Multidisciplinary management of type 2 diabetes:
Practical considerations in diagnosis, care planning and treatment selection

Case study*

Diagnosing type 2 diabetes in a community pharmacy

Overview Click any of the options below to go to that section:

***Fictitious case, created for illustrative purposes only by a healthcare professional**

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Prescribing information and adverse event reporting information can be found at the end of this case study.
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Boehringer Ingelheim

Lilly

Presentation details

- JB is a 54-year-old woman who works in a solicitor's office
- She is recently divorced and lives alone
- JB is overweight and does not take any regular exercise
- She drinks a glass or two of wine most nights, and gave up smoking 5 years ago
- She has visited her local pharmacy five times in the last 2 months for over-the-counter remedies for thrush and for dressings for a cut that has been slow to heal

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Go to **Initial assessment**

Initial assessment

- JB has had three episodes of thrush in as many months
  - She tells the pharmacist that she is urinating frequently, which she thinks is related to the thrush infection
- She has a shallow wound on her hand from a broken glass
  - The cut happened about 3 weeks ago and hasn't fully healed
- Anecdotally, she has complained to the pharmacy counter assistant of feeling very tired all the time

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Go to **Considerations for management (i)**

Considerations for management (i)

- The prevalence of type 2 diabetes (T2D) is rising[1], and it is estimated around 1.1 million people in the UK have diabetes, but have not been diagnosed[2]
- The average person visits a pharmacy 14 times a year,[3] so people who have undiagnosed T2D may present in pharmacies before visiting their GP
- Common signs of diabetes include polyuria, weight loss, fatigue, blurred vision, increased thirst, genital itching or thrush, and wounds taking longer to heal[4]
- The pharmacist invited JB into the consultation room and asked if she had ever been diagnosed with T2D, or if she had any family members with the condition
  - JB answered no to both questions

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Go to **Considerations for management (ii)**

Considerations for management (ii)

- The pharmacist asked JB if she would answer some questions from a diabetes risk assessment tool[5]
  - The pharmacist entered details of JB's gender, age, ethnicity, family history of diabetes, and blood pressure history
  - She calculated a BMI of 29.2 kg/m^2 and measured JB's waist
- The risk assessment tool identified JB as having a high risk of developing diabetes over the next 10 years
  - The pharmacist recommended that JB visit her GP

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Go to **Follow-up (i)**

Follow-up (i)

- A morning urine test was arranged by JB's GP:
  - This found an elevated level of glucose
- In a follow-up blood test, JB's HbA_{1c} was 58 mmol/mol (7.5%), confirming a diagnosis of T2D[6]
- Her GP recommended an initial approach of making diet and lifestyle changes to help lose weight and become more active[7]
  - He provided details for a local slimming club and suggested that JB aimed for an initial weight loss of 5% of her body weight[7,8], and an HbA_{1c} of <48 mmol/mol (<6.5%)[7]
  - He recommended that she try to get up from her desk regularly during each day to stretch or walk around and that she cut down the number of units of alcohol she consumed each week

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Go to **Follow-up (ii)**

Follow-up (ii)

- The GP also offered JB a place on a structured education programme[7]
- After 3 months, JB returned for a follow-up visit arranged to be with the clinical pharmacist at the GP practice:
  - Her HbA_{1c} has risen to 62 mmol/mol (7.8%)
  - JB has lost only a few pounds and had been struggling to change her eating habits
  - She had started eating diabetic biscuits and chocolate she found in the supermarket
  - She said she had cut down her drinking
  - As she lived alone, she found it hard to cook healthy meals for one
  - She had not yet attended the structured education programme due to difficulty in taking time off work

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Go to **Follow-up (iii)**

Follow-up (iii)

- The GP practice pharmacist provided some nutritional advice
  - He explained how she can make changes to include high-fibre, low-glycaemic-index sources of carbohydrate in her diet[7]
  - He discouraged her from using foods marketed for people with diabetes[7]
- He sent JB away with a prescription for standard-release metformin[7], with a plan to titrate up over the coming weeks as tolerated
  - He was concerned that JB might have issues with adherence, so he contacted the community pharmacist to ask that she monitors whether JB was picking up her prescriptions, and to undertake the New Medicine Service at the pharmacy

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Go to **Clinical implications (i)**

Clinical implications (i)

- Undiagnosed T2D is common and some groups are at higher risk of developing T2D, e.g. those with a strong family history or people from South Asian and Black communities[2]
- Pharmacists are often accessible without the need for a booked appointment and they can have a vital role in identifying those at risk of developing T2D
  - Pharmacists should be aware of the common signs of T2D
  - Consider whether T2D may be present in customers complaining of increased frequency of urination, weight loss, fatigue, blurred vision, increased thirst, genital itching or thrush, or those with slow-healing wounds[4]

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Go to **Clinical implications (ii)**

Clinical implications (ii)

- Pharmacists can support people with diagnosed T2D by:
  - Offering pharmacy advanced services, e.g. New Medicine Service, Chronic Medication Service, and/or Medicine Use Review
  - Working closely with the local GP or practice nurse to manage the patient more effectively
  - Monitoring adherence to medications
  - Offering a dosette box if appropriate
  - Counselling patients on the possible side effects of medications, and reassuring them if needed

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Go to **Clinical implications (iii)**

Clinical implications (iii)

- Pharmacists can also support people at risk of developing T2D by:
  - Signposting local weight management services and physical exercise classes
  - Providing patient information leaflets on healthy lifestyle
  - Offering a smoking cessation service
  - Monitoring weight, blood pressure and waist circumference
  - Offering advice to encourage a healthy lifestyle and diet to lower the risk of developing T2D[9]

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References

1. Public Health England (2016) *Diabetes prevalence model*. Available at: http://bit.ly/2sMLhhC (accessed 06.06.2018)
2. Diabetes UK (2016) *Facts and Stats*. Available at: http://bit.ly/2mJteXz (accessed 06.06.2018)
3. NHS England (2013) *Improving Health and Patient Care through Community Pharmacy – Evidence Resource Pack*. Available at: http://bit.ly/2tcZqGf (accessed 06.06.2018)
4. NHS Choices (2016) *Type 2 diabetes – Symptoms*. Available at: http://bit.ly/1gNzGFj (accessed 06.06.2018)
5. Diabetes UK (2016). *Type 2 Diabetes, Know your risk tool.* Available at: http://bit.ly/2tMdDqP (accessed 06.06.2018)
6. NICE (2016) *Clinical Knowledge Summaries. Diabetes – type 2. Diagnosis – Adults.* Available at: http://bit.ly/2ksp8Pj (accessed 06.06.2018)
7. NICE (2015) *Type 2 diabetes in adults: management (NG28).* Available from: http://bit.ly/2tcYOQB (accessed 06.06.2018)
8. Wing RR et al (2011) *Diabetes Care* **34**: 1481–6
9. NICE (2011) *Type 2 diabetes: prevention in people at high risk (PH38)*. Available from: http://bit.ly/2awacM1 (accessed 06.06.2018)

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Prescribing information PI

Prescribing information

TRAJENTA® (linagliptin) 5 mg film-coated tablets

Film-coated tablets containing 5 mg linagliptin. **Indication:** Trajenta is indicated in adults with type 2 diabetes mellitus as an adjunct to diet and exercise to improve glycaemic control as: monotherapy when metformin is inappropriate due to intolerance, or contraindicated due to renal impairment; combination therapy in combination with other medicinal products for the treatment of diabetes, including insulin, when these do not provide adequate glycaemic control. **Dose and Administration:** 5 mg once daily. If added to metformin, the dose of metformin should be maintained and linagliptin administered concomitantly. When used in combination with a sulphonylurea or with insulin, a lower dose of the sulphonylurea or insulin, may be considered to reduce the risk of hypoglycaemia. Renal impairment: no dose adjustment required. Hepatic impairment: pharmacokinetic studies suggest that no dose adjustment is required for patients with hepatic impairment but clinical experience in such patients is lacking. Elderly: no dose adjustment is necessary based on age however, clinical experience in patients > 80 years of age is limited and caution should be exercised when treating this population. Paediatric population: the safety and efficacy of linagliptin in children and adolescents has not yet been established. No data are available. Take the tablets with or without a meal at any time of the day. If a dose is missed, it should be taken as soon as possible but a double dose should not be taken on the same day. **Contraindications:** Hypersensitivity to the active substance or to any of the excipients. **Warnings and Precautions:** Linagliptin should not be used in patients with type 1 diabetes or for the treatment of diabetic ketoacidosis. Caution is advised when linagliptin is used in combination with a sulphonylurea and/or insulin; a dose reduction of the sulphonylurea or insulin may be considered. Acute pancreatitis: In post-marketing experience of linagliptin there have been spontaneously reported adverse reactions of acute pancreatitis. Patients should be informed of the characteristic symptoms of acute pancreatitis. If pancreatitis is suspected, Trajenta should be discontinued; if acute pancreatitis is confirmed, Trajenta should not be restarted. Caution should be exercised in patients with a history of pancreatitis. Bullous pemphigoid: If bullous pemphigoid is suspected, Trajenta should be discontinued. **Interactions:** Linagliptin is a weak competitive and a weak to moderate mechanism-based inhibitor of CYP isozyme CYP3A4, but does not inhibit other CYP isozymes. It is not an inducer of CYP isozymes. Linagliptin is a P-glycoprotein substrate and inhibits P-glycoprotein mediated transport of digoxin with low potency. Based on these results and *in vivo* interaction studies, linagliptin is considered unlikely to cause interactions with other P-gp substrates. The risk for clinically meaningful interactions by other medicinal products on linagliptin is low and in clinical studies linagliptin had no clinically relevant effect on the pharmacokinetics of metformin, glibenclamide, simvastatin, warfarin, digoxin or oral contraceptives (please refer to Summary of Product Characteristics for information on clinical data). **Fertility, pregnancy and lactation:** Avoid use during pregnancy. A risk to the breast-fed child cannot be excluded. A decision must be made whether to discontinue breast-feeding or to discontinue/abstain from linagliptin therapy taking into account the benefit of breast-feeding for the child and the benefit of therapy for the woman. No studies on the effect on human fertility have been conducted for linagliptin. **Undesirable effects:** Adverse reactions reported in patients who received linagliptin 5 mg daily as monotherapy or as add-on therapies (frequencies identified from pooled analysis of placebo-controlled studies) in clinical trial and from post-marketing experience. The adverse reactions are listed by absolute frequency. Frequencies are defined as very common (≥1/10), common (≥1/100 to <1/10), uncommon (≥ 1/1,000 to < 1/100), rare (≥ 1/10,000 to < 1/1,000), very rare (<1/10,000) or not known (cannot be estimated from the available data). Very common: hypoglycaemia (combination with/add-on to metformin and sulphonylurea). Common: lipase increased (monotherapy; combination with/add-on to metformin; combination with/add-on to metformin and sulphonylurea; combination with/add-on to insulin; combination with/add-on to metformin and empagliflozin). Uncommon: nasopharyngitis (monotherapy; combination with/add-on to metformin; combination with/add-on to insulin); hypersensitivity e.g. bronchial hyperreactivity (monotherapy; combination with/add-on to metformin; combination with/add-on to metformin and sulphonylurea; combination with/add-on to insulin); cough (monotherapy; combination with/add-on to metformin; combination with/add-on to insulin); pancreatitis (combination with/add-on to insulin); constipation (combination with/add-on to insulin); rash (monotherapy; combination with/add-on to metformin; combination with/add-on to metformin and sulphonylurea; combination with/add-on to insulin); amylase increased (combination with/add-on to metformin; combination with/add-on to metformin and sulphonylurea; combination with/add-on to metformin and empagliflozin). Rare: angioedema (monotherapy; combination with/add-on to metformin; combination with/add-on to metformin and sulphonylurea; combination with/add-on to insulin); urticaria (monotherapy; combination with/add-on to metformin; combination with/add-on to metformin and sulphonylurea; combination with/add-on to insulin); amylase increased (monotherapy). Not known: nasopharyngitis (combination with/add-on to metformin and sulphonylurea; combination with/add-on to metformin and empagliflozin); hypersensitivity e.g. bronchial hyperreactivity (combination with/add-on to metformin and empagliflozin); cough (combination with/add-on to metformin and sulphonylurea; combination with/add-on to metformin and empagliflozin); pancreatitis (monotherapy; combination with/add-on to metformin; combination with/add-on to metformin and sulphonylurea; combination with/add-on to metformin and empagliflozin); bullous pemphigoid (monotherapy; combination with/add-on to metformin; combination with/add-on to metformin and sulphonylurea; combination with/add-on to insulin); amylase increased (combination with/add-on to insulin). Prescribers should consult the Summary of Product Characteristics for further information on side effects. **Pack sizes and NHS price:** 28 tablets £33.26. **Legal category:** POM. **MA number:** EU/1/11/707/003. **Marketing Authorisation Holder:** Boehringer Ingelheim International GmbH, D-55216 Ingelheim am Rhein, Germany. Prescribers should consult the Summary of Product Characteristics for full prescribing information. **Prepared in** April 2017.

Adverse events should be reported. Reporting forms and information can be found at www.mhra.gov.uk/yellowcard
Adverse events should also be reported to Boehringer Ingelheim Drug Safety on 0800 328 1627 (freephone).

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