PGEA-ACCREDITED DISTANCE LEARNING PACKAGE FOR THE PRIMARY CARE TEAM

SUPPORTED BY AN EDUCATIONAL GRANT FROM AVENTIS

How to complete the learning module...

Marking & feedback guaranteed within 2 months

Each issue of* Diabetes and Primary Care *contains a continuing education module. Each module carries 2 hours PGEA accreditation for GPs; nurses can complete the supplement to use towards their PREP requirements. Participants should be able to complete the supplement within 2 hours. This can then be submitted to the address on the application form for assessment and feedback. Certificates will be awarded to all health professionals completing the supplement to the required standard. No payment is required.

Standards to be achieved

To receive a certificate, the answers provided must meet the following criteria:

1. All questions within the supplement must be answered.
2. The minimum number of answers to individual questions should be given where specified.
3. Factual knowledge around the subject area, plus the case studies, will be compared with specimen answers for accuracy.
4. Questions around your own practice will be assessed for an adequate level of completion. Brief answers are acceptable.

The feedback (GUARANTEED WITHIN 2 MONTHS) will indicate one of two things:

a) You have successfully completed the questions and will be awarded accreditation and a certificate.

b) Your answers have been inadequate, and comments will be provided.

You will also receive a set of specimen answers against which to compare your own work.

EACH MODULE FOLLOWS A STANDARD FORMAT, RELATING TO ONE AREA OF DIABETES CARE

Section 1: Seeks information about your factual knowledge around the subject area

Section 2: Provides factual information to enable you to revise and refresh your existing knowledge (this section will contain no questions for you to answer)

Section 3: Presents two or three case studies to provide you with an opportunity to apply your knowledge to different patient scenarios

Section 4: Invites you to answer questions about the treatment of a number of patients within your practice around the subject area

Section 5: Asks how completion of the supplement will influence your future practice

Diabetes and Primary Care reserves the right to hold back certificates where the above standards have not been met.

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PGEA-Accredited Distance Learning module
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Oral Hypoglycaemic Agents

PGEA ACCREDITED

Readers can, if they choose, use this section to gain accreditation and feedback (marking guaranteed within 2 months).

Section 1. List three different oral hypoglycaemic agents (OHAs) used in your locality in diabetes care, and write down what you know about their use locally. Each OHA should be a different type.

NAME OF ORAL HYPOGLYCAEMIC AGENT	TYPE OF DRUG AND DOSAGE RANGE	INDICATIONS FOR USE	ACTION	SIDE-EFFECTS

Section 2. This section is provided for readers wishing to refresh their knowledge. Readers may choose to defer reading this section until completion of the rest of the module.

Facts about OHAs

Glycaemic control is one aspect of diabetes management, and the United Kingdom Prospective Diabetes Study (UKPDS), published in 1998, provides evidence that we can reduce complication rates in diabetes by improving HbA_{1c} levels. Oral hypoglycaemic agents (OHAs) are used in people with type 2 diabetes after an initial 3 month trial of diet and exercise (except in those who are severely symptomatic who require earlier intervention). *Table 1* recommends which OHA should be introduced at which point in diabetes management, following the National Institute of Clinical Excellence (NICE) *National Clinical Guidelines for Type 2 diabetes – management of blood glucose* recommendations.

Metformin, the only oral treatment available in the biguanide group, reduces hepatic glucose output and increases tissue sensitivity to insulin, thereby reducing the overall demand for insulin. It is contraindicated in renal impairment (defined by NICE as a creatinine level of >130 μmol/l), and gastro-intestinal intolerance is common, although this can be reduced by introducing and titrating the dose slowly.

Insulin secretagogues include sulphonylureas and the more rapid-acting nateglinide and repaglinide. Sulphonylureas have long been the main stay of oral treatment alongside metformin, and act by stimulating the β cells to increase insulin secretion. Second-generation agents such as gliclazide, glimepiride and glipizide are more commonly used, with varying doses and frequency (*Table 1*). Side-effects include hypoglycaemia, and health professionals should be alert to this. Weight gain can also occur although the incidence of both these side-effects varies with different preparations.

Prandial glucose regulators, nateglinide and repaglinide, have a shorter duration of action and are therefore taken with each meal. They increase insulin secretion through different pathways from sulphonylureas, are rapidly absorbed and quickly eliminated, thereby reducing the risk of hypoglycaemia and weight gain. Nateglinide is an amino acid derivative and repaglinide is a meglitinide. They are recommended in people who have irregular lifestyles (*Table 2*).

Thiazolidinediones, often referred to as glitazones or insulin sensitisers, include rosiglitazone and pioglitazone. They increase tissue uptake of glucose and fatty acids (among other actions), thereby potentially reducing

cardiovascular risk as well as glucose levels. Their effect is slow to develop over several weeks of treatment, adverse effects include weight gain and fluid retention, and liver function needs to be monitored. They are currently only licensed for use in combination treatment with other OHAs, and contraindicated in combination with insulin.

Acarbose is the only α-glucosidase inhibitor available in the UK, and delays the digestion of complex carbohydrates. Acarbose has a high incidence of gastro-intestinal side-effects including flatulence and diarrhoea, although these can be lessened if the dose is increased slowly. The side-effects mean that acarbose is often discontinued by the patient before it has any significant effect.

Table 2 details the NICE recommendations on how different oral treatments should be introduced. NICE recommends that people with diabetes should have individual HbA_{1c} targets set of between 6.5% and 7.5%. The guidelines also acknowledge that concordance with treatment is problematic with all glucose-lowering drugs, so the diabetes review should offer opportunities to check whether tablets are actually being taken. The guidelines also state that all oral treatments should be prescribed on a trial basis and the patient's response should be monitored with HbA_{1c} readings, so a check of HbA_{1c} 3 months after any change in treatment should be carried out.

When glycaemic control is unsatisfactory, NICE recommends that another treatment should be added rather than substituted. It is worth noting that in the UKPDS, approximately 50% of people with diabetes were taking more than one glucose-lowering drug 3 years after diagnosis, and this rose to 75% by 9 years after diagnosis. Multiple drug treatment is therefore to be expected, and a significant number of people will also require the introduction of insulin if their target HbA_{1c} level is not maintained.

Insulin should no longer be considered a last resort, and greater acceptance of insulin treatment by people with diabetes can be achieved by discussing it as a treatment option early in the disease process.

Table 1. Commonly used OHAs

Generic name	Proprietary name	Daily dose (max single dose)	Frequency of dose
Biguanide:			
Metformin	Glucophage	500 mg–3 g (1 g)	1–3 times daily
Sulphonylureas:			
Glibenclamide	Semi-Daonil, Daonil, Euglucon	2.5–15 mg (15 mg)	Daily
Gliclazide	Diamicron,	40–80 mg (160 mg)	1–2 times daily
	Diamicron 30 mg MR	30–120 mg (120 mg)	Daily
Glimepiride	Amaryl	1–6 mg (4 mg)	Daily
Glipizide	Glibenese, Minodiab	2.5–40 mg (15 mg)	1–3 times daily
Prandial glucose regulators:			
Nateglinide	Starlix	60–540 mg (180 mg)	With each meal
Repaglinide	NovoNorm	0.5–16 mg (4 mg)	With each meal
Thiazolidinediones:			
Rosiglitazone	Avandia	4–8 mg (8 mg)	Daily
Pioglitazone	Actos	15–30 mg (30 mg)	Daily
α-glucosidase inhibitor:			
Acarbose	Glucobay	50–600 mg (200 mg)	1–3 times daily

Table 2. Information from NICE National Clinical Guidelines for type 2 diabetes – management of blood glucose

- In people who are overweight (BMI >25) and whose blood glucose is inadequately controlled using lifestyle interventions alone, metformin should normally be used as the first-line glucose-lowering therapy.
- Metformin should be considered as an option for first line or combination therapy for people who are not overweight.
- Insulin secretagogues should be used in combination with metformin in overweight or obese people when glucose control becomes unsatisfactory.
- Insulin secretagogues should be considered as an option for first line therapy when metformin is not tolerated or is contraindicated, or when people are not overweight.
- A generic sulphonylurea drug should normally be the insulin secretagogue of choice.
- Long-acting once daily sulphonylureas may be useful where concordance with therapy is a suspected problem.
- Rapid-acting insulin secretagogues may have a role in attaining tight glucose control in patients with non-routine daily patterns.
- People should be offered a thiazolidinedione as oral combination therapy if they are unable to take metformin and insulin secretagogues as combination therapy, or the HbA_{1c} remains unsatisfactory despite adequate trial of metformin with insulin secretagogues.
- Acarbose may be considered as an alternative glucose-lowering therapy in people unable to use other oral drugs.

Section 3. The answers to these case studies should include the broad aims of treatment, although specific goals may be added where appropriate.

Case study 1

Tony White is a 48-year-old businessman with a BMI of 25 who was diagnosed with type 2 diabetes 3 years ago. He has not been prescribed any OHAs to date, although is taking anti-hypertensive medication. His HbA_{1c} was 6.8% a year ago and has now risen to 8%.

Questions about case study 1

a) What treatment and lifestyle goals would you choose for Tony and why?

b) What would be your treatment plan over the next 6 months?

Case study 2

Judy Walsh is 63 years old, works at a local charity shop, and was diagnosed with type 2 diabetes 6 months ago, at which time she had an HbA_{1c} of 9.5%. Her BMI is 32, and she started taking metformin (500 mg) twice daily 3 months ago. Her HbA_{1c} has dropped to 8.5% but she has had diarrhoea since starting the metformin.

Questions about case study 2

a) What treatment and lifestyle goals would you choose for Judy and why?

b) What would be your treatment plan over the next 6 months?

Section 4. Identify four patients within your own practice who have had different OHAs (or combination of agents) prescribed, and answer the questions below for each patient identified

	Patient 1	Patient 2	Patient 3	Patient 4
a) Prescribed OHAs and rationale for prescribing				
b) Is the intervention effective? How do you know?				
c) Are any side-effects evident?				
d) In light of the above and knowledge gained in this update, are changes needed and if so what?				

Section 5. After completing the above exercise, identify two or three key points, stating how this will influence your future practice.

1.
2.
3.

EDUCATION SUPPLEMENT APPLICATION FORM

Please send the completed education supplement and application form (or a copy of it) to the address below if you wish it to be assessed. Feedback on your work, plus a set of specimen answers, will be sent to you within 2 months.

Name.....
Job title.....
Address.....
.....
..... Postcode.....
Telephone..... Fax.....
GMC or UKCC registration number.....

Has the programme been effective in meeting your needs? Yes ☐ No ☐
Comments.....
.....

Diabetes and Primary Care, SB Communications Group, 15 Mandeville Courtyard, 142 Battersea Park Road, LONDON SW11 4NB
Tel. 020-7627 1510 Fax. 020-7627 1570