15 years. I had been working for 15 years and I had been working for 15 years. I had been working for 15 years and I had been working for 15 years. I had been working for 15 years and I had been working for 15 years.

It was a long time before I started to see Marie. I had been working for 15 years and I had been working for 15 years. I had been working for 15 years and I had been working for 15 years. I had been working for 15 years and I had been working for 15 years.



# Case Study 1

- 58 yr old male . Working in Dublin with building contractor as plasterer early Monday till late Friday.
- Time off for frequent clinic attendance results in loss of wages.
- Fears hypos as is often on scaffolding.
- Average HbA1c 2007-2009 - 10.9%
- Telemonitoring commenced April 2009 - HbA1c 10.2%
- Results uploaded from home at weekends
- DSN reviewed fortnightly and contacted wife regarding insulin dose adjustment recommendations.
- Hba1c June 2011 – 8.5%. ( No hypos)





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Improving effectiveness and efficiency of  
***Integrated Diabetes Care***  
through the use of ***remote glucose monitoring***



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