Using Technology to support Self-management in Diabetes

Dr Scott G Cunningham, University of Dundee
Michelle Brogan, Scottish Centre for Telehealth and Telecare
Overview

- Introduction to
  - My Diabetes My Way
  - Remote Monitoring Solution (Diasend)

- Scaling up experiences & outcomes from United4Health Programme in Scotland

- Discussion & Q&A
Diabetes in Scotland

- Scotland’s diabetes prevalence
  - 2002: 103,835 (2%)
  - 2015: 284,123 (5.3%)
- Type 1: 10%; Type 2: 89%; Other types: 1%
- 148,487 (15.3%) aged 65 and over

Number of people recorded with diabetes (all types).
SCI-Diabetes Data Flows

- Laboratory Results
- Master Patient Index
- Retinopathy Screening
- Audit & Reporting
- Primary Care Systems
- Clinical Portal
- Inpatient Linkage
- Scottish Diabetes Research Network
- Patient Access
- Electronic Document Transfer
- Digital Dictation
- Ambulance Service
- Point of Care Blood Glucose Testing

SCI-Diabetes

It's more than just a number
My Diabetes My Way

- Website for patients and carers
- Information leaflets
- Interactive content
  - Videos / Patient Testimonials / Interactive tools
- Validated internal/external content
- Overseen by multidisciplinary group
  - Patients / HCPs / IT professionals
- Live since October 2008

www.mydiabetesmyway.scot.nhs.uk
my diabetes my way is the NHS Scotland interactive diabetes website to help support people who have diabetes and their family and friends.

You’ll find leaflets, videos, educational tools and games containing information about diabetes. You can now also use this website to view your own up-to-date diabetes clinic results, to help you manage your condition more effectively.

Diabetes (know formally as Diabetes Mellitus) is a long-term condition caused by too much glucose, a type of sugar, in the blood. There are over 250,000 people with diabetes in Scotland - that's around one person in every twenty.

In the case of an emergency, view the emergency contact leaflet here.

My Diabetes
Sign up to gain access to your own test results, clinic letters and your treatment plan. Take advantage of this opportunity which is only available in NHS Scotland.

What is Diabetes?
Understand the different types of diabetes mellitus and learn how to manage your type of diabetes. Read about blood glucose monitoring.

My Complications
Learn how poor diabetes control affects your body. Reduce your risk of complications or prevent worsening of existing symptoms. Read about treatment of diabetes complications.

My Medication
Increase your knowledge of the diabetes treatments available for your type of diabetes. Learn about how to administer your medications - insulin and non-insulin treatments are discussed.

My Lifestyle
This section discusses how diabetes affects your life, including topics such as driving, employment, travel and exercising.

My Family
This section contains information to help support you or your family when dealing with diabetes. It covers diabetes and pregnancy and resources for children and parents of children who have diabetes.
If your skin is dry apply a moisturising cream every day, avoiding the areas between your toes. You may need to apply extra moisturising cream if your skin gets very dry in hot or cold weather.

**Toenails**
Carry on cutting your toenails as your podiatrist has advised you to.

**Avoid walking barefoot**
Always wear footwear, even on the beach. The sand can become very warm and you may burn your feet without realising. If you go into the sea, wear some sort of footwear such as plastic shoes to protect your feet. Avoid wearing 'flip-flop' type footwear as they may cause blisters between your toes.

**Prescription shoes**
If you have been supplied with shoes do not wear any other shoes during your holiday (except when you are in the sea).

**Minor cuts and blisters**
Take a small first-aid kit containing sterile gauze dressings and Micropore tape. If you get a small blister, cut or graze, use diluted antiseptic on a gauze swab to clean the wound and tape on a dry sterile gauze dressing. Do not use cotton wool.

**Avoid high or low temperatures**
Protect your feet from sunburn with a high-factor sun protection cream (factor 30 or above) or keep them covered. Do not use dark coloured materials to protect your feet as they absorb heat and you could burn your feet. If you discover any problems with your feet, contact your podiatry clinic or GP for advice immediately.

Happy feet will help you to enjoy your holiday

View the pdf version of this leaflet
Diabetic retinopathy
This video shows you what goes on inside the eye at different stages of diabetic retinopathy.

View the Windows Media Player version of this video.
**Clinical Summary**

**Diabetic Diagnosis/Status**
- **Diabetes Type**: Type 2 Diabetes Mellitus
- **Data of Diagnosis**: 11 May 2014
- **Pregnancy**: No
- **Age at Onset**: 56 Years
- **Duration of Disease**: 6 Months
- **Foot Care Plan**: 
  - **Foot Care Provider**: Other
  - **Foot Care Provider**: Other

**Diabetic Education**
- **Patient Education History**: View and enter detailed education information for this patient
- **Latest Participated Education Record**: 06 Nov 2014 – Level 3
- **My Diabetes MyView**: Not Registered

**Diabetic Complications**
- **CVD**: Yes
- **Endovascular Disease**: Not Recorded
- **PVD**: Not Recorded
- **Neuropathy**: Not Recorded
- **Diabetic Retinopathy**: Not Recorded
- **Eye Disease**: Yes
- **Nephropathy**: Yes

**Diabetes Control (HbA1c)**
- **Overall HbA1c Score**: 6 Aug 2011 8.3%
- **HbA1c**: 53 mmol/mol

**Laboratory Data**

<table>
<thead>
<tr>
<th>Date</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>09-01-2015</td>
<td>5.4</td>
<td>mmol/L</td>
</tr>
<tr>
<td>01-FEB-2011</td>
<td>34</td>
<td>mmol/L</td>
</tr>
</tbody>
</table>

**Creatinine**

<table>
<thead>
<tr>
<th>Date</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>05-May-2015</td>
<td>53</td>
</tr>
<tr>
<td>02-Apr-2015</td>
<td>88</td>
</tr>
</tbody>
</table>

**Uric Acid**

<table>
<thead>
<tr>
<th>Date</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-FEB-2011</td>
<td>3.1</td>
</tr>
<tr>
<td>01-FEB-2011</td>
<td>3.6</td>
</tr>
<tr>
<td>01-FEB-2011</td>
<td>4.0</td>
</tr>
</tbody>
</table>
MDMW Personal Health Record

- Limited to key diabetes data
- Information to explain clinical measurements
- Feedback processes to report errors
- Full system audit trail
- Live since December 2010
- Available to anyone with diabetes in Scotland

www.mydiabetesmyway.scot.nhs.uk
Welcome to the mydiabetesmyway registration page

The project will allow you to access your diabetes information securely. The information is collected from:

- Your GP computer record
- Your hospital clinic computer record
- Other computer systems relevant to diabetes, such as the national retinopathy screening system

If you are still interested in participating, we require you to send us your name, address, email address, date of birth and your CHI number if you know it. Your CHI number is a 10-digit identifier made up of your date of birth and 4 other numbers. You may find it on any hospital letters or your repeat prescription sheet. We need this information to allow us to identify you on our NHS systems and to send you relevant documents such as our enrolment form and your user account details.

Your information will be sent to us securely and we will not share it with any unauthorised third-parties.

Please note that this service is only available to people with diabetes living and registered at a GP Practice in Scotland

Name: 
Address: 
Postcode: 
Email address: 
Date of birth: 
CHI number: 

Submit registration details
When you click on Confirm an email will be sent to mbrillante@nhs.net containing account request details for patient access to My Diabetes My Way.

Patient: BRADY, Gerard
Patient ID/CHI: 0412037173
Date of Birth: 04-Dec-1903
Gender: Male

I confirm that I have verified the identity of this patient.

Confirm  Cancel
My Personal Details

These are the personal details from your diabetes medical record.

If any of them are wrong, please let us know by contacting your diabetes team

- **Date of Birth:** 29/05/1932
- **CHI Number:** 290532V[DC]
- **Address:** A RESIDENCE, SOMewhere IN TAysIDE, DUNDEE
- **Type of Diabetes:** Type 1
- **Year of Diagnosis:** 1995
- **General Practice:**
- **Registered GP:**

Contact your diabetes team | Discussion forum | frequently asked questions
Insulin Injection Technique

Storage of insulin
- Insulin should be stored in fridge 2 - 8 °C
- Insulin in use can remain at room temperature for 4 weeks (5 weeks for Leumir).
- However avoid any exposure to direct sunlight or heat from radiator.

Appearance of insulin
a) Quick Acting (QA) insulins are clear in appearance.

b) Long Acting (LA) Analogues (Lantus and Leumir) are also clear solutions so it is important to check the name on your insulin.

c) Isophane insulins (Humulin I - Insulatard) and Mixed insulins are cloudy. These insulins need to be resuspended because the insulin is bound to a protamine that slows its action. It is therefore essential to mix the insulin so that it is cloudy in appearance through out.

Insulin comes in:
my details | my lifestyle | my results | my eyes | my feet | my medication | my diary | my letters | my goals | my recordings | my summaries

ARCHIBALD MACKIE

My Lifestyle

Height: 1.69 metres (5ft 7in) on 13/01/2016

Weight: 74kg (11st 10lb) on 25/01/2016

Waist Circumference: 90cm on 17/02/2016

BMI: 25.9 kg/m² on 25/01/2016

Influenza Immunisation: [no result]

Smoking Status: Current smoker on 03/02/2016
Cigarettes per day: Smoking 21 cigarettes per day on 03/02/2016

Recorded allergies: More than one allergy recorded.

Manage my Food Diary:
**BMI**

Body Mass Index (BMI) is a measurement of your weight in relation to your height. It is used by healthcare professionals to assess if an individual's weight is putting their health at risk.

For people of European extraction is best to keep your BMI in the range between 18 and 25 kg/m² to reduce the risk of associated health problems.

In higher risk populations (e.g. South Asian and Chinese), the BMI threshold associated with health problems is lower, for example BMI >23 kg/m² may be associated with increase risk of health problems and BMI >27.5kg/m² considered high risk (equivalent to >30 kg/m² in Caucasian populations).

Ref: NICE Public Health Guidance 46.

"Assessing body mass index and waist circumference thresholds for intervening to prevent ill health and premature death among adults from black, Asian and other minority ethnic groups in the UK"
my diabetes my way
...my electronic diabetes record

ARCHIBALD MACKIE

My Test Results

- **HbA1c:** 36.0 mmol/mol (5.4%) on 17/01/2016
- **Blood Glucose:** 4.0 mmol/L on 27/02/2016
- **Blood Pressure:** 130/80 mmHg on 05/02/2016
- **Total Cholesterol:** 4.5 mmol/L on 27/02/2016
- **HDL Cholesterol:** 1.50 mmol/L on 28/01/2016
- **LDL Cholesterol:** 1.2 mmol/L on 28/01/2016
- **Triglycerides:** 2.4 mmol/L on 14/01/2016
- **Creatinine:** 88.0 umol/L on 24/02/2016
- **Albumin/Creatinine Ratio:** > 2 mg/mmol on 12/02/2016
- **eGFR:** > 68 ml/min on 20/01/2016
ARCHIBALD MACKIE
My Target Chart

- **Total Cholesterol**: 4.3 mmol/l, 27/02/2016
- **HbA1c**: 36 mmol/mol, 17/01/2016
- **Body Mass Index**: 25.9, 25/01/2016
- **Blood Pressure**: 130/80, 05/02/2016

**Goal Zones**:
- **Good**: <5 mmol/l
- **Borderline**: 5-6 mmol/l
- **Poor**: >6 mmol/l
- **<53 mmol/mol**: Good
- **53-64 mmol/mol**: Borderline
- **>64 mmol/mol**: Poor

**Blood Pressure Goals**:
- **25-30**: Above 135/85
- **20-25**: 135/85
- **130/80**: Good
ARCHIBALD MACKIE

My Eye Screening

Last Retinal Screening: 07/01/2016

Retinal Status
Right Eye: No Retinopathy on 07/01/2016
Left Eye: No Retinopathy on 07/01/2016

Maculopathy Status
Right Eye: No Maculopathy on 07/01/2016
Left Eye: No Maculopathy on 07/01/2016

Visual Acuity
Right Eye: 6/6 (Corrected) on 07/01/2016
Left Eye: 6/6 (Corrected) on 07/01/2016
**Retinopathy**
This video shows you what goes on inside the eye at different stages of diabetic retinopathy.

If you have difficulty viewing this video please click [alternative player](#).
My Foot Screening

**Foot Risk Category**
- Moderate Risk on 27/01/2016

**Peripheral Pulses**
- **Right Foot**: Present on 27/01/2016
- **Left Foot**: Present on 27/01/2016

**Foot Sensation**
- **Right Foot**: Normal on 27/01/2016
- **Left Foot**: Normal on 27/01/2016

**Monofilaments**
- **Right Foot**: Normal - Foot Unspecified on 27/01/2016
- **Left Foot**: Normal - Foot Unspecified on 27/01/2016

**Foot Vibrations**
- **Right Foot**: Normal on 27/01/2016
- **Left Foot**: Normal on 27/01/2016

Print Options
- Create PDF
- Print this page
Moisturise your feet every day
If your skin is dry, apply a moisturising cream every day, avoiding the areas between your toes.

Toenails
Cut or file your toenails regularly, following the curve of the end of your toe. Use a nail file to make sure that there are no sharp edges which could press into the next toe. Do not cut down the sides of your nails as you may create a ‘spike’ of nail which could result in an ingrown toenail.

Socks, stockings and tights
You should change your socks, stocking or tights every day. They should not have bulky seams and the tops should not be elasticated.

Avoid walking barefoot
If you walk barefoot you risk injuring your feet by stubbing your toes and standing on sharp objects which can damage the skin.

Check your shoes
Check the bottom of your shoes before putting them on to make sure that nothing sharp such as a pin, nail or glass has pierced the outer sole. Also, run your hand inside each shoe to check that no small objects such as small stones have fallen in.

Badly-fitting shoes
Badly-fitting shoes are a common cause of irritation or damage to feet. The professional who screened your feet may give you advice about the shoes you are wearing and about buying new shoes.

Minor cuts and blisters
If you check your feet and discover any breaks in the skin, minor cuts or blisters, cover them with a sterile dressing. Do not burst blisters. Contact your podiatry department or GP immediately.

Over-the-counter corn remedies
Do not use over-the-counter corn remedies. They are not recommended for anyone with diabetes as they can cause damage to the skin that can create problems.

Hard skin and corns
Do not attempt to remove hard skin or corns yourself. Your podiatrist will provide treatment and advice where necessary.

Avoid high or low temperatures
If your feet are cold, wear socks. Never sit with your feet in front of the fire to warm them up. Always remove hot water bottles or heating pads from your bed before getting in.

If you discover any problems with your feet, contact your local podiatry department or GP for advice immediately.

View the pdf version of this leaflet
## My Medication

<table>
<thead>
<tr>
<th>Date</th>
<th>Drug Name</th>
<th>Preparation</th>
<th>Dose</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>29/01/2016</td>
<td><strong>Bendroflumethiazide (Bendrofluazide)</strong></td>
<td>TABS 2.5MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>29/01/2016</td>
<td><strong>Losartan Potassium</strong></td>
<td>TABS 50MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>29/01/2016</td>
<td><strong>Doxazosin Mr</strong></td>
<td>TABS 4MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>29/01/2016</td>
<td><strong>Candesartan Cilexetil</strong></td>
<td>TABS 16MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>29/01/2016</td>
<td><strong>Aspirin</strong></td>
<td>Dispersible TABS 75MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>27/01/2016</td>
<td><strong>Nuseals Aspirin</strong></td>
<td>Ec TABS 75MG</td>
<td>1 TAB</td>
<td>56 tabs</td>
</tr>
<tr>
<td>27/01/2016</td>
<td><strong>Doxazosin</strong></td>
<td>TABS 4MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>27/01/2016</td>
<td><strong>Candesartan Cilexetil</strong></td>
<td>TABS 16MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>27/01/2016</td>
<td><strong>Bendroflumethiazide (Bendrofluazide)</strong></td>
<td>TABS 2.5MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>27/01/2016</td>
<td><strong>Atenolol</strong></td>
<td>TABS 50MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>27/01/2016</td>
<td><strong>Aspirin</strong></td>
<td>Dispersible TABS 75MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>27/01/2016</td>
<td><strong>Alphosyl 2 In 1</strong></td>
<td>Shampoo</td>
<td>Apply</td>
<td>125</td>
</tr>
<tr>
<td>27/01/2016</td>
<td><strong>Bendroflumethiazide (Bendrofluazide)</strong></td>
<td>TABS 2.5MG</td>
<td>1 Tab</td>
<td>84</td>
</tr>
<tr>
<td>26/01/2016</td>
<td><strong>Losartan Potassium</strong></td>
<td>TABS 25MG</td>
<td>1 Tab</td>
<td>28</td>
</tr>
<tr>
<td>25/01/2016</td>
<td><strong>Losartan Potassium</strong></td>
<td>TABS 25MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>24/01/2016</td>
<td><strong>Alphosyl 2 In 1</strong></td>
<td>Shampoo</td>
<td>Apply</td>
<td>125</td>
</tr>
<tr>
<td>23/01/2016</td>
<td><strong>Doxazosin Mr</strong></td>
<td>TABS 4MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>23/01/2016</td>
<td><strong>Atenolol</strong></td>
<td>TABS 50MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>23/01/2016</td>
<td><strong>Candesartan Cilexetil</strong></td>
<td>TABS 16MG</td>
<td>1 Tab</td>
<td>84</td>
</tr>
<tr>
<td>23/01/2016</td>
<td><strong>Bendroflumethiazide (Bendrofluazide)</strong></td>
<td>TABS 2.5MG</td>
<td>1 Tab</td>
<td>84</td>
</tr>
<tr>
<td>23/01/2016</td>
<td><strong>Atenolol</strong></td>
<td>TABS 50MG</td>
<td>1 Tab</td>
<td>84</td>
</tr>
<tr>
<td>23/01/2016</td>
<td><strong>Aspirin</strong></td>
<td>Ec TABS 75MG</td>
<td>1 Tab</td>
<td>84</td>
</tr>
<tr>
<td>22/01/2016</td>
<td><strong>Clarithromycin Mr</strong></td>
<td>TABS 500MG</td>
<td>1 Tab</td>
<td>7</td>
</tr>
<tr>
<td>20/01/2016</td>
<td><strong>Doxazosin</strong></td>
<td>TABS 2MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>20/01/2016</td>
<td><strong>Candesartan Cilexetil</strong></td>
<td>TABS 16MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
<tr>
<td>20/01/2016</td>
<td><strong>Bendroflumethiazide (Bendrofluazide)</strong></td>
<td>TABS 2.5MG</td>
<td>1 Tab</td>
<td>56</td>
</tr>
</tbody>
</table>
About simvastatin

Type of medicine
A lipid-regulating medicine commonly known as a statin

Used for
Lowering cholesterol and other lipids in the blood; to reduce the risk of heart and blood vessel disease

Also called
Simvastatin®; Zocor®; and Inegy® (a combination of simvastatin with a medicine called zetia)

Available as
Tablets and oral liquid medicine

Lipids, or fats, are made naturally in your body from the food you eat. They are easily stored in your body and serve as a source of energy. Cholesterol and triglycerides are types of lipid. If the concentration of these lipids in your blood becomes too high, it leads to a condition called hyperlipidaemia. If it is the concentration of cholesterol which has become too high, it is called hypercholesterolaemia. Although a high blood concentration of lipids will not make you feel ill, it can cause a problem if it is left untreated.

People with high lipid levels can develop small fatty patches called atheroma. These patches develop when excess fat is deposited on to the walls of blood vessels. Over time, these patches can make a blood vessel narrower and this is called atherosclerosis (sometimes referred to as ‘hardening of the arteries’). The narrowing reduces the blood flow through the artery and increases the risk of a number of heart and blood vessel diseases, such as heart attack and stroke.
ARCHIBALD MACKIE

Care Measures Summary

<table>
<thead>
<tr>
<th>Patient Name:</th>
<th>ARCHIBALD MACKIE</th>
<th>Address:</th>
<th>A RESIDENCE, SOMEWHERE IN TAYSIDE, DUNDEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Birth:</td>
<td>29/05/1932</td>
<td>CHI Number:</td>
<td>290532V[DC]</td>
</tr>
<tr>
<td>Type of Diabetes:</td>
<td>Type 1</td>
<td>Year of Diagnosis:</td>
<td>1995</td>
</tr>
</tbody>
</table>

There's a minimum level of care that every person who has diabetes deserves and should expect from their health service. Getting all the checks, seeing the right healthcare professionals and understanding your diabetes are all essential in helping you manage your condition. Use this checklist to make sure you're getting all the care you need.

Get your blood glucose levels measured. 4.0 mmol/L on 27/02/2014

**X** You should have an annual HbA1c blood test to measure your overall blood glucose control. Although there are recommended targets, no two people with diabetes are the same and your target should have been agreed by you and your diabetes healthcare team.

Have your blood pressure measured. 130/80 mmHg on 05/02/2016

✔ You should have your blood pressure taken and recorded at least once a year. There are recommended targets but you should have a target that is right for you.

Have your blood fats (cholesterol) measured. 4.5 mmol/L on 27/02/2014

**X** You should have an annual blood test to measure your cholesterol level. Like blood glucose and blood pressure, you should have your own target that is realistic and achievable.

Have your eyes looked at. 07/01/2016

✔ You have the right to have your eyes screened for signs of retinopathy every year. Using a specialised digital camera, a photo of your eyes is taken and examined by a specialist who is looking for any changes to your retina (the seeing part at the back of your eye).

Have your legs and feet checked. Moderate Risk on 27/01/2016

✔ The skin, circulation and nerve supply of your legs and feet should be examined annually. If there is any risk to your limbs, you should be referred to a podiatrist or a specialist foot clinic.

Have your kidney functions monitored. > 68 ml/min on 20/01/2016

✔ You should have two tests for your kidneys each year. A urine test checking for protein - a sign of possible kidney problems - and a blood test measuring the rate at which blood is filtered by the kidneys.

Have your weight checked. 74kg (11st 10lb) on 25/01/2016

✔ You should be weighed and have your waist measured to see if you need to lose weight.
# My Data Trends

<table>
<thead>
<tr>
<th>Result</th>
<th>Previous result</th>
<th>Current result</th>
<th>Change</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c</td>
<td>48 (6.5%) on 12/07/2008</td>
<td>36 (5.4%) on 17/11/2011</td>
<td>-12</td>
<td>Your HbA1c has decreased since your last measurement and is on target. <strong>Click here</strong> to find out how to maintain your healthy level.</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>25.6 kg/m² on 04/10/2014</td>
<td>27.3 kg/m² on 20/11/2014</td>
<td>1.7</td>
<td>Your weight is <strong>74 Kg</strong>. Your ideal weight based on your height is between <strong>53 Kg</strong> and <strong>71 Kg</strong>. Losing weight will reduce your risk of diabetes complications. <strong>Click here</strong> to find out how to maintain a healthy level.</td>
</tr>
<tr>
<td>Waist Circumference</td>
<td>100cm on 02/02/2015</td>
<td>84cm on 20/02/2015</td>
<td>-16</td>
<td>Your Waist circumference is normal and lower than last result. <strong>Click here</strong> to find out how to maintain a healthy level.</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>120/80 mmHg on 17/02/2014</td>
<td>180/70 mmHg on 24/03/2014</td>
<td>60</td>
<td>Your blood pressure is significantly above target and is higher than your last result. Keeping your BP in target will reduce your risk of heart attack, stroke &amp; kidney problems. If your blood pressure is regularly above target you should discuss your medication with your health care provider. <strong>Click here</strong> to find out how to maintain a healthy level.</td>
</tr>
<tr>
<td>Cholesterol</td>
<td></td>
<td></td>
<td></td>
<td>Your Cholesterol is slightly above target but lower than your last result.</td>
</tr>
</tbody>
</table>
HbA1c is an important measure of your overall sugar level over the last 2-3 months. Ideally this should be somewhere between 48 - 58 mmol/mol (6.5 – 7.5%). For type 2 diabetes, sugar levels can be improved by regular exercise, maintaining a normal body weight, eating a healthy balanced diet, avoiding high sugar foods and taking any diabetes medication regularly. If HbA1c remains above target despite this, you should discuss with your health care provider whether your medication needs changed. For people with type 1 diabetes, it is important to balance the amount of insulin with your food (carbohydrate) intake and activity levels.

The higher your HbA1c is above target, the greater your risk of diabetes complications affecting kidney, eyes, feet and heart.

Self-monitoring of blood glucose is a beneficial part of diabetes management for some people. Blood glucose levels in people without diabetes are 3.5–5.5mmol/L before meals and less than 8mmol/L 2 hours after meals. People with diabetes often have targets around 5-7mmol before meals (lower in pregnancy).

Want more information?

What is HbA1c?
Healthy eating
10 steps to eating well
Monitoring Diabetes
Diabetes Complications
Hypoglycaemia (low blood sugars)
### My Goals Summary

Setting goals is a good way of focusing on specific aspects of your health that you wish to improve.

Here is a summary of the goals you have set yourself, with achievement dates. Try to set goals that are realistic and review and revise your goals regularly. Sharing your goals with your health care team and friends and family can help provide the support and knowledge you need to make these positive changes.

Good Luck!!

<table>
<thead>
<tr>
<th>Result</th>
<th>Current Result</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HbA1c</strong></td>
<td>36.0 mmol/mol (5.4%) on 17/01/2016</td>
<td>No goal set</td>
</tr>
<tr>
<td><strong>Blood glucose</strong></td>
<td>4.0 mmol/L on 27/02/2014</td>
<td>4.0 mmol/L by 01/09/2016</td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td>4.5 mmol/L on 27/02/2014</td>
<td>4.4 mmol/L by 27/04/2016</td>
</tr>
<tr>
<td><strong>Blood pressure</strong></td>
<td>130/80 mmHg on 05/02/2016</td>
<td>130/90 mmHg by 01/06/2016</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>74kg (161 lb) on 25/01/2016</td>
<td>No goal set</td>
</tr>
<tr>
<td><strong>Waist circumference</strong></td>
<td>90cm on 17/02/2016</td>
<td>No goal set</td>
</tr>
<tr>
<td><strong>Smoking status</strong></td>
<td>Current smoker on 03/02/2016</td>
<td>No goal set</td>
</tr>
<tr>
<td><strong>Cigarettes per day</strong></td>
<td>Smoking 21 cigarettes per day on 03/02/2016</td>
<td>Reducing cigarettes to a maximum of 5 per day by 01/09/2016</td>
</tr>
</tbody>
</table>
Manage My Blood Glucose Goal
Maintaining blood glucose levels as close to the normal range as possible, and reducing large swings in blood glucose is important. Good blood glucose control will reduce your risk of long term complications but also help you maintain good energy levels and a positive mood.

Current result: 4.0 mmol/L on 27/02/2014

Suggested goal:
These blood glucose targets below are a rough guide. Your own health care professionals may give you a different target depending on your age, type of diabetes and medication. Pre-meal or fasting blood glucose levels will be lower than blood glucose levels checked after meals.

Add or amend Your goal
Blood glucose: mmol/L
Timescale: Please select
Comments:

Your current goal
Your goal: 4.0 mmol/L by 01/09/2016
Your comments: Reducing my Blood Glucose goal

Clinical guidelines
Your clinician would normally aim to have your Blood Glucose between 4 and 8
Contact Your Diabetes Team

Please use this page to ask us a question or to view history of your current questions.

You can also use it to report any technical problems you are having with the website. If you notice that there is something wrong with your information, or it is not updating, then we will get back to you as soon as we can.

Please note: this service is for non-urgent clinical queries. You should expect to receive a response within 3 working days. If you have an urgent medical problem then please contact your medical team by telephone.

Ask a new question

<table>
<thead>
<tr>
<th>Subject</th>
<th>Status</th>
<th>Amended on</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diasend Upload software</td>
<td>Opened</td>
<td>01/03/2016 (14:26)</td>
</tr>
<tr>
<td>HBA1c</td>
<td>Read</td>
<td>01/03/2016 (14:25)</td>
</tr>
</tbody>
</table>
How does HbA1c return an accurate average measurement of average blood glucose?
Your conversation for the question "HBA1c"

Add reply / more information  Back to your questions

<table>
<thead>
<tr>
<th>Message</th>
<th>Amended on</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the body processes sugar, glucose in the bloodstream naturally attaches to haemoglobin. The amount of glucose that combines with this protein is directly proportional to the total amount of sugar that is in your system at that time. Because red blood cells in the human body survive for 8-12 weeks before renewal, measuring glycated haemoglobin (or HbA1c) can be used to reflect average blood glucose levels over that duration, providing a useful longer-term gauge of blood glucose control. If your blood sugar levels have been high in recent weeks, your HbA1c will also be greater.</td>
<td>01/03/2016 (14:25)</td>
</tr>
<tr>
<td>How does HBA1c return an accurate average measurement of average blood glucose?</td>
<td>01/03/2016 (14:23)</td>
</tr>
</tbody>
</table>
Records Access – Current Status

- 10,312 people have accessed their records
Evaluation

- Survey – opinions following system use:
  - 87% - reminders of information discussed
  - 89.6% - better use of consultation time
  - 94.2% - improved understanding
  - 95.9% - helped to monitor changes over time
  - 88.2% - helped manage diabetes better

- Significant improvements in outcomes:
  - HbA1c (p < 0.001) 1.53 mmol/mol
  - Total cholesterol (p=0.002); HDL (p=0.012); LDL (p=0.001); Diastolic BP (p=0.007); weight (p=0.003)
Anecdotal Feedback

- The knowledge provided helps me understand the normal parameters and where I stand/can improve...
- more information available to me means I can play a more positive role in my treatment...
- Great site and like having the long term history available to put current results in perspective...
- It is great to be able to view all of my results so that I can be more in charge of my diabetes...
- What a fab resource, wish we had this in @NHSEngland
What’s Next?

- Further Developments
  - Parent and carer access
  - eLearning modules – in pilot
  - Smartphone App
  - Virtual clinics
  - Data integration and analytics
  - Notifications and alerts
Diabetes Nurse: How's things?

AM: Here's My sugar levels today

0900 - 4.4, 12.00 - 5.2, 1600 - 7.1,

What do you think?
Patient-recorded Data

- Mobile: >1,300 diabetes apps!
- Wearable technology: pumps, CGM, activity
- Home monitoring: BG, BP, weight, CHO

Other Third-party Apps

Apple Health

fitbit

mydiabetes +myway
...my electronic diabetes record

 diasend
Patient-recorded Data

SCI-Diabetes

Data Analytics Engine

Notification and Alert Engine

mydiabetes*myway
...my electronic diabetes record
Diabetes Control (HbA1c)
HbA1c is a measure of average blood sugar over the past 8-12 weeks. Its levels are associated with risk of complications.

<table>
<thead>
<tr>
<th>Date</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/04/2014</td>
<td>90</td>
</tr>
<tr>
<td>10/07/2014</td>
<td>75</td>
</tr>
<tr>
<td>15/10/2014</td>
<td>72</td>
</tr>
<tr>
<td>Latest</td>
<td>52</td>
</tr>
</tbody>
</table>

Target: 53 mmol/mol

Weight (BMI)
BMI (body mass index) assesses your weight in relation to your height.

<table>
<thead>
<tr>
<th>Date</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/04/2014</td>
<td>30.0</td>
</tr>
<tr>
<td>10/07/2014</td>
<td>29.8</td>
</tr>
<tr>
<td>15/10/2014</td>
<td>29.1</td>
</tr>
<tr>
<td>Latest</td>
<td>30.0</td>
</tr>
</tbody>
</table>

Target: 25.0 kg/m²
Raising Awareness

● Primary Care Mailout
  – List of unregistered patients supplied
  – Review to exclude inappropriate patients
  – Letter sent out on practice headed paper
  – All postage and stationery paid by MDMW
ARCHIBALD MACKIE

My Recordings

In future, we plan to make your home-recorded results available to your health care teams to assist them in better managing your condition. At present, these results are not routinely reviewed, so if you have any concerns or questions, please contact your regular care provider.

You are currently recording your Blood Glucose. Click to change

Enter your Blood Glucose recording in mmol/L

Enter the date and time the recording was made

Save
Name
First name (*)  Last name (*)  Personal ID  EMR Patient ID  EMR Destination
Gerald  Brady  

Personal details
Address  Home phone  Mobile  Work phone
A residence somewhere  
E-mail  E-mail
gbrady@somemail.net  

User name of the patient (unique identification)
Allow patient to log in to the diasend® system and view reports.
The patient needs to be registered with a unique identification in the diasend® system. If the patient wants to log in to diasend® and see the data he/she could use this user name and password. The password must have at least 8 characters.

User name
Gbrady_01

Enter new password

Repeat new password
mydiabetes myway
...my electronic diabetes record

my details | my lifestyle | my results | my eyes | my feet | my medication | my diary

JUSTA TEST
My Preferences
These are your preferences - you can change them at any time.

Email address: mydiabetesmyway@nhs.net Email address verified - change

You are not subscribed to the "My Diabetes My Way" newsletter - change

Mygovscot myaccount
Manage your "myaccount" username - change
Manage your "myaccount" password - change

feedback | frequently asked questions

Uploading status
Accu-Chek® Aviva
Transmitting data to diasend.com

Please disconnect your device from the computer!
### Glucose Logbook/Table

**Joe Blogg**

Information from glucose and/or CGM device is available from the period: 14/03/2014 - 24/02/2016

**Period:** 12/02/2016 - 25/02/2016, 14 days

- **Include manually entered records**

| mmol/L | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | Daily totals |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|
| Fri 12/2 | 7.5   | 6.4   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 7.5 mmol/L |
| Sat 13/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 7.5 mmol/L |
| Sun 14/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 6.4 mmol/L |
| Mon 15/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 5.6 mmol/L |
| Tue 16/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 6.0 mmol/L |
| Wed 17/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 5.5 mmol/L |
| Thu 18/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 5.7 mmol/L |
| Fri 19/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 4.3 mmol/L |
| Sat 20/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 6.3 mmol/L |
| Sun 21/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 4.2 mmol/L |
| Mon 22/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 7.2 mmol/L |
| Tue 23/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 5.0 mmol/L |
| Wed 24/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (1): 7.4 mmol/L |
| Thu 25/2 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Average (0): -- |

- **Number of values:** 15
- **Values per day:** 11
- **Period average (mmol/L):** 5.7
- **Values above goal (10 mmol/L):** 0
- **Values within goal (4-10 mmol/L):** 14
- **Values below goal (4 mmol/L):** 1
- **Highest value (mmol/L):** 7.5 (12/02/2016 00:33)
- **Lowest value (mmol/L):** 3.7 (21/02/2016 16:08)
- **Standard deviation:** 1.1

**Comments:**

- Show

---

**General Terms and Conditions & Privacy Policy**

R&D Ltd
Dr Scott G Cunningham, Technical Consultant
scott.cunningham@nhs.net
www.sci-diabetes.scot.nhs.uk
www.mydiabetesmyway.scot.nhs.uk

@MyDiabetesMyWay
www.facebook.com/mydiabetesmyway
Scaling up in Routine care - Technology to support Self Management

- Potential to increase provider productivity, deliver cost savings, reduce avoidable service use and improve health outcomes
- Digital technologies can empower patients and carers by giving them more control over their own health & increase patient “activation” levels *
- Targeted appropriately support improvements in HBA1c, self efficacy *
- Wide scale adoption of TEC will be essential for sustainability of future health and care services

Scaling up Digital Health & Care

- Patient uptake and engagement with digital & online tools
- Overcome cultural & regulatory barriers
- Technology Integration so patients really benefit
- Right infrastructure & environment conditions
- What implementation/engagement strategies support "Scale up"?
- Increase patient access to digital information to support self-management.
Support and facilitate the redesign and delivery of services through digital Home Health monitoring

Large Scale Deployment in routine care

- Clinical & Economic Impacts
- Critical Success Factors for scale up

NHS 24/SCTT lead co-ordinator across consortium with 14 regions & 34 partners

www.united4health.eu
NHS 24/ SCTT led a collaboration with 3 Health Board Regions, Diabetes Clinical Leads, SCI Diabetes

- Preparation for deployment
- Phase 1 “Kick off – Target 100
- Phase 2 Expand to more sites & Primary Care
- Phase 3 Evaluation Consolidation Sustainability

Project Start: March 2013
Project End: January - September 2015
Active MDMW Users: Scotland v U4H
U4H Diasend: % of Target
Tele-monitoring in Diabetes can be deployed into routine care at scale

Clinical Effectiveness - Improved Diabetes control

Patient Satisfaction - Positive patient response

Fewer face to face GP/Consultant consultations – shift more self management

Lower hospital admission rates
Critical Success Factors

- Technology - to meet changing needs of population (Smart phone v laptop)
- Effective integration through service redesign
- Clinical Leadership at early stage
- More about people than technology
- More co-design with service users.

www.mydiabetesmyway.scot.nhs.uk
What next?

- Growing Diasend and MDMW registrations – uptake issues
- SCI DC improve BGM monitoring functionality
- Benefits Realisation / Evaluation/ Sustainability
- Policy Mandate to accelerate spread across Scotland of Digital remote monitoring through National TEC programme
Diasend – Clinician & Patient Prospective.

https://youtu.be/6NhytEiRQDo
Thank You

Any Questions?