

# Diabetes Improvement Plan

November 2014

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## Foreword



The Quality Strategy (2010) set out a vision for NHSScotland focusing on safe, effective and person-centred care. This vision is central to our approach to the Improvement Plans across clinical priority areas such as diabetes, heart disease and stroke.

This Diabetes Improvement Plan identifies and prioritises what we value. In developing this plan we recognise that we won't always immediately hit upon the perfect solution. What is important is that we all work together to develop what works best for the people of Scotland - that we strive for improvement through 'doing', 'trying' and 'testing', making sure that we continually build upon what works best for patients.

Those working at the frontline of clinical care and those who have personal experience of diabetes are the ones who best understand the problems and more importantly have the ideas on how to most effectively address them. It is important that in seeking to implement and deliver the key priorities set out in this Improvement Plan people feel supported and empowered to work creatively together to deliver better care.

It is also important that we continue to encourage collaborative infrastructure and networks for improvement in Scotland which ensure that the focus of care is truly person-centred. Indeed, we must also link this approach clearly to our commitment to provide high quality services to the growing number of people living longer with more than one condition.

I hope that other clinical areas can learn from the approach outlined within this Plan and draw upon it to think about how patient care can be improved in their area, through an approach that is clear about our aims and about the role that each of us has in improving outcomes for patients.

I want to take this opportunity to thank everyone involved in improving patient care for your efforts to date and to ask you to continue those efforts to deliver even better outcomes and experiences for the people of Scotland.

A handwritten signature in black ink that reads "Maureen Watt". The signature is written in a cursive, flowing style.

Maureen Watt, MSP  
Minister for Public Health

# 1. Introduction

## Context

1. One in 20 people in Scotland have diabetes. There were 268,154 people diagnosed with diabetes in Scotland recorded on local diabetes registers at the end of 2013<sup>1</sup>. This represents 5% of the population. Crude prevalence of diabetes ranged from 4.34% to 5.8% across NHS Boards. The majority of people living with diabetes (88.2%) have type 2 diabetes and nearly 11% have type 1 diabetes. Annex A sets out these figures in more detail.

2. The Scottish Public Health Observatory (ScotPHO) has estimated that there are 49,000 people who have undiagnosed type 2 diabetes. In addition, Diabetes UK estimates previously suggested there are approximately 620,000 people in Scotland who are at high risk of developing type 2 diabetes. However they now consider this figure to be higher<sup>2</sup>.

3. The increasing prevalence of diabetes puts more and more pressure on diabetes services. For example, over the last decade the number of primary care contacts because of diabetes has risen by a quarter to an estimated 800,000 contacts per year<sup>3</sup>. Diabetes services have worked extremely hard to absorb these pressures but new innovative approaches are required in order to continue to improve care into the future.

4. The rising numbers of people with diabetes comes at a heavy price both for individuals and their families, but also to the NHS and the economy. The York Health Economics Consortium recently calculated that diabetes currently accounts for approximately 10% of the total health resource expenditure in the UK and is projected to account for around 17% in 2035/36<sup>4</sup>. They note that complications related to diabetes account for a substantial proportion of the direct health costs and that as prevalence increases, the cost of treating complications will grow if current care regimes are maintained.

5. Compared with the white population, type 2 diabetes is up to six times more common in people of South Asian descent and up to three times more common in those of African and African-Caribbean descent. The average age at diagnosis is younger and relative risk of death at any age between three and six times higher in minority ethnic groups.

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<sup>1</sup> Scottish Diabetes Survey 2013 (June 2014)

<http://www.diabetesinscotland.org.uk/Publications/SDS2013.pdf>

<sup>2</sup> Diabetes UK Position Statement (September 2014)

<http://www.diabetes.org.uk/Documents/About%20Us/What%20we%20say/diabetes-uk-position-statement-early-identification-type-2-0914.pdf>

<sup>3</sup> ISD Scotland, Practice Team Information (PTI) Statistics - <http://www.isdscotland.org/Health-Topics/General-Practice/GP-Consultations>

<sup>4</sup> Hex N, Bartlett C, Wright D, Taylor M, Varley D: (2012) Estimating the current and future costs of type 1 and type 2 diabetes in the UK, including direct health costs and indirect societal and productivity costs. *Diabetic Medicine* 29: 855–62

## Quality Strategy and the Route Map

6. The NHS Scotland Quality Strategy (2010) is the blueprint for improving the quality of care that patients and carers receive from the NHS across Scotland. It sets out ambitions which acknowledge:

- Putting people at the heart of everything the health service does;
- A focus on providing the best possible care; and
- Recognition that real improvement in quality of care involves all staff, both clinical and non-clinical, working at all levels in all roles.

7. The publication of the Quality Strategy, with its ambition for world class health care, encourages us all to aim for services that at least match the best that can be found elsewhere in the world. The Quality Strategy remains our vision and the anchor point which we should continually reference as we move forward.

8. Building on the Quality Strategy and emphasising the continued commitment to pursuing the three Quality Ambitions of Safe, Effective and Person-centred care, the Route Map to the 2020 Vision for Health and Social Care (2013) sets out a new and accelerated focus on 12 priority areas for action. The Route Map maintains the focus on improving quality at scale with regard to both health and social care. Working in partnership – across Scottish Government, with the wider public sector, the third sector, staff and with patients - has been crucial to our past successes and will remain so as we progress further in our ambition to deliver safe, effective and person-centred-care. Annex B maps the Diabetes Improvement Plan priorities against those of the Route Map.

## Quality Improvement

9. Since 2013, the Scottish Government has been encouraging the use and implementation of the 3 step Improvement Framework for Scotland's Public Services. This has been supported further by the publication of the NHSScotland Quality Improvement Hub document on 'the spread and sustainability of quality improvement in healthcare' which identifies the factors vital to plan for at the onset of improvement work to optimise spread and sustainability. Further information on resources available is provided in Annex C.

10. This approach is not about developing something new but about unlocking and channelling the collective knowledge and energy of people towards a common goal of real and lasting improvement.

11. The methodology of the 3 Step Improvement Framework is designed to prompt self-assessment and debate. It is about getting started and 'doing': creating conditions for and implementing the improvements that will make a difference. It is easy to become distracted by a series of assumptions based on how things have always been rather than try something new. It is about encouraging people to work together locally to test and try new approaches and, where successful, work with our national advisory structures to ensure that there is spread and sustainability of these approaches.

12. In developing this Improvement Plan we have taken a partnership approach involving and engaging our national advisory group - the Scottish Diabetes Group –

and its constituent parts. Successful implementation of this work will depend on continued collaboration between all those involved.

13. There are already a number of examples of a quality improvement (QI) approach being applied by the diabetes community, e.g. 'think, check, act', which is the new name for the Diabetes in Scottish Hospitals (DiSH) project. The challenge is to ensure that systematic quality improvement approaches are implemented more widely.

### A Network Approach

14. Managed Clinical Networks (MCNs) have a crucial role in the continued development of structures and services to help support and influence the quality improvement of care and are the key vehicle for the delivery of our improvement aims. The functions and benefits of the MCN approach was most recently set out in July 2012<sup>5</sup>. We encourage Boards to ensure that their MCNs are fit for purpose with a lead clinician working alongside a network manager to provide strong clinical leadership and working in collaboration with patients.

### Person-centred Care

15. If care is to be truly person-centred then any improvement work must not just be about health issues but also about social care. Integration of health and social care is the Scottish Government's ambitious programme of reform to improve services, ensuring that health and social care provision across Scotland is joined-up and seamless. This Improvement Plan includes priorities relating to living with the condition.

16. The Scottish Government is taking forward a range of activity to further enhance person-centred care and ensure that the patient experience informs the development of health and social care. The House of Care is a framework which when implemented will help to achieve the delivery of coordinated person-centred care. The model is built on quality improvement methodology, supported by empowered patients and carers working in collaboration with healthcare practitioners to enable change at an organisational level. Central to its success is the interaction between patients and practitioners of care and support planning. Work in Scotland to adopt care and support planning supported by the House of Care framework is currently being aimed at general practitioners (GPs) but also has specialist involvement. This will build skills that support relational care responsive to the needs of people living with long term conditions through individualised care planning and goal setting. Specific activity is also in progress within the diabetes community in the three early adopter sites.

17. Listening and responding to the experiences of people using health and social care is an important part of informing the development of person-centred services. We need to build on the successes of existing initiatives which have been developed across a number of long term conditions including diabetes (such as Patient Voices) and for people to provide direct feedback at a local level regarding their experience of care (such as Patient Opinion). The Scottish Government is working with Healthcare

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<sup>5</sup> Managed Clinical Networks: Supporting and Delivering The Healthcare Quality Strategy - CEL 29 (2012)

Improvement Scotland and the Health and Social Care Alliance (the ALLIANCE) to develop a mechanism to ensure that the patient voice is heard at a national level.

18. As the integration agenda progresses we are committed to ensuring that we work with patients to ensure that any forthcoming priorities reflect their needs. Person-centred care will also mean recognising that many people live with more than one condition, that is have multi-morbidities, and as we take this work forward we must endeavour to ensure a holistic approach to their care.

## Diabetes Care

19. The Diabetes Action Plan 2010: Quality Care for Diabetes in Scotland was centred around the principles of the Quality Strategy and was intended to drive up standards of care through genuine involvement of people with diabetes, sharing of outcome information and the promulgation of best practice. The new Diabetes Improvement Plan builds on progress to date, describes priority areas for improvement and outlines expectations in the context of new approaches to quality improvement (which are set out in more detail below).

## 2. Diabetes in Scotland

### Progress to Date

20. Considerable progress has been made since the Diabetes Action Plan was published in 2010. The annual Scottish Diabetes Survey describes the continued improvement in recording of key diabetes parameters despite the increasing number of people with diabetes in Scotland. This reflects the strength of the healthcare community supporting people with diabetes in Scotland, the active engagement with people living with diabetes and the support of the Scottish Government and the third sector. Some of the notable initiatives which the Scottish Diabetes Group has supported in recent years are highlighted below.

### Diabetes in Childhood and Adolescence

21. The setting up of the Childhood and Adolescent sub group in 2011 has acted as a catalyst to push forward developments in paediatric and adolescent diabetes services. This multidisciplinary group has:

- Provided the support (e.g. tailored feedback) to enable all clinics to focus on improving the poor HbA1c levels in children and young people.
- Enhanced the paediatric pages in SCI-Diabetes so that it is now being used in all paediatric clinics.
- Produced "Supporting Children and Young People with type 1 Diabetes in Education" to help provide clarity and promote a team approach for young people with diabetes in schools.
- Under an umbrella project called "Making Connections" and working with the clinics, Diabetes Scotland and young people, the Group is developing and implementing a programme to improve adolescent transition. A unique feature of this initiative is the training of young people to work with local transition services to deliver workshops, support young people or facilitate the local use of social media. The aim is to help young people to develop the life skills and self-reliance during transition (16-25 yrs) that should encourage greater engagement with adult diabetes services in the future.

### Insulin Pump Therapy

22. During the last three years there has been a significant increase in the number of people with type 1 diabetes using insulin pump therapy. As of September 2014 over 2,340 people in Scotland are using an insulin pump – over 5% of the total number of people over 18 with type 1, and more than 1 in 4 children and young people. This form of insulin delivery has made a big difference to those who have received it. Successful insulin pump therapy is only possible following intensive work by the patient in association with the local diabetes team. This achievement has required significant redesign of many diabetes teams and the support of Scottish Government and NHS Boards.

### Psychology in Diabetes, Psychology and Diabetes (PiD-PaD)

23. Psychologists have a key role to play in education and training; service design; improving self-management, and person-centred care and helping staff support



people with diabetes manage their condition as best they can. Sponsored by the Scottish Diabetes Group the PiD-PaD psychologists working across five health boards (2.0 wte) have trained over 500 primary and secondary care staff in how to understand and change health-related behaviours using evidence-based methods that ensured generalisation to everyday clinical practice. An important element of this training was the availability of psychologists in diabetes services to support staff in their efforts to use these new skills. Alongside other clinical and health psychologists from across Scotland the PiD-PaD team delivered the first national training conference in 2012 on understanding and changing health-related behaviours, an event which was both well attended and very positively evaluated.

### Diabetes Clinical Management System and Audit

24. Delivery of diabetes care involves collection and analysis of core diabetes information which influences clinical decisions. Many different healthcare professionals are involved and it is therefore important that key information is available to all of those who need this, no matter where or when it is gathered. Within Scotland we have developed and use SCI-Diabetes to do this. This is recognised as a world leading system collecting core diabetes data from the whole population with diabetes in Scotland. During the last two years an update of SCI-Diabetes has been introduced to all diabetes centres in Scotland, replacing a previous clinical system.

25. Analysis of the data can be at many different levels - individual patient data changing over time, hospital clinic or GP surgery data used to compare and improve services, or at NHS Board or Scotland wide information for national or international comparison to stimulate discussion and improvement. Linking of the information with clinical management systems has also enabled the identification of inpatients with diabetes in hospitals to aid improvement in their management.

26. An international comparison of HbA1c values for our population with type 1 diabetes has stimulated a desire to improve this in Scotland. SCI-Diabetes data is now being used to support improvement in individual clinics through the use of run charts.

### Scottish Diabetes Research Network

27. The Scottish Diabetes Research Network (SDRN) supports clinical and epidemiological research across Scotland. The network supports 6 research nurses and has made a positive contribution in increasing trial activity in Scotland. There were a total of 1202 patient trial visits in 2009 and 3667 last year. In the last year, the SDRN portfolio included 67 research projects. Individual trials include internationally funded trials in type 1 diabetes (Bioresource), a range of commercial trials of novel therapies for people with diabetes, a ground breaking multicentre trial of insulin pump therapy (REPOSE), and novel trials of pharmacogenomics (DIRECT).

28. Using information generated through SCI-Diabetes, linked to other data within NHS Scotland, to examine many aspects of diabetes care and science, the network's epidemiology group has continued to improve our understanding of the impact of changing diabetes care on our population, the complications associated with diabetes and the development of new therapies.

29. Achievements include in depth examination of the diabetes retinal screening programme, of contemporary mortality in people with type 1 diabetes, rates of amputation in people with diabetes and examination of safety aspects of diabetes medication including insulin glargine and thiazolidinediones. Importantly SDRN epidemiology has also facilitated the use of routine datasets for longer term follow up of clinical trials (e.g. WOSCOPS) and specialised patient cohorts (e.g. the SCOTS study of patients undergoing obesity surgery) - making Scotland a more attractive site for a range of future research studies.

## Education

30. The past three years have seen significant improvements in patient education throughout Scotland. This progress has been overseen by the Diabetes Education Advisory Group, and coordinated and supported by the national education lead and local MCN education leads. Through consultation documents, discussions and workshops, a consensus was reached on the essential criteria for what constitutes structured patient education. Criteria for ensuring a professional is a trained educator were developed and agreed. A process was developed to review and ensure that current patient education meets the recommended criteria and healthcare professionals, people with diabetes and carers from most of the Health Boards have now been trained as reviewers of patient education programmes.

31. It is important that patient education courses are tailored to suit local circumstances, but crucial that they are of an appropriate standard. The process developed can provide reassurance to people with diabetes and those delivering the courses that these meet our quality standards. The delivery of accredited structured education can now be recorded on SCI-Diabetes. With this in place, the delivery of structured education across Scotland can be measured to ensure that people with diabetes are able to access the education support they require.

## Inpatient Diabetes

32. In 2012, in conjunction with the national NHSScotland Quality Improvement Hub, three Scottish Health Boards tested the NHS Diabetes Think Glucose approach to improving inpatient care, where diabetes is a secondary condition. Improvements were seen in hypoglycaemia management, insulin prescribing, early identification of patients with diabetes and rates of hypoglycaemia. The results and experience from the testing have led to NHSScotland Quality Improvement Hub developing a package of measures, interventions and education, using improvement methodology, for roll out across Scotland. The economic implications of improving diabetes care in hospital are being evaluated as part of the on-going work.

## Foot care

33. Led and supported by the Scottish Diabetes Foot Action Group, a cohesive national Diabetic Foot network has been established dedicated to service improvement and better patient outcomes. This network has delivered a number of significant improvements including:

- National foot risk stratification. The number of patients with a foot risk stratification at any time has increased from 25% in 2007 to 91% in 2013; the variation between different parts of the country has greatly reduced; and traffic light risk stratification developed by the network (and highlighted in the 'Putting

Feet First' campaign) is now being used UK wide and across many other countries.

- Nationally agreed patient information leaflets are now in use.
- Education programmes for staff have been implemented e.g. over 10,000 professionals have used the on line foot risk stratification module; and a podiatry competency framework for integrated diabetic foot care has been developed.
- A national inpatient foot care initiative ("CPR for diabetic feet") has been launched.

### 3. Priorities for Improvement

34. All aspects of diabetes care are important and matter to people living with diabetes. Therefore, whilst the improvement plan focuses energy and attention on specific areas for improvement, it is vital to recognise that many areas of activity which are not highlighted here are nevertheless issues which will continue to require sustained effort to maintain and continuously improve outcomes for patients.

35. The scale of the cost and the challenge means that diabetes is a priority for all NHS Boards. However, it is also clear that NHS Boards must balance finite resources against many pressing demands and important issues. Therefore this Plan is built upon an assumption that the changes envisioned will be largely enacted through a strong focus on improvement methodologies and collaboration, working within existing funding and investment mechanisms. This needs to be underpinned by a strong infrastructure (e.g. robust clinical data, effective MCNs) and supported by strategic investment in national initiatives to nurture and energise new tools and developments.

36. This improvement plan identifies as a national priority a limited number of topics. These priorities follow on and build upon actions identified in the 2010 Diabetes Action Plan. They have been identified as specific challenges for Scotland and areas where examples of good proactive action already exist and where focused effort can deliver real improvements. The priority areas are:

- Prevention and Early Detection of Diabetes and its Complications
- Type 1 Diabetes
- Person-Centred Care
- Equality of Access
- Supporting and Developing Staff
- Inpatient Diabetes
- Improving Information
- Innovation

37. Having worked with the diabetes community to identify the priorities, the expectation is that over the coming years NHS Boards, through their diabetes Managed Clinical Networks (MCNs) will commit themselves to implementing a programme of work to improve the quality of care and outcomes within these identified priority areas and undertake to provide evidence of the improvements made. It is for MCNs to initiate work in line with their local circumstances and pressures, but with the goal of addressing all of the priority areas by 2020.

38. This plan sets out the national projects that the Scottish Government, through the Scottish Diabetes Group (SDG) will sponsor to achieve the priority aims and support local improvement activities. These actions will be delivered through a wide range of activity detailed in the work plan for the SDG and its subgroups. Patient engagement is critical to the implementation of all these priorities and an important first step is to ensure that the voice of people living with diabetes is part of the Scottish Diabetes Group and its sub-groups.

# Diabetes in Scotland: Priorities for Improvement

**Aim:** To improve the experience and clinical outcomes for patients living with diabetes across Scotland.

## Prevention and Early Detection of Diabetes and its Complications

To establish and implement approaches to support the prevention and early detection of type 2 diabetes, the rapid diagnosis of type 1 and the implementation of measures to promptly detect and prevent the complications of diabetes.

## Type 1 Diabetes

To improve the care and outcomes of all people living with type 1 diabetes.

## Person-Centred Care

To ensure people with diabetes are enabled and empowered to safely and effectively self-manage their condition by accessing consistent, high quality education and by creating mutually agreed individualised care plans.

## Equality of Access

To reduce the impact of deprivation, ethnicity and disadvantage on diabetes care and outcomes.

## Supporting & Developing Staff

To ensure healthcare professionals caring for people living with diabetes have access to consistent, high quality diabetes education to equip them with the knowledge, skills and confidence to deliver safe and effective diabetes care.

## Inpatient Diabetes

To improve the quality of care for people living with diabetes admitted to hospital by improving glucose management and reducing the risk of complications during admission.

## Improving Information

To ensure appropriate and accurate information is available in a suitable format and effectively and reliably used by all those involved in diabetes care.

## Innovation

To accelerate the development and diffusion of innovative solutions to improve treatment, care and quality of life of people living with diabetes.

## Priority 1. Prevention and Early Detection of Diabetes and its Complications

**Aim:** To establish and implement approaches to support the prevention and early detection of type 2 diabetes, rapid diagnosis of type 1 and to implement measures to promptly detect and prevent the complications of diabetes.

### Overview

The 2010 Action Plan recognised the need to implement the range of population strategies to address primary prevention of cardiovascular disease and type 2 diabetes. This plan further recognises the important role of the diabetes community working alongside public health colleagues in developing and supporting practical approaches to the challenge and, crucially, signposting people at risk of developing diabetes towards relevant information and services (e.g. weight management services).

Diabetes Scotland roadshows identified that 51% of those accessing a risk assessment were found to be at high risk. Supporting people to understand the risks and learn what can be done to manage them can delay or even prevent the onset of type 2 diabetes. There is uncertainty about how many people have undiagnosed diabetes and also about the estimation and value of the term “pre-diabetes”.

The 2010 Action Plan highlighted research showing the long asymptomatic phase of type 2 diabetes. This remains frequently undetected and during this period complications may develop and be present at diagnosis. Previous evidence from the UKPDs indicated that 35-39% of people diagnosed with type 2 diabetes had retinopathy suggesting that diabetes was likely to have been present for at least five years before diagnosis. Recently in Scotland we have found 19% of those<sup>6</sup> diagnosed with type 2 diabetes had some retinopathy within 1 year of diagnosis. This suggests an improvement, but there is need to improve this further.

Type 1 diabetes presents more acutely, but early identification and urgent treatment can prevent the development of life threatening diabetic ketoacidosis. As many as 1 in 4 children and young people are diagnosed with type 1 diabetes when they are in diabetic ketoacidosis. For children under 5 it is as many as 1 in 3. Understanding the signs and symptoms of type 1 diabetes is critical for early identification and treatment of type 1. [See “*Type 1 Diabetes*”.]

Approximately 80% of diabetes complications are preventable or can be significantly delayed through early detection, good care and access to appropriate self-management tools and resources. Even when managing care well, maintaining engagement with NHS services enables early detection of complications, and treatment to prevent or delay further deterioration. Register information relating to screening for complications is useful in identifying individuals or groups of people who are not receiving the recommended screening.

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<sup>6</sup> Looker HC, Nyangoma SO, Cromie D, Olson JA, Leese GP, Black M, Doig J, Lee N, Lindsay RS, McKnight JA, Morris AD, Philip S, Sattar N, Wild SH, Colhoun HM; Scottish Diabetic Retinopathy Screening Collaborative; Scottish Diabetes Research Network Epidemiology Group. Diabetic retinopathy at diagnosis of type 2 diabetes in Scotland. *Diabetologia*. 2012 Sep;55(9):2335-42

## **Actions:**

### **1. Enhance strategies to support people at risk of developing diabetes and early identification of those with diabetes**

- Engage with the Public Health Observatory to seek information to improve the understanding of data on undiagnosed diabetes.
- Develop and implement an appropriate framework for assessing risk of diabetes for people currently undiagnosed to support early identification, diagnosis and treatment of those at risk of developing type 2 diabetes.

This framework is required to facilitate targeted lifestyle advice for those at highest risk and will be developed in line with the current evidence base including Scottish Intercollegiate Guideline Network (SIGN) 115 and 116 guidelines.

Areas which will be considered include follow up of outcomes of those diagnosed with Gestational diabetes [See also “Priority 3 – Person-Centred Care”]; implementation of the Hyperglycaemia in acute illness risk calculator tool - an aide for clinicians to identify at risk patients following hyperglycaemia during an acute hospital admission <sup>7</sup>; and ways to improve local recording and monitoring of Impaired Glucose Tolerance (IGT) and Impaired Fasting Glucose (IFG).

### **2. Earlier identification of the diagnosis of diabetes and its complications**

Early diagnosis strategies need to include increasing public awareness of diabetes, support for education campaigns of healthcare professionals and building a structured public health plan to support both high-risk/targeted and population approaches. The ‘Health Promoting Health Service: Action in Hospital Settings’ Chief Executive Letter (CEL 01 - 2012) explicitly states the crucial role of MCNs in championing preventative action and engaging the workforce to deliver on this with a focus on inequalities.

- Develop and roll out education campaigns and guidance aimed at primary care staff on diagnosis of diabetes. This will include the national rollout of Diabetic ketoacidosis (DKA) campaign; improving the recognition of the risk factors for type 2 diabetes; and developing guidance on the use of HbA1c for diagnosis of diabetes.
- Improve the use the clinical register to identify and encourage all individuals with diabetes to engage with screening and care services.

Effective screening for complications enables care to be further optimised when complications are developing. Better use of available diabetes data and improving communication with people with diabetes will help to reduce non-attendance rates, ensure that people receive the recommended 9 processes of care [see page 29] and encourage self-management.

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<sup>7</sup> Stress Hyperglycaemia in Hospitalised Patients and Their 3-Year Risk of Diabetes: A Scottish Retrospective Cohort Study, PLOS Medicine 2014  
<http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001708>

## Priority 2. Type 1 Diabetes

**Aim:** To improve the care and outcomes of all people living with type 1 diabetes.

### Overview

The 2010 Action Plan highlighted the growing prevalence of type 1 diabetes and the need to deliver quality care to reduce the associated morbidity and mortality. It aimed to promote an increase in good glycaemic, blood pressure and cholesterol control - actions that reduce the risk of complications. Provision of quality assured structured education and supported self management were key actions of the plan. Improving care for all people with type 1 diabetes remains a priority. It is essential that NHSScotland supports innovation in the ways of delivering type 1 care, especially closer working between paediatric and adult teams to optimise education and improve self management skills.

The 2013 Scottish Diabetes Survey has demonstrated that only 22% of individuals with type 1 diabetes have optimal glycaemic control, defined as an HbA1c <58 mmol/mol. Intensive glycaemic control improves the short, medium and long term outcomes of type 1 diabetes and is one of the key goals of care. When compared internationally, Scotland has a poor record in glycaemic control. We therefore need focussed activity to improve glycaemic control for all ages, aiming to support NHS Boards to increase the number of people with HbA1c <58 mmol/mol and reducing the number of people with HbA1c >75 mmol/mol.

The beneficial impact of starting well in diabetes is increasingly recognised. Therefore, improving care at the onset of type 1 diabetes is important and improves an individual's ability to adjust to living with diabetes. Supporting individuals with diabetes in the early years including early intensification of therapy and access to high quality education is vital. In addition, supporting children and young adults during the educational years and during transition from paediatric to adult care settings minimises disengagement and the risk of deteriorating glycaemic control. Provision of services for young women requires a specific focus because although diabetes is associated with an additional risk of death at all ages and in both sexes the relative risk (by comparison to the general population) is greatest at younger ages and in females.

The diabetes community in Scotland has already started work in this area by reviewing diabetes control in different units across the country with a view to shared learning and improvement. We also wish to build on the progress made by the Childhood and Adolescent sub group, by outlining specific measures for targeted activity to enhance the care and treatment of children and young adults, including addressing the issues associated with disengagement from health care.

### Actions:

#### 1. Improve the care of children and young people

- Develop and implement strategies (including education, awareness of complications, the particular healthcare needs of young women and care planning) that support children and young adults to improve their management of diabetes, ensuring early identification and referral of new onset type 1 diabetes.



- Minimise the impact of adolescence and young adulthood on diabetes care by utilising the available resources aimed at transitional care and by up skilling healthcare professionals in youth engagement.

## **2. Improve glycaemic control**

- Develop and implement strategies that promote good glycaemic control in the early stages post diagnosis including: an early glycaemic intensification strategy; and national structured education resource for use within 6 months of diagnosis.
- Timely access to structured education at 12 month post diagnosis.
- Implement a national improvement programme to increase the proportion of people with type 1 diabetes with optimal glycaemic control, including timely and appropriate access to insulin pumps.

### Priority 3. Person-Centred Care

**Aim:** To ensure people with diabetes are enabled and empowered to safely and effectively self-manage their condition by accessing consistent, high quality education and by creating mutually agreed individualised care plans.

#### Overview

The 2010 Action Plan pointed to the range of policies setting out our approach to and need for person-centred care and well supported self management, as being critical to ensuring good health outcomes and improved quality of life. These are supported further through the Route Map to the 2020 Vision.

We know that good self-management can be achieved through access to education. This can take many forms, however many people with diabetes have never been on a formal structured education course. We wish to build on the work of the education subgroup to ensure the quality and improve the availability of structured education. We also need to embrace innovative solutions that can support self management and Priority 8 sets out our intentions to achieve this.

Through the Scottish Diabetes Group (SDG) we will also ensure that the learning and outcomes from person-centred strategies including the House of Care are shared and disseminated through the diabetes community. Individualised care planning enables patients and healthcare professionals to respond to changes in people's lives and circumstances and as such they should be kept under review. Changes can happen for a number of reasons: life events that affect our ability to cope and manage our day to day health, transition from school to higher education and work, starting a family and so on.

Feedback from patient groups has also identified other issues that are important to patients. These include challenges around sharps disposal, management of access to blood glucose strips and navigating appointment systems.

National audits in Scotland, Northern Ireland, England and Wales have highlighted the risks of pregnancy in women with type 1 and type 2 diabetes. Critical findings of these audits are an increase in birth weight, rates of caesarean section, congenital anomalies and perinatal mortality in children born to women with diabetes. We want to ensure that women with pre-existing diabetes have pregnancy outcomes comparable with the best population outcomes worldwide.

To achieve this we need to improve uptake and quality of pre-pregnancy and pregnancy care for those with established diabetes and the screening for and management of those with gestational diabetes. The quality markers are known. By improving the capture, analysis and feedback of these markers and through sharing and implementing best practice and innovation, units will be able to work towards the reduction of rates of congenital anomaly, admission to special care baby unit and perinatal mortality for women with existing type 1 and type 2 diabetes.

Randomised control trial evidence supports improvement in outcomes with identification and treatment of gestational diabetes (GDM). While controversies remain around precise definitions of gestational diabetes it is clear that all health boards need to have in place an identified, implemented and audited pathway for

gestational diabetes to ensure that women – particularly those who are over 40 and/or overweight - are offered timely screening for and treatment of gestational diabetes.

**Actions:**

**1. Timely and appropriate access to high quality patient education and self management support**

- Ensure access to appropriate high quality education resources [See also structured education identified at Priority 2]
- Ensure that during consultations healthcare professionals actively support self management by providing relevant information and appropriate signposting to third sector and community resources.

**2. Improve care planning**

- Ensure that people with diabetes are at the centre of the agenda/goal setting process and the creation of mutually agreed care plans that meet their specific needs. This will include current work to implement the House of Care framework and maximising the use of MyDiabetesMyWay.

**3. Empower and engage people living with diabetes**

- SDG and MCNs will actively involve people living with diabetes in decision making processes enabling their experience to be recognised and used to drive service change for improvement. This includes recognising what matters to people living with diabetes and acting upon their feedback.

**4. Improve the outcomes in pregnancy**

- Establish a pregnancy workstream of the SDG in order to more systematically address the challenges of pregnancy for women living with diabetes.
- The SDG Pregnancy workstream will work with NHS Boards to improve pregnancy related data collection and work with MCNs to link existing datasets to generate data for improvement.
- Develop and improve the pathway for the diagnosis and care of women for who develop gestational diabetes (GDM).

## Priority 4. Equality of Access

**Aim:** To reduce the impact of deprivation, ethnicity and disadvantage on diabetes care and outcomes.

### **Overview:**

Tackling health inequalities is recognised by the Government as the great challenge for public health today and will be one of the main issues to be addressed in the review of public health policy which is expected to report in Summer 2015.

Despite improvements in life expectancy and health outcomes significant differences still exist for people with diabetes depending on deprivation, where they live, ethnic group and their life circumstances. Ensuring equality of access to health services for all people living with diabetes is an important thread that should run through all efforts to improve the quality of services.

Deprivation rates vary across Scotland from 7.9% to 26%. Those in the most deprived areas have reduced life expectancy, higher smoking rates and less engagement with health care services. Type 2 diabetes rates increase with deprivation level and the likelihood of hospital admission with stroke and ischaemic heart disease is 52% and 57% more likely in those in the most deprived areas compared to those living in the least deprived areas. Morbidity resulting from diabetes complications is three-and-a-half times higher in people in social class V compared with those in social class I<sup>8</sup>. Those who are socially excluded may experience a sense of hopelessness that will militate against them developing confidence to manage their diabetes and create a further barrier to accessing services and navigating NHS systems that are not sensitive to the impacts of deprivation on the population.

One fifth of the Scottish population live in rural areas and a significant number live in remote areas. This presents a significant challenge to diabetes teams which service these areas. The main healthcare issues relevant to geographical location relate to accessing services out of hours, maximising specialist resources locally and retention of skilled and competent health care professionals. An integrated transport system is also a key determinant to accessing services and minimising the impact of remote and rural living.

Health inequalities also exist for those individuals requiring additional support such as those who are housebound, resident in care homes or 'looked after' children and young adults. Accessing services can be challenging and ensuring health care provision that meet specific needs requires individualised care planning.

Those with lower levels of health literacy are more likely to experience poorer outcomes, finding it more difficult to communicate with healthcare professionals, understand medications labelling and find it more difficult to look after long term health needs.

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<sup>8</sup> Public Health England, Adult obesity and type 2 diabetes (2014).

<https://www.gov.uk/government/publications/adult-obesity-and-type-2-diabetes>

## **Actions:**

### **1. Minimise the impact of deprivation, ethnicity and geography**

- Establish a Health Inequalities workstream of the Scottish Diabetes Group to review the effectiveness of current approaches to tackling inequalities. This will include identifying and promulgating best practice (e.g. in the delivery of culturally sensitive approaches) and making recommendations on what steps might be taken to make improvements.
- Utilise MyDiabetesMyWay to target action towards disadvantaged groups by assessing the uptake of MyDiabetesMyWay based on: deprivation status, ethnicity and geographical location enabling targeted action to reduce disengagement from services.
- Explore and support the development of alternative models of care (e.g. community based specialist diabetes services) in particular for deprived and remote and rural communities in order to improve diabetes outcomes.

### **2. Improve outcomes for individuals requiring additional support**

- Maximise the health literacy of people living with diabetes by promoting and improving access to health literacy tools and resources.
- Ensure that the needs of 'hard to reach' groups, such as 'looked after' children and young adults, are considered in service plans.
- Support the use of personalised care plans for housebound individuals and people living in care homes.
- Roll-out relevant inpatient safety initiatives and develop a training package for care home staff.

## Priority 5. Supporting and Developing Staff

**Aim:** To ensure healthcare professionals caring for people living with diabetes have access to consistent, high quality diabetes education to equip them with the knowledge, skills and confidence to deliver safe and effective diabetes care.

### Overview

Many different health care professionals will interact with a person living with diabetes and each interaction or consultation is an opportunity for the HCP to work with individuals to enhance motivation and optimise self management. General Practitioner trainees are given specific training in consultation skills but this type of training has not been readily available to most other health care professionals (HCPs). The actions described below support the provision of person-centred care covered in Priority 3 and will be supported by current activity to implement the House of Care.

Improving person-centred care requires a combination of high quality education packages delivered by trained educators and HCPs trained in goal setting and behavioural change. Currently there are about 25 patient education programmes which run throughout Scotland and a programme for assessing and approving structured education packages. The recent National Education Day highlighted the rich tapestry of education throughout the various regions in Scotland and also the enthusiasm of staff and people with diabetes to improve their person-centred care and education. Future success requires the nurturing of local courses responsive to the local need but also the harnessing of these courses which should be available to “lift off the shelf” by any MCN as an approved national programme.

In Scotland, we have an excellent track record of innovation, and effective and efficient service provision which reflects key aspects of the Scottish Government 20/20 Vision. Where services have employed psychologists, the range of services available to people with diabetes has substantially increased; some aspects of services have been redesigned using care pathways and protocols; greater support and training has been available to staff, and a psychologist has been readily available to deliver evidence-based treatments to those with significant diabetes-related difficulties.

### Actions:

#### 1. Increase the level of consultation and patient engagement skills

- Promote through MCNs the awareness and use of currently available training packages and consider in collaboration with experts in the field of consultation skills, what additional resources should be developed for different health care groups.

#### 2. Increase the level of educator skills and confidence in delivering diabetes education

- The Scottish Diabetes Group will engage with local MCN education leads and embed the skills required to develop or use national education programmes.

### **3. Increase the level of psychological assessment skills**

- The Scottish Diabetes Group will encourage the development of psychological services as part of the care and management of people living with diabetes in line with national guidance, building on the PiD-PaD project to increase the availability of psychological support.

## Priority 6. Inpatient Diabetes

**Aim:** To improve the quality of care for people living with diabetes admitted to hospital by improving their glucose management and reducing the risk of complications during admission.

### Overview

The estimated annual cost of inpatient care for people with diabetes in Scotland was £301 million between 2005 and 2007, 12% of the inpatient budget.<sup>9</sup> The total annual cost is likely to have increased since then. At any one time 15-20% of inpatients have diabetes. There is clear evidence that inpatient diabetes care is sub-optimal. Issues identified in national inpatient diabetes audits in England and Wales<sup>10</sup> include prescribing and medication errors resulting in hypoglycaemia and hyperglycaemia. Out of target glucose levels (high and low) are not being recognised or addressed leading to serious complications (diabetic ketoacidosis and hypoglycaemic coma). Hyperglycaemia has been associated with increased infection rates<sup>11</sup> and hypoglycaemia with an increased length of stay and subsequent mortality (ref 4).<sup>12</sup>

The Scottish Diabetes Group, along with the Quality Improvement and Efficiency Support Team, Healthcare Improvement Scotland and NHSScotland Quality Improvement Hub has developed and piloted improvement packages that have sustainably improved diabetes care in a range of wards in three NHS Boards. These projects have resulted in improvements in the identification of patients as having diabetes on admission resulting in better care planning, a reduction of insulin errors and improved management of hypoglycaemia.

The National Diabetes Inpatient Audits (NADIA) in 2009 and 2010 also revealed that between 3.2 and 2.2% of inpatients with diabetes developed a new foot lesion whilst in hospital. The Scottish Inpatient Diabetic Foot Audit in November 2013 revealed that: 2.4% of inpatients with diabetes developed a new foot lesion whilst in hospital, 57% of inpatients had not had their feet checked and 60% who were discovered to be at risk of developing a foot ulcer did not have any pressure relief in place. In response to this the Scottish Diabetes Foot Action Group (SDFAG) has developed and launched a Check, Protect and Refer (CPR) for diabetic feet campaign to raise awareness of this problem and introduce appropriate pressure relief to prevent avoidable foot ulcers.

Feedback from patient surveys undertaken by Diabetes Scotland has provided valuable insight into aspects of care which can be investigated and improved whilst receiving inpatient care. Quality improvement methodologies such as small tests of change provide a helpful way to begin the process of improving the patient experience. The main areas for improvement identified by the surveys were:

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<sup>9</sup> Inpatient costs for people with type 1 and type 2 diabetes in Scotland: a study from the SDRN epidemiology group. Lindsay Govan, Olivia Wu, Andrew Briggs, Helen M Colhoun, John A McKnight, Andrew D Morris, Donald WM Pearson, John R Petrie, Naveed Sattar, Sarah H Wild, Robert S Lindsay *Diabetologia* 2011; 54(8); 2000-8

<sup>10</sup> National Diabetes Inpatient Audit 2012. <http://www.diabetes.org.uk/Documents/Reports/NaDIA-annual-report-2012-0613.pdf>

<sup>11</sup> Anthony P Furnary, YingXing Wu. Clinical effects of hyperglycemia in the cardiac surgery population: the Portland Diabetic Project. *Endocrine Practice* 2006; 12 Suppl 3:22-6

<sup>12</sup> Hypoglycemia and clinical outcomes in patients with diabetes hospitalized in the general ward. Turchin A, Matheny ME, Shubina M, Scanlon JV, Greenwood B, Pendergrass ML. *Diabetes Care*. 2009 Jul;32(7):1153-7. doi: 10.2337/dc08-2127



- Food – suitability, carbohydrate counting, timing and access, gluten free, vegetarian.
- Insulin – being locked away or administered incorrectly.
- Equipment – access to pens, meters etc.
- Understanding of diabetes in general.

## **Actions:**

### **1. Improve glycaemic control of people admitted to hospital**

- The Scottish Diabetes Group will work with NHS Boards and support them in the introduction and spread of key aspects of the ‘think, check, act’ (Diabetes in Scottish Hospitals) initiative.

### **2. Improve foot care outcomes**

- Improve the awareness of foot care to reduce the number of people developing avoidable ulcers including distribution of ‘Check Protect Refer’ (CPR) for feet posters; developing a LearnPro module and training manual on CPR to inform ward staff.

### **3. Improve the experience of people with diabetes admitted to hospital**

- Improve admission procedures for planned admissions to include planning for insulin management, food and other specific needs of people with diabetes.

## Priority 7. Improving Information

**Aim:** To ensure appropriate and accurate information is available in a suitable format and effectively and reliably used by all those involved in diabetes care.

### Overview

Delivering the improvements in care set out in this plan, and ensuring consistent care delivered on a day to day basis wherever people live in Scotland, requires data and information on diabetes to be comprehensive and accurate and for the systems that manage the data to be effective, reliable and responsive.

There needs to be clarity around the differences between (a) the use of data in a consultation between a patient and their healthcare professional, (b) what is needed at a local team or MCN level to identify where improvements can be made and health outcomes targets monitored and achieved, (c) the health informatics required to drive service improvements, model changes to care and to understand what is happening in diabetes care and health outcomes; and (d) the data required for formal reporting at national and NHS Board level. A key issue is how to maintain the current system whilst improving upon it in order to deliver 'Data Driven Diabetes Care'.

### Actions:

#### 1. Improve access to appropriate and accurate information

- Review and enhance the clinical system holding clinical data to ensure that it meets the needs of frontline healthcare professionals and that: patient data is available and more accessible for use during each consultation; design of the interface is driven by the service user; and enhancing mechanisms to prioritise system improvements.

#### 2. Better reporting and use of data at both national and local levels

- The Scottish Diabetes Group will strengthen mechanisms to ensure that data is available and used to inform national discussions on improving care through accessible and relevant reporting.
- The Scottish Diabetes Group will work with stakeholders to review and improve the Scottish Diabetes Survey.

#### 3. Improve patient access to their data to support self management

- The Scottish Diabetes Group will work with the third sector to develop and enhance the MyDiabetesMyWay website to ensure that it is accessible and supports mobile technology and assess options for a public awareness campaign building on the previous Chat Click Call campaign.

## Priority 8. Innovation

**Aim:** To accelerate the development and diffusion of innovative solutions to improve treatment, care and quality of life of people living with diabetes.

### Overview

The increasing numbers of people developing diabetes is placing ever greater pressures on diabetes services. Managing this pressure, combined with the challenge of improving the quality, effectiveness, efficiency and person-centredness of diabetes care will require the diabetes community – in consort with others - to strengthen its capacity and willingness to innovate. It is hard to see how diabetes services – and the NHS as a whole - can remain sustainable without introducing radical change.

Medicines innovation and use of medicines for patients with diabetes, has increased considerably over the last 6 years, leading to more treatment options for patients. The pace of growth in the availability of new SMC approved medicines can create challenges for health care professionals in optimising medicines for the individual patient. The Diabetes Prescribing Strategy 2014-2016 provides guidance to support clinicians in finding the correct medicine for the patient ensuring this decision is based on clinical-evidence, safety profile and cost-effectiveness.

A number of innovative tools and ideas developed for and/or could be utilised by diabetes services (e.g. insulin pumps, continuous glucose monitors and emerging sensor based technology) have, for a variety of reasons, been slow to be adopted. The challenge is to find effective ways to overcome barriers to implementation.

The Scottish Government has highlighted innovation as one of its key priorities and in health is taking forward a range of measures including publishing 'Health and Wealth in Scotland: A Statement of Intent for Innovation in Health', establishing the Innovation Partnership Board (IPB), setting up new Innovation Centres (such as the Digital Health Institute), and giving a commitment to define National Priorities for Innovation and to develop Managed Innovation Plans.

Diabetes in Scotland already has a number of advantages for building partnerships and opportunities for innovation. These include: existing strong networks - both national and international - involving those with clinical, IT, research, third sector, pharmaceutical and other expertise; rich sources of data; and a track record of collaboration and implementation of innovative approaches. From this starting point, the goals for diabetes should be to:

- Speed up the diffusion and implementation of proven clinical and cost effective innovative solutions in Scottish diabetes services which will demonstrably improve outcomes, quality of life of people living with diabetes and efficiency in diabetes care.
- Encourage and support innovators in diabetes to develop and pilot innovative solutions.
- Develop and support networking to increase opportunities for fruitful collaboration and innovation – both within the diabetes community and by the diabetes community engaging more effectively with Government, other public bodies, global and national firms, Small and medium enterprises, the third sector and academia.

- Support the development of high quality diabetes research and the mechanisms to translate the outputs of this work into improvements in care.
- Improve the communication and promotion – nationally and internationally – of the opportunities and successes of Scotland’s contribution to innovation and research.
- Increase access to training in technology approaches for healthcare professionals and patients.

**Actions:**

**1. Promote networking and mechanisms to support innovation**

- The Scottish Diabetes Group will produce by spring 2015, a robust plan to enable the diabetes community to ensure that it is well placed to develop and deliver innovative solutions which offer improved care to people living with diabetes.

**2. Increase the pace of adoption of proven innovations**

- The Scottish Diabetes Group will work with the Innovation Partnership Board and other stakeholders to develop robust approaches to identify innovative ideas and solutions and put in place appropriate agreements and mechanisms to ensure the effective implementation of these innovations.

## 4. Monitoring and Reporting

39. NHS boards have responsibility to deliver safe, effective and person-centred care to their local population and in most cases for diabetes, they look to their MCNs to support and monitor progress. This section of the Improvement Plan builds upon existing monitoring and reporting arrangements and sets out how we will monitor performance and progress in future.

40. The actions highlighted in this Plan will be kept under review by the Scottish Diabetes Group. Each of the groups and projects sponsored by the SDG will be expected to put in place proportionate and effective arrangements to measure and report their outcomes. In addition, MCNs will be expected to provide an annual report both to their own board and to the SDG setting out progress against the Improvement Plan priorities. Plans are being developed to increase the number of annual visits to MCNs by the SDG in order to provide focus, challenge and support for this reporting process.

41. The annual Scottish Diabetes Survey continues to provide a rich, comparative national overview of diabetes services which facilitates benchmarking between areas. However, there is a recognised need to provide - for diabetes services, NHS boards and the public - more robust and timely information about the quality of the care provided. This Plan outlines the first steps to put in place a new mechanism to generate this information.

42. SCI-Diabetes is currently developing a programme to enable MCNs to generate a quarterly report without additional administrative burden on local staff of a selection of key diabetes measures which, taken together and reported over time, will provide a “barometer of improvement”. An initial set of 12 measures are described below.

### Initial Measures

43. The limitations of existing outcome measures is acknowledged and therefore a key aim over the coming years will be to develop new and better measures of quality and outcome to support improvement. The first 12 measures will therefore be kept under review with a view to improving or extending these in the future.

#### **Quarterly Diabetes Reporting – Initial measures**

1. % people with diabetes who receive all 9 key indicator measurements for diabetes
2. % persons with an HbA1c <58mmol/mol at 1 year post diagnosis
3. % persons with an HbA1c <58 mmol/mol and >75 mmol/mol
4. % current smokers
5. % of people aged 50 to 80 with a total cholesterol <5mmol/l AND a systolic BP <140 mm Hg
6. % of new foot ulcers
7. % of people eligible for diabetic retinopathy screening actually screened within last 15 months
8. % of people with diabetes reaching end stage renal disease or requiring renal replacement therapy

9. % of people on CSII therapy
10. % of persons with a BMI  $\geq 30$  who have lost  $\geq 5\%$  body weight in the last year
11. % persons who have attended structured education
12. % disengaged from diabetes care i.e. no HbA1c and retinal screening in the preceding 15 months

*In most cases, measures will be reported for T1DM <18yrs | T1DM >18 years | T2DM.*

### **1. % people with diabetes who receive all 9 process of care measures for diabetes**

Annual assessment of the following processes of care is important to ensure effective screening for microvascular complications and assessment of cardiovascular risk factors. These include; weight (and BMI measurement), blood pressure, smoking status, HbA1c, urinary albumin test, serum creatinine, cholesterol level, retinopathy screening and foot risk stratification.

### **2. % persons with an HbA1c <58mmol/mol at 1 year post diagnosis**

Early intensification of glycaemic control plays an important role in determining metabolic memory and the future risk of complications. This is a marker of effective self-management and diabetes services.

### **3. % persons with an HbA1c <58 mmol/mol and >75 mmol/mol**

Targeting a health improvement strategy aimed at improving overall glycaemic control is an assessment of effective self management and diabetes services.

### **4. % current smokers**

One in four people with diabetes smoke - 23.5% (type 1) and 18.1% (type 2) - increasing the risk of micro and macrovascular complications. This measure is included in recognition of the importance of addressing this factor. A measure of referral of persons who smoke to cessation services would be helpful but is currently unavailable.

### **5. % of people aged 50 to 80 with a total cholesterol <5mmol/l AND a systolic blood pressure <140 mm Hg**

Cardiovascular disease is the major cause of morbidity and mortality in people with diabetes. Cardiovascular disease increases with increasing age. It is important to manage cardiovascular risk factors in those at high risk who are likely to benefit most from the interventions offered. Two important modifiable risk factors are blood pressure and cholesterol. These are therefore useful markers of cardiovascular risk management.

### **6. % of new foot ulcers**

Approximately 50% of non-traumatic lower limb amputations in Scotland are due to diabetes. People living with diabetes are at a 10 fold increased risk of amputation compared to those without diabetes Assessment of the new foot ulcers provides a useful marker of foot risk management.

### **7. % of people eligible for diabetic retinopathy screening actually screened within last 15 months**

Diabetes is the leading cause of blindness in persons of working age in Scotland. Assessment of visual loss is a measure of the effectiveness of screening and a way to maintain the focus on raising standards.

**8. % of people with diabetes reaching end stage renal disease (ESRD) or requiring renal replacement therapy (RRT)**

Diabetes is one of the leading causes of end stage renal disease in Scotland. Assessment of ESRD and RRT will be a measure of effective screening for microalbuminuria and management of progressive renal disease.

**9. % of people on CSII therapy**

The use of CSII therapy can improve glycaemic control and reduce the risk of severe hypoglycaemia. Assessment of the number of people on CSII therapy provides an indicator of use within geographical areas.

**10. % of persons with a BMI  $\geq$  30 who have lost  $\geq$  5% body weight in the last year**

Lifestyle interventions including effective weight loss programmes improve health related outcomes. Assessment of those individuals who are obese who achieve clinically meaningful weight loss is an indicator of self-management and effective weight management services.

**11. % persons who have attended structured education**

Structured education improves an individual's ability to self manage their diabetes and is associated with improved glycaemic control and quality of life. Assessment of uptake of structured education is an indicator of effective diabetes services in providing and promoting self management.

**12. % disengaged from diabetes care i.e. no HbA1c and retinal screening in the preceding 15 months**

Disengagement from diabetes services is associated with poorer health related outcomes. Assessment of disengagement provides an indicator of engagement with diabetes services.

Future measures

44. The proposed 12 measures represent a first step. We want and need to develop, report and act upon new and better measures of diabetes outcomes and care - measures which can provide meaningful data for people living with diabetes and for healthcare professionals to enable them to assess, understand, improve and reliably deliver high quality care. Crucially, these measures need to be collected and recorded in such a way that they do not create a data collection burden for staff. Such measures can be, and in some cases already are being developed and piloted on a small scale.

45. Some new measures might be suitable for routine on-going data capture, in which case the task is to refine and implement the measure at scale, most likely through SCI-Diabetes. Other measures might be useful as part of a targeted initiative. Some data might be most practically captured through a survey, by sampling, or by self-reporting by people living with diabetes.

46. There is also scope to consider what other existing data sources might help to illuminate service quality, safety and performance. For example, the rolling survey of the 15 Health Care Essentials undertaken across the UK by Diabetes UK (Scotland).

47. Areas where the diabetes community are exploring ways to reliably and efficiently measure care include:

- % of hypoglycaemia in hospital correctly treated / other measures of effective inpatient diabetes management.
- % of those with diabetic maculopathy, who meet eligibility criteria given anti VEGF therapy.
- Number of new foot ulcers developed while an inpatient.
- Self-reported satisfaction of diabetes control at discharge.
- % of cases in Diabetic Ketoacidosis (DKA) at diagnosis, of those under 18 years.
- % on CSII therapy within 6 months of fulfilling criteria.
- % people with type 2 undergoing structured education within 6 months of diagnosis.
- % increase in MyDiabetesMyWay sign up, including by subgroup e.g. deprivation, ethnicity.
- Measures in minimising risk for mothers with diabetes and their babies / maternal and foetal outcomes e.g. proportion of women with GDM who are identified at booking.

48. In addition, there are a number of areas where it would be useful to periodically collect information that would evidence progress against the actions identified in this plan. However, in some cases appropriate measures have not yet been defined and in some the mechanism to efficiently capture accurate and comprehensive information is not in place. The table below sets out some of the measures relevant to the actions in plan, the appropriate lead for collecting the information and the priority to which it relates.

Information/Lead	Priority
<b>SDG/Scottish Diabetes Survey Group</b>	
Reduction in the number of people at high risk of developing diabetes	1
Increase in the number of diagnosed over expected annual increase	1
<b>Diabetes Managed Clinical Networks</b>	
Evidence of patient feedback/experience informing the review, update and measurement of programmes	3
Number of opportunities available and taken up for patients to meet and learn from one another (e.g. peer learning opportunities)	3
Evidence of the use of agenda/goal setting approaches	3
Evidence of patient experience and patient reported outcomes	3
Number of staff who have taken part in development work on how to deliver positive care planning and evidence of implementation	3
Demographic information to ensure diversity of patient experience is captured	3
Evidence of patient involvement in the changes made to deliver improvement to local services	3



Number of people with diabetes involved in decision making and evidence of increase	3
Number of staff completing Health Literacy Training	4
Number of people completing consultation and patient engagement skills training	5
Increase in patient satisfaction	6
Reduction in bed days	6
Reduction in HbA1c at discharge	6
<b>Scottish Diabetes Foot Action Group</b>	
Measure of the effectiveness of CPR for feet campaign and implementation	6
Increase in patients knowing their own foot risk score	1
Downloads and feedback statistics on Putting Feet First	1
<b>Scottish Diabetes Group – Childhood and Adolescent Subgroup</b>	
% of completed care plans while in full time education	2
% utilising resources aimed at transitional care	2
% staff undergoing training in youth engagement	2
Assess glycaemic control in 'looked after' children	4
<b>Diabetes Scotland</b>	
Increase in the number of people self reporting involvement in decision making process	3
Measure and quality assure implementation of sharps and blood glucose test strip guidance through patient feedback	3
Feedback from Careline	All

## 5. Next Steps

49. This Improvement Plan sets out our continued ambition to deliver world-leading health and social care which is person-centred, clinically effective and safe. Although much progress has been made, we must always seek to increase the pace and scale of improvement.

50. The Plan identifies key priorities and sets out why these issues are important. It identifies a range of actions which, if delivered, will contribute towards improvement. It is intended to be an enabling and empowering document and not simply a collection of new targets. It sets out aims and ideas which will continue to evolve and develop. The document's purpose is to support the delivery of continuous improvement, to encourage people to test and try new approaches, and to help to spread and sustain what works.

51. Whilst it is true that not everything that matters can be measured, it is also true that progress is rarely made without some measures of progress. The Plan therefore sets out how diabetes care – and the impact of the Improvement Plan - will be measured and reported.

52. All those with a vested interest in the delivery of diabetes services, across all levels and roles, including, of course, those living with their diabetes, have an important part to play in this improvement work. It is by working together, learning together and sharing that we will deliver improvements.

## ANNEX A

### No. of people in Scotland with Diabetes: Crude and age-adjusted prevalence of diabetes (all types), 2013, Scotland, by NHS Board.

NHS Board	Population	Type 1 No. on diabetes register at end of 2013	Type 2 No. on diabetes register at end of 2013	Other types* No. on diabetes register at end of 2013	Total No. on diabetes register at end of 2013	Crude prevalence	Age adjusted prevalence
Ayrshire and Arran	373,189	2,226	19,336	68	21,630	5.8%	5.3%
Borders	113,707	633	5,349	49	6,031	5.3%	4.5%
Dumfries and Galloway	150,828	908	7,738	70	8,716	5.8%	4.9%
Fife	366,219	1,996	17,731	83	19,810	5.4%	5.2%
Forth Valley	299,099	1,672	13,521	89	15,282	5.1%	5.1%
Grampian	573,420	3,158	23,082	140	26,380	4.6%	4.8%
Greater Glasgow & Clyde	1,217,025	6,464	54,406	777	61,647	5.1%	5.3%
Highland	319,811	1,867	13,701	212	15,780	4.9%	4.4%
Lanarkshire	572,520	3,586	27,637	247	31,470	5.5%	5.6%
Lothian	843,733	4,372	31,833	381	36,586	4.3%	4.7%
Orkney	21,530	118	929	2	1,049	4.9%	4.4%
Shetland	23,210	126	902	7	1,035	4.5%	4.4%
Tayside	411,749	1,951	19,318	159	21,428	5.2%	4.9%
Western Isles	27,560	184	1,122	4	1,310	4.8%	4.1%
<b>Scotland</b>	<b>5,313,600</b>	<b>29,261</b>	<b>236,605</b>	<b>2,288</b>	<b>268,154</b>	<b>5.0%</b>	<b>5.0%</b>
		<b>10.9%</b>	<b>88.2%</b>	<b>0.9%</b>			

\* Other types of diabetes include Maturity Onset Diabetes of the Young (MODY), gestational diabetes and secondary diabetes.

Source: Scottish Diabetes Survey 2013

## ANNEX B

### Diabetes: Supporting the Delivery of the 2020 Vision Route Map

Triple Aim:	Quality of Care						Health of the Population			Value and Sustainability		
REFRESHING THE DIABETES ACTION PLAN	Person Centred Care	Safe Care	Primary Care	Unscheduled & Emergency Care	Integrated Care	Care for Multiple & Chronic Illnesses	Early Years	Health Inequalities	Prevention	Workforce	Innovation	Efficiency & Productivity
<b>Prevention and Early Detection of Diabetes and its Complications</b>												
Enhance strategies to support people at risk of developing diabetes and early identification of those with diabetes	■	■	■	■	■	■	■	■	■	■	■	■
Earlier identification of the diagnosis of diabetes	■	■	■	■	■	■	■	■	■	■	■	■
<b>Type 1 Diabetes</b>												
Improve the care of children and young people	■	■	■	■	■	■	■	■	■	■	■	■
Improve glycaemic control	■	■	■	■	■	■	■	■	■	■	■	■
<b>Person-Centred Care</b>												
Timely and appropriate access to high quality patient education and self management support	■	■	■	■	■	■	■	■	■	■	■	■
Improve care planning	■	■	■	■	■	■	■	■	■	■	■	■
Empower and engage people living with diabetes	■	■	■	■	■	■	■	■	■	■	■	■
Improve the outcomes in pregnancy	■	■	■	■	■	■	■	■	■	■	■	■
<b>Equality of Access</b>												
Minimise the impact of deprivation, ethnicity and geography	■	■	■	■	■	■	■	■	■	■	■	■
Improve outcomes for individuals requiring additional support	■	■	■	■	■	■	■	■	■	■	■	■

Triple Aim:	Quality of Care						Health of the Population			Value and Sustainability		
	Person Centred Care	Safe Care	Primary Care	Unscheduled & Emergency Care	Integrated Care	Care for Multiple & Chronic Illnesses	Early Years	Health Inequalities	Prevention	Workforce	Innovation	Efficiency & Productivity
<b>REFRESHING THE DIABETES ACTION PLAN</b>												
<b>Supporting and Developing Staff</b>												
Increase the level of consultation and patient engagement skills	■		■			■				■		■
Increase the level of educator skills and confidence in delivering diabetes education												■
Increase the level of psychological assessment skills	■					■						
<b>Inpatient Diabetes</b>												
Improve glycaemic control of people admitted to hospital	■	■		■		■			■			
Improve foot care outcomes	■	■				■			■			
Improve the experience of people with diabetes admitted to hospital	■											
<b>Improving Information</b>												
Improve access to appropriate and accurate information	■	■	■				■	■			■	■
Better reporting and use of data at both national and local levels		■								■	■	■
Improve patient access to their data to support self management	■		■	■						■	■	
<b>Innovation</b>												
Promote networking and mechanisms to support innovation											■	
Increase pace of adoption of proven innovations	■	■									■	■

## ANNEX C

### References and Resources

**Diabetes Action Plan 2010: Quality Care for Diabetes in Scotland** (August 2010)  
<http://www.scotland.gov.uk/Resource/Doc/321699/0103402.pdf>

**Scottish Diabetes Survey 2013** (June 2014)  
<http://www.diabetesinscotland.org.uk/Publications/SDS2013.pdf>

**SIGN 116 - Management of Diabetes: A national clinical guideline** (March 2010 / updated May 2011)  
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[http://www.sehd.scot.nhs.uk/cmo/CMO\(2014\)14-Diabetes%20Prescribing%20Strategy%20June%202014.pdf](http://www.sehd.scot.nhs.uk/cmo/CMO(2014)14-Diabetes%20Prescribing%20Strategy%20June%202014.pdf)

**Diabetes Scotland**  
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**Scottish Public Health Observatory (ScotPHO) - Diabetes**  
<http://www.scotpho.org.uk/health-wellbeing-and-disease/diabetes/key-points>

**SCI- Diabetes**  
<http://www.sci-diabetes.scot.nhs.uk>

**My Diabetes My Way - Diabetes Information in Scotland**  
<http://www.mydiabetesmyway.scot.nhs.uk/>

### Other Websites and Resources

**Route Map to the 2020 Vision for Health and Social Care** (May 2013)  
<http://www.scotland.gov.uk/Resource/0042/00423188.pdf>

**The Healthcare Quality Strategy for NHSScotland** (May 2010)  
<http://www.scotland.gov.uk/Resource/Doc/311667/0098354.pdf>

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**Everyone Matters: 2020 Workforce Vision: Implementation framework and plan 2014-15** (December 2013)

<http://www.workforcevision.scot.nhs.uk/wp-content/uploads/2013/12/Implementation-Plan.pdf>

**Health Inequalities in Scotland** (Audit Scotland, December 2012)

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**Making it Easy: A Health Literacy Action Plan for Scotland** (June 2014)

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**SIGN 115 – Management of Obesity** (February 2010)

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**Preventing overweight and obesity route map** (February 2010)

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**Creating a Tobacco-Free Generation: A Tobacco Control Strategy for Scotland** (March 2013)

<http://www.scotland.gov.uk/Resource/0041/00417331.pdf>

**NHSScotland Quality Improvement Hub**

<http://www.qihub.scot.nhs.uk>

**Scottish Patient Safety Programme (SPSP)**

<http://www.scottishpatientsafetyprogramme.scot.nhs.uk>

**Person Centred Care resources – QI Hub**

<http://www.qihub.scot.nhs.uk/person-centred.aspx>

**Everyone Matters: 2020 Workforce Vision**

<http://www.workforcevision.scot.nhs.uk>

**The ALISS Project - Accessing Local Information to Support Self management**

<http://www.aliss.scot.nhs.uk>

**The Knowledge Network – NES Health Literacy Resources**

<http://www.knowledge.scot.nhs.uk/healthliteracy.aspx>

**Train the Trainers' Toolkit Helping others to facilitate learning in the workplace: A Practical Guide**

<http://www.nes.scot.nhs.uk/education-and-training/by-theme-initiative/facilitation-of-learning.aspx>



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ISBN: 978-1-78412-940-8 (web only)

Published by the Scottish Government, November 2014

The Scottish Government  
St Andrew's House  
Edinburgh  
EH1 3DG

Produced for the Scottish Government by APS Group Scotland, 21 Tennant Street, Edinburgh EH6 5NA  
PPDAS40445 (11/14)

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