CDS Starter Kit: Diabetes follow-up care

Introduction

The delivery of high-quality diabetes care is a complex process that requires a provider to consider many pieces of patient information and treatment guidelines. Given that many recommendations for diabetes care are relatively well-defined, diabetes follow-up care is a good opportunity to use CDS and begin combining different types of CDS to support workflow transformation and improve patient care.

Treatment guidelines and logic used by the CDS

In this Starter Kit, the focus is on three areas of diabetes care: 1) regular testing in patients with well-controlled diabetes; 2) treatment for patients with diabetes and hypertension; and 3) annual microfilament foot exams for patients with diabetes. The guidelines for each are provided below.

1) **Regular testing in well-controlled diabetes patients**

The American Diabetes Association has established guidelines for standard monitoring of diabetic patients.(1)

- Hemoglobin A1C (HbA1c) testing is recommended twice per year in well-controlled patients
- Tests of urine protein levels are recommended annually - Nephropathy in Diabetes
- Lipid panels should be tested annually

2) **Treatment for hypertension in diabetes patients** (2)

For patients with diabetes and hypertension, the target blood pressure (BP) is <130/80 mmHg. Drug therapy is recommended for patients with diabetes and hypertension when systolic blood pressures are >140 mmHg and/or diastolic >85-90 mmHg. Two-drug therapy is recommended when BP is more than 20/10 mmHg to 30/10 mmHg above goal, either as a separate prescription or in fixed dose combinations.

Preferred drugs for the treatment of diabetes and hypertension (in the absence of heart failure, known coronary heart disease, or microalbuminuria):

- The preferred first-line drug is either a thiazide type diuretic or an ACE inhibitor. Combination therapy of hydrochlorothiazide/ACE inhibitors as first-line therapy is an option.
- For two drugs: When a second drug is required for hypertension control, it should be either an ACE inhibitor or a diuretic.

- For three drugs: If blood pressure is not controlled on a thiazide-type diuretic in addition to an ACE inhibitor, then treatment with a thiazide-type diuretic, an ACE inhibitor AND a beta-blocker are recommended.

3) Foot exams

All individuals with diabetes should receive an annual foot examination to identify high-risk foot conditions, or as advised by a physician. (3)

User guide for CDS tools for diabetes follow-up care

Diagnosis & treatment

Step 1: Enter diabetes (with hypertension) follow-up care as reason for visit

The documentation of diabetes follow up care as the reason for visit is a trigger that activates diabetes specific CDS. Documentation of reason for visit is typically completed by a medical assistant or scheduling assistant. It is important that the individual completing the documentation is adequately trained in how to use the EHR and CDS system.

Step 2: Measure and record vitals, current medications, and other pertinent data related to diabetes-care

Current vital signs, medications, and information about compliance with treatment plans should be documented at the beginning of a visit for diabetes follow-up care. Because there is a relatively standard set of information that needs to be collected, a CDS documentation template can be used to ensure that information is documented consistently.

Step 3: Perform follow-up care

High-quality diabetes care requires providers to use information many types of information, including but not limited to, vitals and measurements, laboratory test results, medications. These data may have been documented at different points in time and may be stored document in different areas of the chart. A powerful advantage of EHRs with CDS is that they can pull together data from many parts of the chart and organize them in new and helpful ways. For example, the information can be pulled together in a single screen or CDS module that is specifically designed to support diabetes care. This type of CDS falls into the general category of data display.

- Review standard laboratory tests, order tests if needed

For patients with well-controlled diabetes, HBA1C testing is recommended every 6 months; lipid panels and urine protein are tested annually. If a patient is overdue for any of these tests, the physician can be alerted that the test needs to be ordered. Many CDS systems provide a link to an order entry screen near the alert to support the provider's workflow. Systems may also provide infobuttons if the provider wants to learn more about the guidelines and recommendations.

- Review blood pressure, prescribe drug therapy if indicated

Providers review current blood pressure to ensure that it is within the recommended range. If blood pressure is out of range, drug therapy is recommended. This process has multiple opportunities for CDS. For example, an alert can be used to signal that the patient's blood pressure is out of range. The system can support documentation of the issue by automating documentation or guiding the provider to a documentation screen after the provider clicks to acknowledge the alert. Once elevated blood pressure is documented as a problem, the system may provide a second alert regarding recommended drug therapy. Many CDS systems provide a link to an order entry screen near the alert to support the provider's workflow.

- Review date of most recent foot exam, perform foot exam if needed

An annual foot exam is recommended for all diabetic patients. If a patient is overdue for a foot exam, the CDS system may provide an alert that the test should be performed. Some CDS systems provide a link to a documentation template specifically designed for diabetes foot exams. Infobuttons can also provide support for those who wish to learn more about the evidence for foot exams.

Example

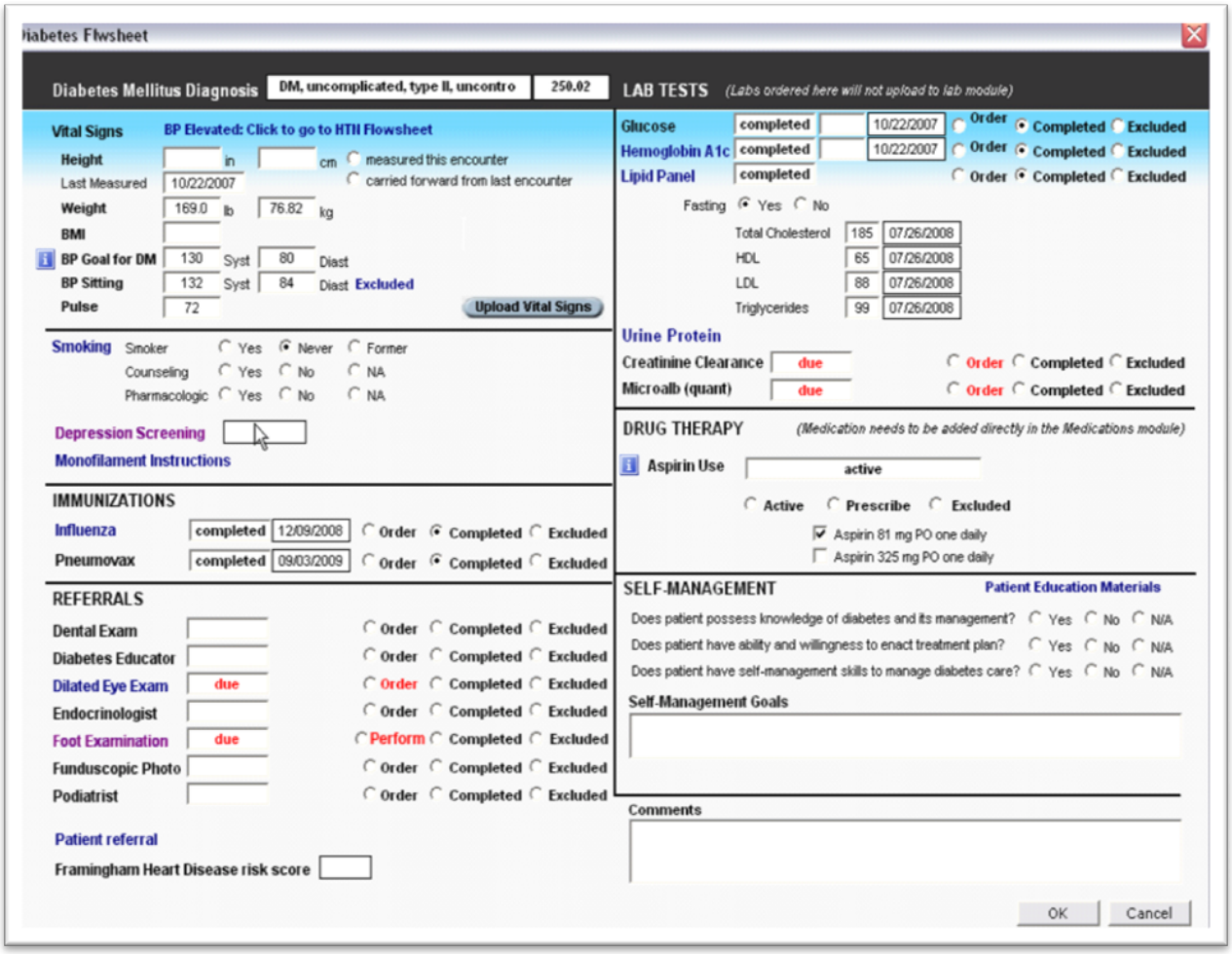
NextGen Ambulatory EHR (4)

Steps 1 & 2: Enter diabetes (with hypertension) follow-up care as reason for visit & measure and record vitals, current medications, and other pertinent data related to diabetes-care

The reason for visit and updated vital signs and other relevant data are entered into documentation templates.

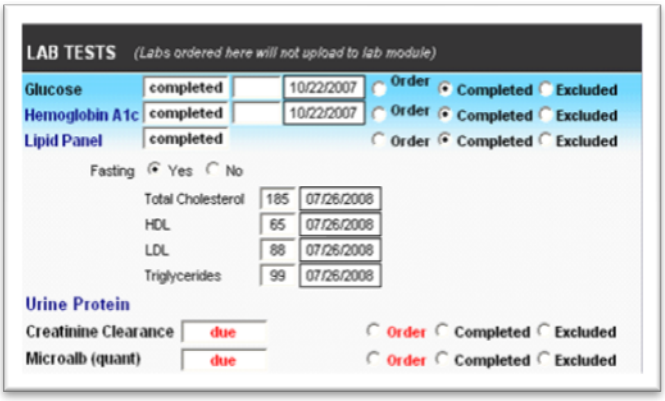
Step 3: Perform follow-up care

Clinical decision support for diabetes follow-up care is provided through the Chronic Conditions HPI and Diabetes Flowsheet. Pictured below, the Diabetes Flowsheet is a standard part of the Ambulatory EHR system. It organizes data on vital signs, smoking status, immunizations, referrals, laboratory tests, drug therapy, and diabetes self-management. This flowsheet combines data display, alerts and reminders, documentation templates, and infobuttons to support comprehensive diabetes follow-up care.



- Review standard laboratory tests, order tests if needed

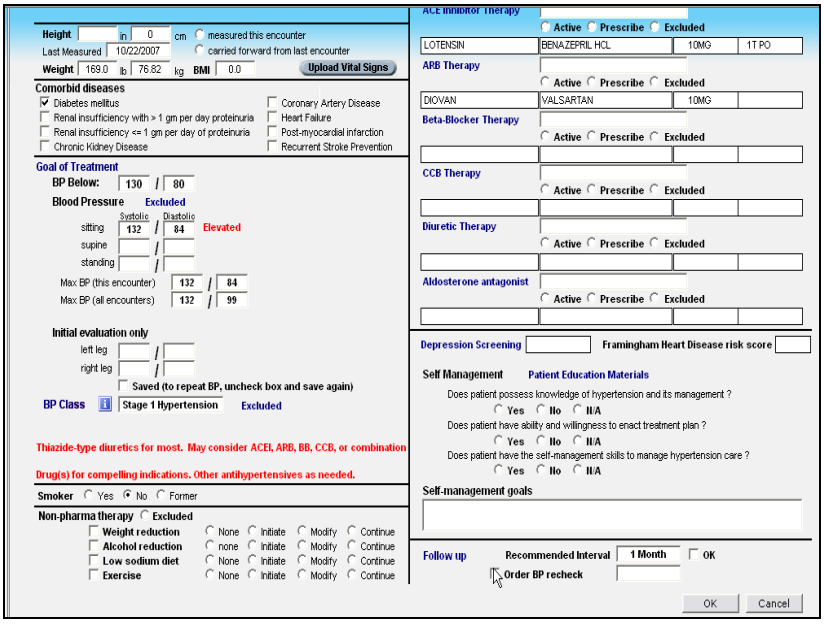
In the Diabetes Flowsheet, lab tests commonly used in diabetes care are organized in the upper right-hand corner of the sheet. In this example, the patient is up to date on glucose, HbA1c, and lipids panels, but is overdue on urine protein tests. The provider is alerted to overdue tests in RED. The provider can link to an order entry form by clicking the radio button to the left of the word “order”.

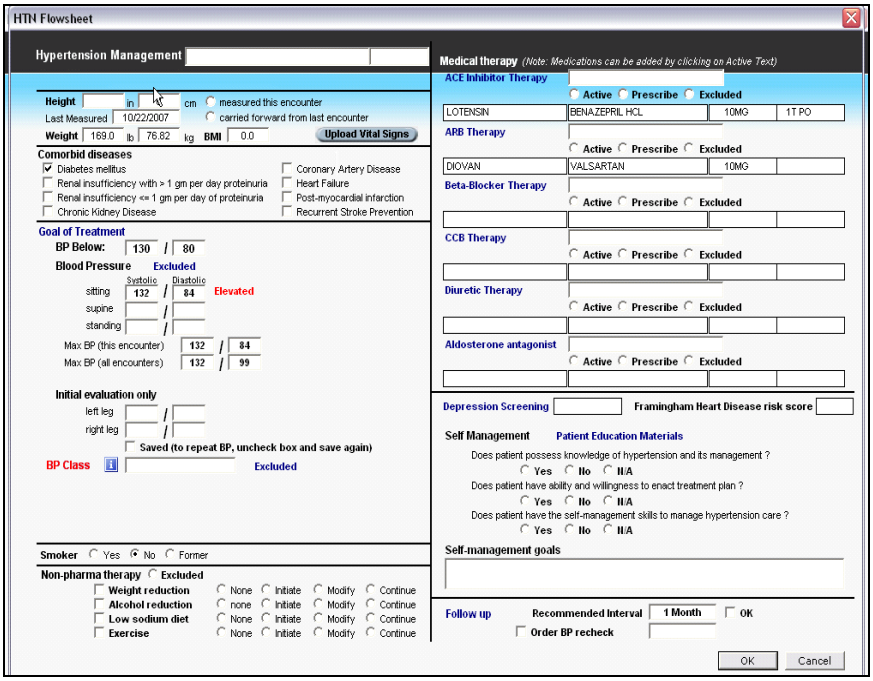


- Review blood pressure, prescribe drug therapy if indicated

Blood pressure is displayed in the Vital Signs section of the Diabetes Flowsheet. In this example, the patient's sitting blood pressure is above the goal for diabetes patients. The CDS system automatically compares the current blood pressure to the goal and generates an alert plus hyperlink in BLUE across the top of the section that states "BP Elevated: Click to go to HTN (hypertension) Flowsheet. If the provider wanted to see more information about the recommended blood pressure goal, s/he could click the infobutton in blue next to "BP Goal for DM".

If the provider clicks on the hyperlink to the Hypertension Flowsheet, the system will open new flowsheet pre-populated with information about the patient's vitals and comorbidities. The CDS provides multiple alerts (in red) to guide the provider through a workflow. First, the provider is alerted that the patient's blood pressure is elevated and that BP class needs to be documented. If the provider clicks on the "BP class", the system will launch a documentation template that allows the provider to select the severity of the patient's hypertension. Once BP Class is documented, the system will generate treatment recommendations presented in red. The provider can use this recommendation to inform treatment. In this example, the patient is already on the recommended drug therapy so the provider orders a blood pressure recheck. The provider can exit the HTN Flowsheet and return to the Diabetes Flowsheet when treatment of hypertension is considered complete.

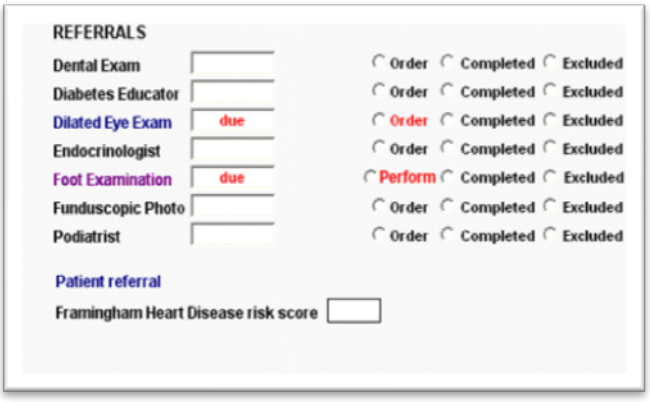


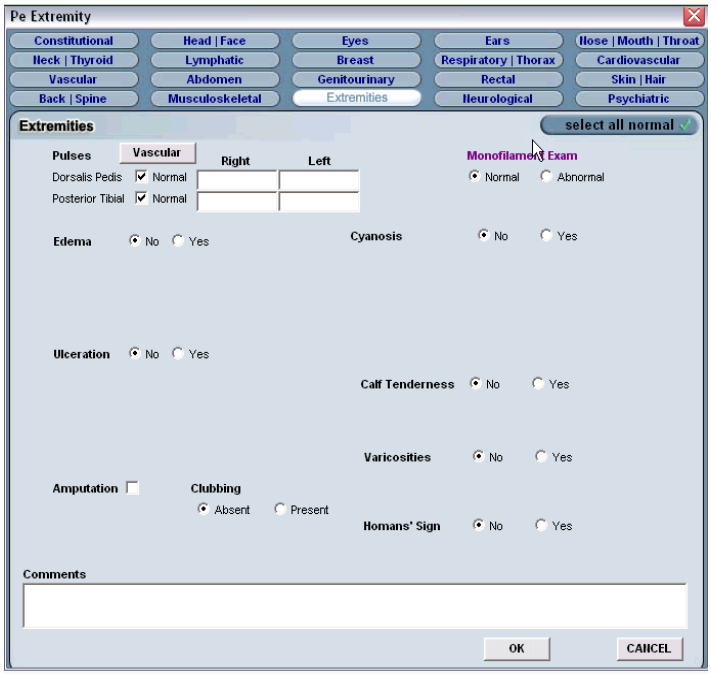


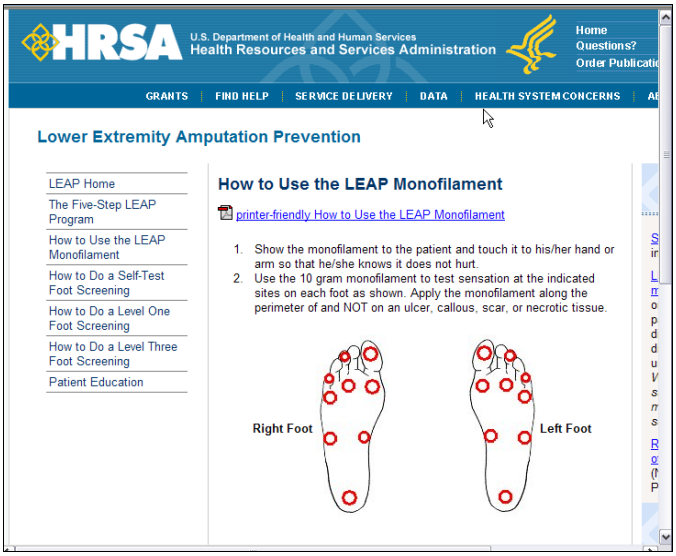
- Review date of most recent foot exam, perform foot exam if needed

Providers can review information about annual foot exams in the Referrals section of the Diabetes Flowsheet. An alert appears in red if the patient is overdue for a foot exam. If the provider clicks "Perfom", a documentation template will launch to enable complete documentation of findings. The documentation also provides a hyperlink (in blue) to more information about how to conduct a foot

exam. When documentation of the foot exam is complete, the provider can exit out of the template and return to Diabetes Flowsheet.







When the provider considers diabetes follow-up care to be complete, s/he can exit out of the Diabetes Flowsheet and address any other problems that require attention during this visit.

Summary

The NextGen and Cerner examples illustrate the versatility of CDS for diabetes. Apart from providing vendor-specific guidance, these examples can help implementers think about how different CDS intervention types can match work processes for a particular clinical condition.

References

1. American Diabetes Association. Executive summary: Standards of medical care in diabetes--2011. Diabetes Care. 2011 Jan;34 Suppl 1:S4-10.

2. Kaiser Permanente Care Management Institute. Adult Diabetes Clinical Practice Guidelines [Internet]. Agency for Healthcare Research and Quality October 30, 2006 cited 06/08/11]. Available from: http://guidelines.gov/content.aspx?id=9659&search=diabetes+and+diabetic+hypertension+and+130%2f80+mmhg+and+85-90

3. Mayfield JA, Reiber GE, Sanders LJ, Janisse D, Pogach LM, American Diabetes Association. Preventive foot care in diabetes. Diabetes Care. 2004 Jan;27 Suppl 1:S63-4.

4. NextGen Healthcare Information Systems, Inc. Online demonstration [Internet]. Available from: https://www.nextgen.com/Community/VirtualOffice/DemoLogin.aspx