

CME activity

Vildagliptin: the evidence for its place in the treatment of type 2 diabetes mellitus

Release date: December 2008

Expiration date: December 2009

Accreditation statement

Core Medical Publishing designates this educational activity for a maximum of 1 *AMA PRA Category 1 Credit*[™]. Physicians should only claim credit commensurate with the extent of their participation in the activity.

The CME activities contained in this publication will expire 1 year from the cover date.

CME activities published in *Core Evidence* are planned and implemented in accordance with the Essentials and Standards of the Accreditation Council for Continuing Medical Education (ACCME).

Statement of need

Recent data from the International Diabetes Federation indicate that 246 million adults worldwide had diabetes in 2007, a figure that is estimated to increase to 380 million by 2025. A further 308 million have impaired glucose tolerance (IGT, or “prediabetes”), which is also expected to increase to 418 million by 2025. The majority have type 2 diabetes, which is associated with significant morbidity and mortality from complications and increased risk of cardiovascular disease.

Treatment of diabetes aims to control hyperglycemia, reduce cardiovascular risk, and prevent complications. However, there is evidence that blood glucose is poorly controlled in two-thirds of patients with type 2 diabetes. Most oral drugs used to treat diabetes reduce glycosylated hemoglobin by approximately 1%, which may be insufficient for patients whose blood glucose is much higher than the recommended target range of 6.5–7.5%. Long-term control may be difficult with drugs that act on tissue abnormalities rather than underlying disease mechanisms (i.e. reduced insulin secretion from pancreatic beta cells). Furthermore, patient compliance may be affected by poor tolerability or contraindications.

There has been much activity in developing new drugs that attempt to address these needs. The dipeptidyl peptidase 4 (DPP-4) inhibitors vildagliptin, saxagliptin, and sitagliptin represent a recently introduced class of oral antidiabetic drugs. Physicians need to understand the mechanism of action of these new agents; their effects on patient-oriented outcomes including hypoglycemia, tolerability, and weight gain, and disease-oriented outcomes including blood glucose; and their place in therapy in combination with other agents.

Target audience

This educational activity is intended for primary care physicians and diabetologists, as well as other healthcare professionals interested in or involved in the management of patients with diabetes.

Learning objectives

Upon completion of this activity, participants should be able to:

- discuss the prevalence and burden of type 2 diabetes
- know the treatment options for type 2 diabetes and their pros and cons
- describe unmet needs in the management of patients with type 2 diabetes
- evaluate the evidence with a DPP-4 inhibitor, vildagliptin, in type 2 diabetes and its potential place in therapy.

Method of instruction

Participants should read the learning objectives and the article Profit L, Chris P, Nadin, C. Vildagliptin: the evidence for its place in the treatment of type 2 diabetes mellitus. *Core Evidence*. 2008;3(1):13–30. After reviewing the material, complete the post test and evaluation form, which can be found over the page or online at <http://www.coremedicalpublishing.com>.

Disclosures

The authors declare that they have no conflicts of interest.

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Commercial support

This activity was not supported by any commercial interests.

CME mission statement

Core’s CME mission statement is intended to provide a description of the purposes of the overall CME program, the content areas and target audience of its CME effort, the general types of activities and services provided, as well as an account of the expected results.

Core’s CME mission and purpose is to develop a model CME program based on the ACCME Essentials and Standards; demonstrate “exemplary” compliance in all of its CME program areas; and to develop model CME activities by use of its four CME goals.

CME goals

The goals of Core’s CME program are to:

1. develop independent and balanced continuing education activities for a target audience of physicians of all specialties and settings
2. deliver continuing medical education activities that will be of value to physicians addressing the identified content area and information most relevant to patients
3. publish evidence-based, outcomes-oriented reviews of FDA-approved uses of drugs as well as off-label uses
4. jointly sponsor CME activities with other strategic organizations in order to provide high quality educational activities that serve to improve physician performance and patient outcomes.

Core Medical Publishing will develop and deliver educational content in the form of live CME activities and publications, both printed and electronic.

The expected outcome of the CME program is that studies of participants will show a high degree of correlation between satisfaction and patient care applicability regarding the subjects addressed by Core Medical Publishing. A secondary outcome will be continued ACCME accreditation and recognition of its CME program.

Core Medical Publishing will continually improve its CME program through application of the ACCME Essentials and Standards and assessing the results of its individual activities and the overall CME program.

Posttest

1. In which of the following group(s) is type 2 diabetes commonly found?

- A. Adults aged over 40 years
- B. White children and adolescents
- C. Hispanic/Latino youths
- D. African Americans
- E. Obese patients

2. Type 2 diabetes is associated with which of the following?

- A. End-stage renal disease
- B. Hypertension
- C. Dyslipidemia
- D. Low body mass index
- E. Stroke

3. Type 2 diabetes is a complex metabolic disease. Which of the following is incorrect?

- A. Beta cell dysfunction is a major factor in the development of type 2 diabetes
- B. Beta cells increase insulin output to maintain normal glucose levels in the presence of insulin resistance in peripheral tissues
- C. The progressive deterioration in beta cell function over time results in an inability to meet demand for continuing increases in insulin
- D. Beta cell function is usually close to normal in most patients with newly diagnosed type 2 diabetes
- E. Beta cell function continues to decline during treatment with oral antidiabetic medication

4. Glucagon is important in carbohydrate metabolism. Which of the following is incorrect?

- A. Glucagon stimulates glucose release from the liver during fasting to maintain glucose homeostasis
- B. In patients with type 2 diabetes glucagon levels are elevated
- C. During periods of hyperglycemia glucagon secretion is suppressed
- D. Vildagliptin lowers glucagon levels in patients with type 2 diabetes
- E. Vildagliptin has no effect on glucagon levels in patients with type 2 diabetes

5. Glucagon-like peptide (GLP-1) is an incretin hormone secreted into the bloodstream from endocrine cells in the gastrointestinal mucosa in response to a meal. Which of the following statements about GLP-1 is/are incorrect?

- A. GLP-1 is activated by dipeptidyl peptidase 4 (DPP-4)
- B. GLP-1 mediates insulinotropic activity via GLP-1 receptors on beta cells
- C. GLP-1 suppresses postprandial glucagon suppression
- D. GLP-1 mediates glucose-dependent insulin secretion
- E. GLP-1 secretion is impaired in type 2 diabetes

6. Several classes of oral antidiabetic drugs are available. Which of the following statements is/are true?

- A. Gastrointestinal adverse effects are common with metformin
- B. Sulfonylureas can cause weight gain
- C. Thiazolidinediones are not associated with weight gain
- D. Metformin increases muscle insulin sensitivity
- E. Sulfonylureas stimulate insulin release from beta cells

7. Despite the availability of antidiabetic drugs, there are still unmet needs in the management of type 2 diabetes. Which of the following is incorrect?

- A. Oral antidiabetic agents such as metformin, thiazolidinediones, and sulfonylureas sensitize specific tissues to the effects of insulin or enhance insulin-producing activity of the pancreas rather than the underlying process of preserving beta cell function
- B. Most of the commonly used oral glucose-lowering drugs reduce glycosylated hemoglobin by 2%
- C. Most of the commonly used oral glucose-lowering drugs may not produce a sufficient reduction in glycosylated hemoglobin in patients who have levels much greater than the recommended target
- D. Current treatments are often limited by tolerability and contraindications
- E. Long term glycemic control is difficult to maintain with current oral antidiabetic drugs

8. Vildagliptin, sitagliptin, and saxagliptin are newer antidiabetic medications. Which of the following is/are true?

- A. They are GLP-1 analogs
- B. They are DPP-4 inhibitors
- C. They are given by injection
- D. They enhance glucose-dependent insulin secretion by beta cells
- E. They suppress elevated glucagon secretion

9. Evidence exists for which of the following outcomes being achieved by vildagliptin?

- A. Reduction in glycosylated hemoglobin
- B. Reduction in fasting and postprandial plasma glucose
- C. Incremental glycemic control in combination with other oral antidiabetic agents
- D. Increase in postprandial GLP-1
- E. Improvement in beta cell function

10. Which of the following is not true of the clinical use of vildagliptin in the management of patients with type 2 diabetes?

- A. It only works in patients with some beta cell function
- B. Liver function tests are required during treatment
- C. The evidence demonstrates its efficacy in adult patients with type 2 diabetes
- D. It is associated with less weight gain than metformin
- E. Metformin is currently first-line treatment and sulfonylureas second line

Evaluation of CME Activity

Please answer the following questions by checking the appropriate rating

4=strongly agree 3=agree 2=disagree 1=strongly disagree 4 3 2 1

1. After participating in this activity I am better prepared to:

- discuss the prevalence and burden of type 2 diabetes.
- know the treatment options for type 2 diabetes and their pros and cons.
- describe unmet needs in the management of patients with type 2 diabetes.
- evaluate the evidence with a DPP-4 inhibitor, vildagliptin, in type 2 diabetes, and its potential place in therapy.

2. Please answer the following questions by checking the appropriate rating.

- The information was relevant to my professional needs and practice.
- The presentation and teaching methods matched my preferred learning style.
- The content was objective, scientifically based, and free of commercial bias.

3. Please elaborate on any of the answers you provided above in question 2.

4. The authors were knowledgeable in the subject area.

5. Based on information presented in this activity, I will:

- change my practice.
- make no changes as my current practice reflects this CME activity's recommendations.
- seek additional information on this topic.
- do nothing as the content was not convincing.

6. What issue(s) related to the therapeutic area discussed in this activity, or other topics, would you like addressed in future continuing education?

Answer Sheet & Evaluation Form

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Directions: select one answer for each question in the posttest and circle the appropriate letter. Please allow 4 weeks for processing.

Physicians:

Mail to:

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Suite 1102
White Plains, NY 10601

Fax to: (914) 220-8352

Examination Answers

Select and circle the single best answer(s)

1.	A	B	C	D	E
2.	A	B	C	D	E
3.	A	B	C	D	E
4.	A	B	C	D	E
5.	A	B	C	D	E
6.	A	B	C	D	E
7.	A	B	C	D	E
8.	A	B	C	D	E
9.	A	B	C	D	E
10.	A	B	C	D	E

Participation Information

(please print)

First Name: _____

Last Name: _____

Address: _____

City: _____

State: _____ Zip: _____

Daytime Phone: _____

Fax: _____

E-mail: _____

Physician I am claiming _____ (in 0.25 increments)
 AMA PRA Category 1 Credit(s)[™].

Pharmacist Other (specify) _____

License No. _____

State of Licensure _____

