Diabetes care in general practice

Integrated care is a model of care which makes best use of available resources, fully utilising the clinical skills of practice nurses

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Diabetes is the fifth leading cause of death in the world and is increasingly being described as an epidemic. The Institute of Public Health (IPH), estimated that just over 140,000 people had diabetes in 2007 (4.5% of the population; type 1 and type 2 combined). This figure is expected to rise to over 190,000 adults (5.2% of the population) by 2015. The rising problem of obesity, a more sedentary lifestyle and an ageing population are just some of the reasons for the projected increase internationally and nationally in the number of people with diabetes. Having established that diabetes is a serious illness what can the Irish health service and more particularly what can we in general practice do about it?

National Diabetes Clinical Care Diabetes Programme

In 1989 Ireland signed up to the WHO’s St Vincent Declaration: we agreed to deploy resources for the prevention, identification and treatment of diabetes and particularly its complications: blindness, renal failure, amputation, coronary artery disease and stroke. The Irish St Vincent Task Force reported an uneven distribution of resources – individuals working in isolation with pockets of excellent care. They recommended that we adopt a planned, integrated, and structured approach to diabetes care and that the health service provide the resources to deliver on our commitment made in 1989. Now over 20 years later we have a National Diabetes Clinical Care Diabetes Programme which has set as its aim to: ‘save the lives, eyes and limbs of patients with diabetes’. The objective of the programme is that everyone with diabetes should access a structured programme which covers all aspects of their diabetic care. The projected result of investing in integrated care, will be a reduction in overall bed days by 40,000 per year; reduction in mortality by 10% and reduction in morbidity (Reduce; blindness by 40%, amputations by 40%, cardiovascular events by 20%). The National Diabetes Programme prioritised the National Retinopathy Screening Programme and Foot Care in 2011. The next priority is progressing integrated care – with the majority of the care of type 2 diabetes being delivered in primary care i.e. the appropriate care in the appropriate setting.

Integrated care

Integrated care is a model of care which makes best use of available resources, fully utilising the clinical skills of GPs and Practice Nurses, with patient care pathways agreed between primary and secondary care. Integrated care ensures that patients have access to the care they need when they need it. By supporting structured diabetes care in the primary care setting, secondary care will have the capacity to review...
BYDUREON® (EXENATIDE)

REPUBLIC OF IRELAND ABBREVIATED PRESCRIBING INFORMATION

BYDUREON® is a registered trade mark and BYDUREON® By Your Side is a trade mark of Amylin Pharmaceuticals, Inc.

BYDUREON® is indicated for the treatment of Type 2 diabetes mellitus in combination with metformin, sulphonylurea, thiazolidinedione, or combinations of metformin and sulphonylurea or metformin and a thiazolidinedione, in adults who have not achieved adequate glycaemic control on maximally tolerated doses of these oral therapies.

Dosage and Administration:

The recommended dose is 2mg once weekly, on the same day each week. Each dose should be administered in the abdomen, thigh, or the back of the upper arm as a subcutaneous injection immediately after suspension of the powder in the solvent. Instructions on the suspension and administration of BYDUREON can be found in the 'Instructions for the User' provided in the carton and must be followed carefully by the patient. Appropriate training is recommended for non-healthcare professionals administering the product. Patients switching from exenatide twice daily (Byetta) to BYDUREON may experience transient elevations in blood glucose concentrations, which generally improve within the first two weeks after initiation of therapy. When BYDUREON is added to existing metformin and/or thiazolidinedione therapy, the current dose of metformin and/or thiazolidinedione should be continued. When BYDUREON is added to sulphonylurea therapy, a reduction in the dose of sulphonylurea should be considered to reduce the risk of hypoglycaemia. Blood glucose self-monitoring may be necessary to adjust the dose of sulphonylurea if a different antidiabetic treatment is started after the discontinuation of BYDUREON, consideration should be given to the prolonged release of Byetta. Elderly No dose adjustment is required based on age. Consideration should be given to the patient's renal function. Renal or hepatic impairment: No dose adjustment is necessary in patients with mild renal impairment (creatinine clearance 50-80ml/min) or hepatic impairment. Not recommended in patients with moderate renal or hepatic impairment (creatinine clearance 30-50ml/min), severe renal impairment (creatinine clearance <30ml/min), or end-stage renal disease. Paediatric population: The safety and efficacy in children and adolescents aged under 18 years have not yet been established. No data are available. Contra-indications: Hypersensitivity to the active substance or to any of the excipients. Warnings and Special Precautions: Should not be used in patients with Type 1 diabetes mellitus or for the treatment of diabetic ketoacidosis. Must not be administered by intravenous or intramuscular injection. Not recommended for use in patients with moderate or severe renal impairment or end-stage renal disease. There have been rare, spontaneously reported events of altered renal function with exenatide, including included serum creatinine, renal impairment, worsening chronic renal failure, and acute renal failure, sometimes requiring haemodialysis. Some of these occurred in patients experiencing events that may affect hydration and/or receiving renal medicinal products known to affect renal function/hydration status, including angiotensin converting enzyme inhibitors, angiotensin II antagonists, non-steroidal anti-inflammatory medicinal products, and diuretics. Not recommended in patients with severe gastrointestinal disease. There have been rare, spontaneously reported events of acute pancreatitis. Patients should be informed of the characteristic symptom of acute pancreatitis, persistent, severe abdominal pain. Resolution of pancreatitis has been observed with supportive treatment, but very rare cases of necrotising or haemorrhagic pancreatitis and/or death have been reported if pancreatitis is suspected. BYDUREON and other potentially suspect medicinal products should be discontinued. Treatment with BYDUREON should not be resumed after pancreatitis has been diagnosed. The concurrent use of BYDUREON with insulin, D phenylalanine derivatives (meglitinides), alpha-glucosidase inhibitors, dipeptidyl peptidase-4 inhibitors, or other GLP-1 receptor agonists has not been studied. The concurrent use of BYDUREON and exenatide twice daily (Byetta) has not been studied and is not recommended. The risk of hypoglycaemia was increased when BYDUREON was used in combination with a sulphonylurea in clinical trials. Furthermore, patients on a sulphonylurea combination, with mild renal impairment, had an increased incidence of hypoglycaemia compared to patients with normal renal function. To reduce the risk of hypoglycaemia associated with the use of a sulphonylurea, reduction in the dose of sulphonylurea should be considered. Rapid weight loss (>1.5 kg per week) has been reported in patients treated with exenatide. Weight loss of this rate may have harmful consequences. There have been some reported cases of increased INR, sometimes associated with bleeding, with concomitant use of warfarin and exenatide. After discontinuation, the effect of BYDUREON may continue as plasma levels of exenatide decline over 10 weeks. Choice of other medicinal products and dose selection should be considered accordingly until exenatide levels decline. Interactions: The following interaction studies were conducted using 10 micrograms exenatide twice daily, but not exenatide once weekly. HMG CoA reductase inhibitors: Lovastatin AUC and Cmax were decreased and Tmax was delayed when exenatide (10μg BD) was administered concomitantly with a single dose of lovastatin (40mg). Concomitant use of exenatide twice daily and HMG CoA reductase inhibitors was not associated with constant changes in lipid profiles. Lipid profiles should be monitored as appropriate. Rosuvastatin Tmax was delayed when warfarin was administered 35 min after exenatide twice daily. No clinically relevant effects on Cmax or AUC were observed. Increased INR has been reported during concomitant use of warfarin and exenatide twice daily. INR should be monitored during initiation of BYDUREON therapy in patients on warfarin and/or coumarin derivatives. Digoxin and losartan: A delay in Tmax was observed in interaction studies between digoxin or losartan and exenatide twice daily. No clinically relevant effects on Cmax or AUC were observed. Fertility, Pregnancy, and Lactation: Women of childbearing potential should use contraception during treatment with BYDUREON. BYDUREON should be discontinued at least 3 months before a planned pregnancy. BYDUREON should not be used during pregnancy and the use of the insulin is recommended. BYDUREON should not be used during breast feeding. Driving, etc: No studies on the effects on the ability to drive and use machines have been performed. When BYDUREON is used in combination with a sulphonylurea, avoid hypoglycaemia while driving and using machines. Undesirable Effects: Acute Reactions Reported From Clinical Study/lit/ren/only common Hypoglycaemia (with a sulphonylurea), constipation, diarrhoea, nausea, vomiting, injection site pruritus, injection site nodules. Common Diarrhoea/palpitations, dizziness, headache, abdominal distension, abdominal pain, diaphoresis, itching. Acute pancreatitis and acute renal failure have been reported rarely and anaphylactic reaction has been reported very rarely in spontaneous post-marketing reports with exenatide twice daily. For full details of these and other side-effects, please see the Summary of Product Characteristics, which is available at http://www.medicines.ie/. Legal Category: POM. Marketing Authorisation Number and Holder: EU/1/11/696/001. Eli Lilly Nederland BV, Grootslag 1-5, NL-3991 RA Houten, The Netherlands. Date of Preparation or Last Review June 2011. Full Prescribing Information Is Available From Eli Lilly and Company Limited, Lilly House, Priory Road, Basingstoke, Hampshire, RG24 9NL, Telephone. Basingstoke 02 256 317 000. E-mail. ukmedinfo@illy.com or Eli Lilly and Company (Ireland) Limited, Hyde House, 63 Adelaide Road, Dublin 2, Republic of Ireland. Telephone: Dublin (01) 661 4377, E-mail ukmedinfo@illy.com. BYDUREON® (exenatide) is a registered trademark of Amylin Pharmaceuticals, Inc. References: 1. BYDUREON® summary of product characteristics. 2. Duration 6 press release. Available at: https://investor.lilly.com/releasesdetail2.cfm?ReleaseID=554248. 3. Taylor et al. 88(4), Endocrine Reviews 2001, 11:9, http://www.biomedcentral.com/1472-682F/11/9

NEW

BYDUREON the first and only therapy to provide continuous glycaemic control with a once weekly injection

Mean HbA1c reduction between 1.3% and 1.9%3
• Sustained HbA1c reduction of 1.5% at 2 years3
• Sustained weight loss of 2.4kg at 2 years3

BYDUREON® (EXENATIDE)
patients requiring specialist intervention quickly. Adopting a structured approach to care delivery involves creating practice registers, adherence to evidence based guidelines, allocation of protected time, regular patient follow-up, ongoing audit and feedback, and continuing professional education.2,5 Routine integrated care involves the patient, GP, practice nurse, endocrinologist, clinical nurse specialist in diabetes, dietitian, ophthalmologist and podiatrist. All patients with type 2 diabetes should have access to specialist services such as retinopathy screening, endocrinology, vascular, cardiology, nephrology and psychology as needed. An annual and comprehensive review is regarded as the crucial element of integrated diabetes care. Research proves that interventions at key stages can make a difference (see Table 1).

Creating a diabetes register
Unless you know who your patients with diabetes are you cannot recall them for review appointments. Create registers of patients with diabetes: type 1, type 2. Many GP software systems facilitate drug searches of diabetes medications and glucose test strips. www.hse.ie has notes on creating diabetes registers for several software systems, or ask your software provider to assist you. Practices who are not computerised can create a manual register of patients with diabetes – Cardex file or ledger. Once you have created the register, each member of the practice team has a responsibility to maintain it by entering all newly diagnosed patients.

Pre-diabetes
When screening for diabetes you will also diagnose patients with impaired fasting glucose and impaired glucose tolerance. These patients have the same cardiovascular risk as those with diabetes, so should be followed up to reduce cardiovascular risk factors (diet, exercise, smoking, BP, lipids). 5% per year will progress to type 2 diabetes: this can be reduced by 60% with lifestyle modification.2 They should attend for an annual glucose tolerance test to ensure that they have not progressed to a diagnosis of diabetes. Creating a register of patients with pre-diabetes will facilitate recall for annual review.

Adherence to evidence based guidelines
A Practical Guide to Integrated Type 2 Diabetes Care (Harkins, 2008) has the current guidelines for management of type 2 diabetes and can be downloaded from www.hse.ie These guidelines are very user friendly and should be available for reference in every practice. The HSE West Diabetes Manual is also very helpful. I suggest laminating page 1 – type 2 diabetes at a glance – is a useful desk top quick reference tool. In DiGP we have Harkins 2008 Protocol for the Management of Microalbuminuria (pg 37) on the back of this.

Evidence for target BP and Hba1c
The UK Prospective Diabetes Study (UKPDS, 1998)3, a landmark study in type 2 diabetes, demonstrated that lower Hba1c (aim <7% = 53) is associated with less complications, also any reduction was advantageous. This validates the efforts of patients who struggle to make small reductions in Hba1c. Also good BP control (target <140/85) was as important as glycaemic control with 24% reduction in all complications of diabetes and 44% reduction in stroke. A 10 year follow-up of UKPDS study group (2008) still showed reduced cardiovascular risk of 25% for every 1% reduction in Hba1c. Both the original intervention group and control group showed increased Hba1c which demonstrates that type 2 diabetes is a progressive disease. Investigators have concluded that early control of hyperglycaemia provides future cardiovascular protection. This further reinforces the role for primary care in early diagnosis and good glycaemic control. Unlike early glycaemic control, benefit from BP control is not maintained over time, therefore good blood pressure control must be continued if benefits are to be sustained. The findings of the ACCORD study showed a previously unrecognised risk of intensive glucose lowering (target Hba1c 6% = 42) of high risk patients with established type 2 diabetes. In light of these findings the UK and USA recommend target is Hba1c of 6.5-7%. At recent conferences there has been discussion of less stringent targets in the elderly.

Targets to prevent complications:
• BP <130/80 (>65 yr old <140/80)
• Hba1c < 42 (6.5%)

Diabetes – active case finding
It is estimated that the average time from the onset of type 2 diabetes to diagnosis is 7 years as patients are initially asymptomatic, therefore patients often have complications of diabetes on diagnosis.2 This will continue if we in general practice do not screen our practice population to detect diabetes early and prevent the onset of complications. If primary care are not actively case finding patients with diabetes, as per targeted screening guidelines3 patients will continue to be diagnosed when they present with a complication e.g. MI. Diagnosis is made as per 2008 Guidelines.2

Creating a diabetes register

<table>
<thead>
<tr>
<th>The Impact of Intervention at Key Stages in Diabetes</th>
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</thead>
<tbody>
<tr>
<td><strong>Prevention</strong></td>
</tr>
<tr>
<td>Up to half of all new cases could, in theory, be prevented by reducing rates of obesity</td>
</tr>
<tr>
<td><strong>Early diagnosis</strong></td>
</tr>
<tr>
<td>Up to half of all people with diabetes already have serious complications when diagnosed.</td>
</tr>
</tbody>
</table>

**People with diabetes**
- Structured programmes of care increase the level of self-management.
- Surveillance and early intervention prevents/reduces complications.
- Good blood glucose control can reduce kidney damage by one-third.
- Good blood pressure control can reduce strokes by one-third.
- Eye screening and treatment can reduce blindness by half.
- Footcare can reduce foot complications by two-thirds.

Who to screen
- Family Hx. 1st degree rel. type 2 diabetes
- Hx. gestational diabetes
- Baby >4.1kg/9lbs or Hx gestational diabetes
- Obese patients – BMI >25/inactive lifestyle
- Symptoms polydipsia/polyuria
- Recurrent candidiis, skin or urine infections
- Hypertensive, hypercholesterolaemia
- Established arterial disease – IHD, CVA, PVD
- >45 year olds
- Polycystic ovarian disease, patients on long term steroids
- Ethnicity – Asian, African, African/American
- ? when taking bloods offer to do random blood sugar
When metformin alone is no longer enough.

Add Victoza®...

...to help your patients with type 2 diabetes achieve:

- Mean reductions in HbA1c: up to 1.50% (16 mmol/mol)
- Mean reductions in weight: up to 3.7 kg
- Improvements in SBP* from baseline
- Improvements in beta-cell function

*SBP = Systolic Blood Pressure

Abbreviated Prescribing Information

Victoza® 6 mg/mL solution for injection in pre-filled pen (liraglutide) Please refer to the Summary of Product Characteristics for full information. Victoza® 2 x 3 ml pre-filled pens. Victoza® 3 x 3 ml pre-filled pens. 1 ml of solution contains 6 mg of liraglutide. Indications: Treatment of adults with type 2 diabetes mellitus in combination with metformin or a sulphonylurea, in patients with insufficient glycaemic control despite maximal tolerated dose of metformin or sulphonylurea monotherapy, or in combination with metformin and a sulphonylurea, or metformin and a thiazolidinedione in patients with insufficient glycaemic control despite dual therapy.

Dosage: Victoza® is administered once daily by subcutaneous injection and can be administered at any time independent of meals however, it is preferable that Victoza® is injected around the same time of the day. Victoza® should not be administered intravenously or intramuscularly. Recommended starting dose is 0.6 mg daily. After at least one week, the dose should be increased to a maintenance dose of 1.2 mg. Based on clinical response, after at least one week the dose can be increased to 1.8 mg to further improve glycaemic control in some patients. Daily doses higher than 1.8 mg are not recommended. When used with existing metformin therapy or in combination with metformins and thiazolidinediones, the current dose of metformin and thiazolidinedione can continue unchanged. When added to existing sulphonylurea therapy or in combination with metformin and sulphonylureas, a reduction in the dose of sulphonylurea may be necessary to reduce the risk of hypoglycaemia. Victoza® can be used in the elderly (>65 years old) without dose adjustment but therapeutic experience is patients 75/75 years of age is limited. No dose adjustment is required for patients with mild renal impairment (creatinine clearance 60-90 mL/min). Due to lack of therapeutic experience Victoza® is not to be recommended for use in patients with moderate (creatinine clearance 30-59 mL/min) and severe renal impairment (creatinine clearance below 30 mL/min), patients with end stage renal disease, patients with hepatic impairment and children below 18 years of age. Contraindications: Hypersensitivity to the active substance or any of the excipients. Warnings and Precautions for use: Victoza® should not be used in patients with type 1 diabetes mellitus or for the treatment of diabetic ketoacidosis. Victoza® is not a substitute for insulin. Addition of liraglutide in patients already treated with insulin has not been evaluated and is therefore not recommended.

Limited experience in patients with congestive heart failure New York Heart Association (NYHA) class III and no experience in patients with NYHA class IV. Due to limited experience Victoza® is not recommended for patients with inflammatory bowel disease and diabetic gastronephrosis. Victoza® is associated with transient gastrointestinal adverse reactions, including nausea, vomiting and diarrhoea. GEP-1 analogues have been associated with pancreatic toxicity; patients should be informed of symptoms of acute pancreatitis; persistent, severe abdominal pain. If pancreaticitis suspected, Victoza® and other suspect medicinal products should be discontinued. Thyroid adverse events, including increased blood calcium, goitre and thyroid nodule reported in clinical trials particularly in patients with pre-existing thyroid disease. Risk of hypoglycaemia in combination with sulphonylureas, lowered by dose reduction of sulphonylureas. Signs and symptoms of dehydration, including renal impairment and acute renal failure reported with Victoza®. Patients should be advised of potential risk of dehydration in relation to gastrointestinal side effects and to take precautions to avoid fluid depletion. No studies on the effects on the ability to drive and use machines performed. Patients should be advised to take precautions to avoid hypoglycaemia while driving and using machines, in particular when Victoza® is used in combination with a sulphonylurea. Substances added to Victoza® may cause degradation; in the absence of compatibility studies Victoza® must not be mixed with other medicinal products. Fertility, pregnancy and lactation: Victoza® should not be used during pregnancy or during breast feeding. If a patient wishes to become pregnant, or pregnancy occurs, treatment with Victoza® should be discontinued; use of insulin is recommended instead. Apart from a slight decrease in number of live implants, animal studies did not indicate direct haemolytic effects with respect to fertility. Undesirable effects: During clinical trials with Victoza® the most frequently observed adverse reactions which varied according to the combination used (sulphonylureas, metformin or a thiazolidinedione) were: Very common: nausea, diarrhoea, headache when used in combination with metformin; hypoglycaemia, nausea and diarrhoea when used with metformin and a sulphonylurea; nausea, diarrhoea and vomiting when used with metformin and a thiazolidinedione; Common: nausea, appetite decreased, diarrhoea, vomiting, dyspepsia, gas, injection site reactions when used in combination with metformin; nausaphagia, hypoglycaemia, anorexia, nausea, diarrhoea, vomiting, dyspepsia, constipation, abdominal discomfort, injection site reactions when used in combination with a sulphonylurea. Bronchitis, anorexia, headache, vomiting, dyspepsia, abdominal pain upper, constipation, itch and use when used with metformin and a sulphonylurea. Nasopharyngitis, hypoglycaemia, anorexia, appetite decreased, headache, dyspepsia, constipation, flatulence, abdominal distension, gastrointestinal reflux disease, gastroenteritis viral, fatigue, pyrexia, injection site reactions when used with metformin and a thiazolidinedione. Gastrointestinal adverse reactions are more frequent at start of therapy but are usually transient. Very few hypoglycaemic episodes observed other than with sulphonylures. Patients >70 years or with mild renal impairment (creatinine clearance 60-90 mL/min) may experience more gastrointestinal effects. Consistent with medicinal products containing protein/peptides, patients may develop anti-liraglutide antibodies following treatment but this has not been associated with reduced efficacy of Victoza®. Few cases reported of angioedema (0.05%) and acute pancreatitis (<0.2%). Injection site reactions usually mild. Thyroid neoplasms, increased blood calcium and goitres are the most frequent reported thyroid adverse events – rates per 1000 subjects of exposure were 6.8, 10.9 and 5.3 of liraglutide treated patients in comparison with 6.4, 10.7 and 2.1 of placebo treated and 2.4, 6.0 and 1.8 of total comparator treated. The Summary of Product Characteristics should be consulted for a full list of adverse effects. Overdose: In the event of overdosage, appropriate supportive treatment should be initiated according to the patient’s clinical signs and symptoms. MA numbers: Victoza® 3 x 1.8 ml pre-filled pens EU/109529/002. Victoza® 3 x 3 ml pre-filled pens EU/109528/003. Legal Category: POM. For complete prescribing information please refer to The Summary of Product Characteristics which is available on www.medicines.org.uk or by email from info@novonordisk.com or from Medical department, Novo Nordisk Limited, 3-5 Upper Pembroke Street, Dublin 2, Ireland; www.novonordisk.ie Date created: Dec. 2011. Victoza® is a trademark of Novo Nordisk A/S.
Regular patient follow-up
The 2008 Guidelines recommend that patients attend for review of their diabetes every 3-6 months. The practice protocol for recall may be that you advise the patient when their next review is due and the onus is on the patient to make the appointment. Actually giving the patient a return appointment increases attendance; as patients may go to the desk on the way out and there is a queue so the return appointment is not made. Your protocol could include follow up of those who do not attend, either by phone call/text or recall letter.

Having the diagnosis of diabetes clearly visible on the patient’s file facilitates opportunistic reminders to attend for diabetic review, when the patient attends for other reasons. Having a formal recall system means that you can be confident the patient has been invited for their diabetes review, that they haven’t been lost to follow-up because they were not aware it was necessary. Patient empowerment hugely facilitates diabetes care, as a patient who is aware of what is required for self management will seek the required care even when it is not offered. It is essential to explore the patient’s attitude and health beliefs around diabetes as eliciting these at the outset can provide an opportunity for you to address fears and correct any misinformation. If someone’s only experience of diabetes has been associated with amputations, the fear generated by this can be a huge barrier to involvement with self-management.

It is essential to provide ‘protected time’ for a diabetes review, as opportunistic reviews in a routine appointment time is insufficient for a comprehensive review. The diabetic review appointment usually takes 20 to 30 minutes. Protected time can be a longer appointment time or the practice may choose to provide a dedicated diabetes clinic.

Investigations
- HbA1c
- Fasting lipid profile
- Full blood count
- Microalbuminuria
- Serum creatinine
- Serum iron
- Serum transferrin
- Thyroid function Tests
- 12-lead ECG

Provision of education and psychological support: explain, advise, follow-up.

Organisation of care
Encourage the patient to join an integrated care programme if available in your practice. This usually involves the patient signing a consent form.

- Add the patient to practice register and give follow-up appointment.
- The patient should attend for retinopathy screening, podiatrist – if not categorised as low risk as per screening protocol – and a dietitian.
- Consider the need for review by diabetic nurse specialist.
- Set up a management plan for the control of glycaemia, lipid levels and blood pressure with defined targets appropriate for the individual patient as outlined later in this guideline.
- Identify lifestyle issues that need to be addressed.
- Issue the patient with glucose monitor and instruct in its use.

Regular review includes
Recent life-events/new symptoms
1. New difficulties in self-management of diabetes
2. Self-monitored results; discussion of their meaning
3. Dietary behaviours, physical activity and smoking
4. Diabetes education, skills and foot care
5. Blood glucose, lipid and blood pressure therapy and results
6. Other medical conditions and therapy affecting diabetes
7. Psychological, lifestyle and social aspects
8. Arterial/foot risk factors identified at annual review
9. Complications and other problems identified at annual review.

Annual Review
Along with all of the areas monitored at regular review, the annual review also includes surveillance of the following:

Symptoms: ischaemic heart disease, peripheral vascular disease – neuropathy, erectile dysfunction. All patients with symptoms that might reflect vascular disease, particularly ischaemic heart disease, should be investigated.

Feet: footwear, deformity/joint rigidity, poor skin condition, ischaemia, ulceration, absent pulses, sensory impairment.

Eyes: visual acuity and retinal review by ophthalmologist/retinal screening programme.

Kidney: renal damage, albumin excretion and serum creatinine.

Arterial risk: blood glucose, blood pressure, blood lipids, and smoking status.

Attendance: podiatry, dietician and other as indicated.

Integrated care mandates joint care at primary and secondary levels. As outlined above a review of the patient in the DiabetesCentre should take place at 1-2 yearly intervals. This interval should be agreed locally.

• BP/WT/HT/BMI/Waist Circ
• F.Hx/Medication hx and current meds
• Medical Hx
• Complications. Ask re-ocludication as patient may not elicit this information
• Smoking status
• Physical activity
• Diet
• Foot assessment. If low risk as per screening guidelines (Harkins 2008)
• Arrange retinopathy screening appointment
• Knowledge assessment.

Health Promotion Empowerment Model
Patients are empowered when they have:
• The knowledge to make informed decisions.
• The support and resources to implement change.
• A partnership relationship with their healthcare professional.

Refer to:
• Retinopathy screening
• Podiatrist – community if foot screen not low risk
• Dietitian – community
• Structured Pt. Ed. – XPERT/CODE/Desmond
• Endocrinologist (Not practical to refer all patients with type 2 diabetes)
• Individual management plan: control blood sugar, lipids, BP, lifestyle modification.
Follow up appointment
• Newly diagnosed patient may need to be seen weekly x 4
or monthly x 3 then every 3 months x 1yr. This needs to be
individually tailored.
• Lifestyle modification is the cornerstone of treatment and as
the patient is responsible for 95% of his/her treatment, self
management education is vital.

Social and emotional well being
• Build knowledge, skills and confidence
• Explore worries – existing knowledge of diabetes and its
complications.
• Explore feelings – failure/self blame – if associated with
obesity, may feel self inflicted.
• Feeling helpless and alone.
• Overwhelmed by the burden of chronic disease – almost a
grief reaction.
• Explore feelings of depression.

Home blood sugar monitoring
• Necessary if patient is on insulin.
• Some evidence suggests not associated with improved
control in type 2 if not on insulin.
• Most treatment decisions are made on HbA1c results not
home BS readings.
• Time spent teaching monitor use may be better spent on
other aspects of diabetes education.
• Beneficial if patient is adjusting diet according to readings
(pre-prandial BS<6, 2hr PP BS<8).
• Offer only as an integral part of self-management. Discuss its
purpose and agree how it should be interpreted and acted
upon.

Patient education
• What is diabetes
• Complications of diabetes
• Diet/exercise/Weight control/alcohol
• Aims of diabetes care
• Eye and foot care
• Discuss self-monitoring
• Allowances/LTI Scheme/GMS/DFI
• Medications – uses and side effects, mention insulin
• Hypoglycaemia
• Hyperglycaemia
• Sick days

Employment/insurance/driving issues
• Flu and pneumonia vaccine

Structured Patient Education
Group Education
• DESMOND – Diabetes EducationaAnd Self Management for
Ongoing and Newly Diagnosed – Type 2. 6-10 people, 8 hour
programme.
• XPERT-Expert Patient Education versus Routine Treatment –
type 2. 2 hours x 6 weeks.
• CODE-Community Oriented Diabetes Education – type 2.
2hour x 4 weeks, follow-up 6 months.
• DAFNE – Dose Adjustment For Normal Eating – type 1. Group
(4-6) 5 Day course.
• Berger – type 1. 3 day course.

Dietary advise
• Healthy eating, not a special restrictive diet – use food
pyramid.
• Regular meals based on high fibre starchy foods.
• NB portion sizes.
• Food and drinks low in sugar.
• Low in fat and salt.
• 5 portions fruit/veg per day.
• Alcohol – 3 units/day men, 2 units women with some alcohol
free days.
• No diabetic products – expensive and unnecessary.
• Watch weight – calories to match activity.
• Note if not on med associated with hypoglycaemia no need
to pre-load with calories before exercising.

Physical activity
• 30 min per day, note 3x10 min spread over the day is
beneficial.
• Housework/stairs/gardening.
• GP exercise referral scheme.
• Resistance exercise – armchair programme.
• Walking groups/walking buddy.
• Find activity that suits patients interest and lifestyle –
increase gradually. If patient enjoys the activity more likely to
sustain it long-term.
• Patient should be able to talk while doing activity and not be
out of breath.
• Appropriate footwear. Check feet after activity for blisters.
• If on insulin check BS before activity.

Exercise 3 times a week for 6 months reduction in HbA1c
Aerobic exercise only – 0.51%
Resistance training with weights. – 0.38%
Both types of exercise – 0.96%

Comparison with some oral hypoglycaemic agents
• Glitazone (Actos)
  Reduce HbA1c by 0.8-1%
• GLP-1 analogues (Byetta, Victoza)
  Reduce HbA1c by 1%
• DPP4 Inhibitors (Januvia, Onglyza):
  Reduce HbA1c by 0.5-1%
JAMA 2007;298:194-206

Cardiovascular fitness
• Patients who were fit had 1/3 the risk of non-fit subjects even
if they had a high BMI.

Having the diagnosis of diabetes clearly visible on
the patient’s file facilitates
opportunistic reminders
to attend for diabetic
review, when the patient
attends for other reasons.
Lantus contains insulin glargine, an insulin analogue, and has a prolonged duration of action. Lantus should be administered subcutaneously once daily at the same time each day and the dose should be individually adjusted.

**Dosage and Administration:**
- Lantus is administered subcutaneously at the same time each day and the dose should be individually adjusted.
- Prevention of hypoglycaemia: Avoid hypoglycaemia, in general the most frequent adverse reaction of insulin therapy, by individual adjustment of the dose.
- Insulin requirements may be diminished due to reduced insulin metabolism.
- Gluconeogenesis: In the case of liver disease, the capacity for gluconeogenesis will be reduced and insulin requirements may be diminished.
- Insulin requirements may be diminished due to reduced capacity for gluconeogenesis and reduced hepatic glycogenolysis.
- Renal impairment: In patients with renal impairment, insulin requirements may be diminished.
- Hepatic impairment: In patients with hepatic impairment, insulin requirements may be diminished.

**Interactions:**
- Disopyramide, ACE inhibitors, and others enhance the blood glucose-lowering effect and increase susceptibility to hypoglycaemia.
- Oral antidiabetic medicinal products, ACE inhibitors, and others enhance the blood glucose-lowering effect and increase susceptibility to hypoglycaemia.

**Effects on ability to drive and use machines:**
- The patient’s ability to concentrate and react may be impaired as a result of hypo/hyperglycaemia or, for example, as a result of visual impairment. Patients should be advised to take precautions to avoid potential hazards while driving.

**Hypoglycaemia:**
- Adverse Reactions:
  - Hypoglycaemia, in general the most frequent adverse reaction of insulin therapy, may occur if the insulin dose is too high in relation to the insulin requirement.
- Mild episodes may lead to severe and sometimes prolonged and life-threatening hypoglycaemia.

**Overdose:**
- Adverse Reactions:
  - Hypoglycaemia.
- Metabolism and nutrition disorders:
  - Hypoglycaemia.

**Fertility, Pregnancy and Lactation:**
- Fertility:
  - Effects on male fertility: Unknown.

**Children:**
- The safety and efficacy of Lantus in children have been studied.

**Contraindications:**
- Hypersensitivity to insulin glargine or any of the excipients.
- Hypoglycaemia.

**Precautions:**
- Cardiac failure:
  - Close monitoring is essential.
  - Observe for signs and symptoms of heart failure (weight gain, increased blood pressure, dyspnoea).
- Cardiac deterioration:
  - Discontinue pioglitazone if symptoms of cardiac deterioration occur.

**Adverse reactions:**
- Common: Injection site reactions such as: redness, itching, pain, itching hives, swelling or inflammation.
- Relatively more frequent injection site reactions such as: pain, redness, swelling, itching, hives, inflammation.
- Very common: Injection site reactions such as: redness, itching, pain, swelling or inflammation.
- Treatment of adults, adolescents and children of 6 years or above with diabetes mellitus, where the patient’s ability to concentrate and react may be impaired as a result of hypo/hyperglycaemia or, for example, as a result of visual impairment. Patients should be advised to take precautions to avoid potential hazards while driving.

**Legal Category:**
- POM.

**Marketing Authorisation Numbers:**
- Sanofi-aventis Deutschland GmbH, D-65926 Frankfurt am Main, Germany.
Men with BMI of <27 who were unfit had 2/3 greater risk of cardiovascular event.

Blair, SN 1997

**Weight management**

10% weight loss results in:
- 15% reduction in HbA1c
- 10mmhg reduction systolic BP
- 20mmhg reduction diastolic BP
- 10% reduction cholesterol
- 30% reduction in triglycerides

Blair, SN 1997

Weight management
- Patients with BMI >30 non-smoker
- Patients with BMI >30 smoke have similar life expectancy.

Blair, SN 1997

**Addressing obesity and smoking cessation**

**Review appointment**
- Review 3-6 monthly.
- Discuss self management issues.
- Explore what aspects of diabetes the patient is ready to address.
- BP/diet/physical activity/alcohol/smoking/weight control. (Target may be not to increase weight)
- Results – HbA1c, FLP, Renal profile.
- Agree targets – short-term/achievable.
- Ongoing education.
- Social impact of diabetes.
- Psychological impact of chronic illness.

**Annual review**
- In shared care annual review occurs in OPD. As for regular review and the following:
  - Symptoms – IHD, Neuropathy, Erectile dysfunction (50% males with diabetes), Claudication.
  - Feet-footwear, skin condition/integrity, pulses, sensation.
  - Eyes – annual retinal screening.
  - Kidneys – urea/Creat/eGFR/ urine microalb. (if no proteinuria).

**Microalbuminuria**

Predictor for retinopathy and cardiovascular disease
- Reversible damage.
- Improve glycaemic+BP control.
- Start ace inhibitor or angiotension reception blocker even if normotensive to delay the progression to macroalbuminuria.

**Albumin Creatinine Ratio (ACR)**
- Normal <2.5 – repeat annually
- Microalbuminuria: 2.5-25 repeat x 3 over 6 months
- 2 out of 3 positive = nephropathy
- >25 macroalbuminuria (Proteinuria) Exclude UTI.

**Key points**
- Practice nurse ideally placed for primary prevention in childhood – Healthy diet/physical activity.
- Targeted case finding in general practice – early detection.
- If delivering diabetes care – register, review, recall.
- Lifestyle factors: healthy diet/exercise/smoking cessation.

**Resources**

Patient information booklets, membership form, Structured Patient education Programme – CODE.
Smoking Cessation/Physical Activity/Leaflets – HSE Health Promotion Unit.
Community Podiatry.
Community Dietitian, Structured Pt. Ed. XPERT Programme.

**References**


**It is essential to provide ‘protected time’ for a diabetes review, as opportunistic reviews in a routine appointment time is insufficient for a comprehensive review.**