Chapter Eight

Data Entry Using Flow Sheets and Anatomical Drawings

Learning Outcomes

After completing this chapter, you should be able to:

◆ Describe flow sheets
◆ Work with a flow sheet
◆ Create a Form-based flow sheet
◆ Create a Problem-based flow sheet
◆ Use an EHR drawing tool to annotate drawings in an encounter

Learning to Use Flow Sheets

Flow sheets present data from multiple encounters in column form. This format allows for a side-by-side comparison of findings over a period of time. Some clinicians prefer to view a patient chart this way because it is easier to spot trends in the patient’s health conditions. It is ideal for chronic disease management such as diabetes or long-term conditions such as pregnancy. OB offices use flow sheets to monitor pregnancy because it affords them a view of the previous visits when documenting the current one. Paper flow sheets have been in use long before flow sheets were developed for EHR systems. The difference is that EHR systems have the ability to create them dynamically.

Not all EHR systems implement flow sheets in the same manner, so flow sheets in the workplace may vary from these exercises. Some EHR systems limit flow sheets to lab results or vital signs. However, by using a codified nomenclature, it is possible to create clinical flow sheets that present findings from entire encounters in columns by encounter date. Additionally, there are several different ways for an EHR to create a flow sheet based on a list, a problem, or a form.

Patients with chronic diseases such as diabetes often develop additional chronic diseases, for example, hypertension, cardiovascular disease, macular
degeneration, and a number of other diseases. Rather than try to develop complicated forms that cover different combinations of diseases, a clinic can simply develop one form for each. As you will see in this exercise, you can switch forms throughout the exam without reentering findings. Because the forms share the same nomenclature, a finding that is used on both forms automatically displays the entered data when either form is loaded.

**Guided Exercise 50: Working with a Flow Sheet**

In previous exercises, you worked with multiple diagnoses for a single patient. You also have learned that creating and using forms for specific diseases, conditions, or types of visits can speed up data entry because the form presents all of the findings likely to be needed by the clinician for a particular type of exam. This exercise will combine those two concepts and add a third concept, the flow sheet. In this exercise you will learn to use a flow sheet to document a patient encounter.

**Case Study**

Guy Daniels is a patient with hypertension and borderline diabetes who has been seen quarterly at the outpatient clinic to better manage his health. Mr. Daniels returns for a three month checkup. Lab tests have been ordered and performed before his visit. The results were reviewed by the clinician when they arrived electronically earlier today.

**Step 1**

If you have not already done so, start the Student Edition software.

Click Select on the Menu bar, and then click Patient. In the Patient Selection window, locate and click on **Guy Daniels**, as shown in Figure 8-1.

Make certain you set the date and time correctly for this exercise. If you need help, review Chapter 3, Guided Exercise 13.

**Step 2**

Click Select on the Menu bar, and then click New Encounter.

Select the date **May 24, 2012**, the time **4:15 PM**, and the reason **Office Visit**.

Compare your screen to Figure 8-2. Make certain that the date and time match before clicking on the OK button.

**Step 3**

Enter the Chief complaint by locating the button in the Toolbar labeled “Chief” and clicking on it.

In the dialog window that will open, type “**3 month check up**.”

![Figure 8-1 Selecting Guy Daniels from the Patient Selection window.](image)

![Figure 8-2 New encounter for an office visit, May 24, 2012 4:15 PM.](image)
Compare your screen to Figure 8-3 and then click on the button labeled “Close the note form.”

**Step 4**

Locate and click on the Forms button in the Toolbar at the top of your screen, as you have done in previous exercises.

Select the form labeled “Hypertension,” as shown in Figure 8-4.

**Step 5**

Locate the Diagnosis Hypertension at the top of the form.

Click the Y check box for Hypertension. A circle next to the finding will turn red.

To save time at the practice, the form designer has incorporated the vital signs fields into the first page of the form. Enter the following vital signs for Guy Daniels:

- **Temperature:** 98.2
- **Respiration:** 20
- **Pulse:** 68
- **BP:** 125/85
- **Weight:** 229

**Step 6**

The clinician performs the Quick Screening exam.
Locate and click on ROS button in the Toolbar near the top of your screen. The button should appear orange.

Locate and click the Negs (auto negative) button to quickly document the clinician’s physical findings.

Compare your screen to Figure 8-5.

**Step 7**

You may have noticed previously that the Toolbar near the top of your screen has additional buttons when you are on the Forms tab. Two of the buttons are used for invoking the Flow Sheet view. One button creates a flow sheet based on a form and the other creates a flow sheet based on a problem or list. In this exercise, you will learn to create a flow sheet based on the form.

To invoke the Flow Sheet view of Guy Daniels’s chart, follow these steps:

Click on the button labeled List Size until the list size is set to 1.

Locate and click on the button labeled “FS Form” in the Toolbar near the top of your screen. (The icon resembles a file folder with a grid pattern.)

The screen will change to the Flow Sheet view. The button should now be orange.

The FS Form button is used to view a flow sheet when you are in the Forms tab.
About the Flow Sheet View  The Flow Sheet view resembles a spreadsheet similar to Microsoft Excel® or Lotus 1-2-3®, that is, it is made up of rows and columns of “cells.” The first column displays descriptions as well as red and blue buttons for findings on the current form. The date of the current encounter is at the top of the column. The remaining columns to the right display encounter data from previous visits.

The flow sheet rows are grouped vertically into logical sections that match the sections you are accustomed to seeing in the encounter note. The title of each section is printed in blue on a teal background. For example, sections in Guy Daniels’s flow sheet are titled “Physical Findings” and “Tests,” “Assessment,” and “Plan.” A small plus or minus sign next to the section title allows you to collapse or expand the findings below it. Functionally, this is comparable to the ability to expand or collapse trees in the Nomenclature Pane or to expand folders in the Outline view.

The list of findings in the first column and how they are displayed is determined by the way the flow sheet is invoked as follows:

FS Form—When a flow sheet is invoked from a form, the software uses the data elements on the form to populate the first column.

Problem—If the flow sheet were invoked instead from the Problem List on the Manage tab, the first column would be populated with findings pertinent to the selected problem in the Problem List.

List—A third type of Flow Sheet view can be created from a list. When a list is used, the first column of the flow sheet is populated with findings in the list, findings that are within the tree view of the list, and findings of similar body systems.

Step 8
The columns on the right display the dates of previous visits. The cells within the column display the words POS (in red) or NEG (in blue), or a numerical value for the finding. A blank cell indicates no finding was recorded on that encounter date.

Each cell that has a finding recorded can display only one field of data. Where there is more than one type of data (for example, if entry detail fields have been used for a finding), the cell will contain a button with an ellipsis (three dots). Clicking on the ellipsis button will invoke a small window allowing you to view the additional details.

Try this yourself. Locate the row under vital signs labeled RR (respiration rate); next, locate the column dated 02/14/2012; now position your mouse on the gray ellipsis button in the cell containing the value “26 breaths.” Click on the ellipsis button.
A Data Details window will be invoked, as shown in Figure 8-7.

When you have finished looking at the data details, click on the button labeled “Cancel” to close the data details window.
**Step 9**

The full encounter note for any previous encounter can be viewed by positioning the mouse over the date at the top of any of the columns on the right and clicking the mouse on the date.

Locate and click on the column header date **02/14/2012**.

(Note that you must click on the date itself, not on the row or spaces adjoining it.)

A window displaying the full encounter note will be invoked. Compare your screen to Figure 8-8.

Click on the Cancel button to close the Narrative window for 2/14/2012.

**Figure 8-9 Window used to cite items from previous encounter into current encounter.**

**Step 10**

Locate and click on the button labeled “Cite” in the Toolbar at the top of your screen. The button icon resembles a teal check mark over a grid. Whenever Cite mode is enabled, the Cite button will be orange. (The Cite button is circled in red in Figure 8-9.)

Cite is used to bring information forward from previous encounters into the current one. The information can be updated as it is brought forward. The findings also could be edited after they are in the current encounter, but the Cite feature allows you to bring the finding into the current note and edit it in one step.
Step 11
When the Cite button is on (orange), clicking on the date of a column header will invoke a different window. The “Review cite” window will list findings from that encounter instead of the encounter narrative. The Cite button changes which window is invoked. When the Cite button is on, a window of findings is invoked; when it is off, the Narrative window is invoked.

When the Cite button is on, the mouse pointer will change to resemble a large question mark whenever you move over the cells of the flow sheet. With the cite button on, position the mouse pointer on the column header date 05/23/2012, as shown in Figure 8-9, and click the mouse.

(Note that you must click on the date itself, not on the row or spaces adjoining it.)

A window of findings from the May 23 2012, encounter will be invoked. Compare your screen to Figure 8-9.

The red and blue buttons for each finding are used to select the finding just as they are elsewhere in the software. The description of the finding will include any numerical values entered in the previous encounter. Two additional buttons appear on the right of each finding.

The first is the Ellipsis button, which you used in step 7 to view results. However, when Cite mode is on, instead of displaying results, the Ellipsis button allows you to modify any numerical data when citing the finding. The second button (whose icon resembles a red pushpin in a note pad) is used to add a free-text comment to a finding when citing it.

Step 12
A new glucose test has been performed.

In the “Review cite of flow sheet column” window, locate and highlight the finding for the “random blood glucose test” result.

Click on the ellipsis button for that finding. A small window resembling a calculator will appear.

Use your mouse to point to the numeric buttons and click on each number to change the previous test result from 120 to the current test result 110. (You can also type the numbers on a keyboard.)

Click the number buttons 1 1 and 0. Compare your screen to Figure 8-10, and then click on the button labeled “Enter.” This will record your modification and close the number pad.
Step 13

From the Cite window you can also select or deselect the red or blue buttons for any of the findings listed. Although it may appear that you are editing a past encounter, you are not. You are simply selecting and editing the findings that will copy to the current encounter. Do not be concerned that this will change any of the findings in a previous encounter.

Compare your screen to Figure 8-11.

Click on the button labeled “Post To Encounter” to cite the findings.

Step 14

Individual findings can be cited without invoking the cite review window. When the Cite button is on, instead of positioning the mouse pointer on the date in the column header to invoke a window, you can position the mouse pointer on an individual cell of the flow sheet and click the mouse button. The data from that specific cell will be copied into the current encounter.

Scroll the flow sheet downward until you can see all the rows of the section labeled “Tests.”

Locate the finding “Plasma LDL cholesterol” in the last row of that section.

Position your mouse pointer in that row, under the column dated 02/14/2012; click the mouse on the cell that reads “120 mg/dl,” as shown in Figure 8-12.
This will cite a normal Plasma LDL in the column for the current encounter.

Locate and click on the button labeled “Cite” in the Toolbar at the top of your screen. This will turn Cite off.

**Step 15**

As you learned earlier in this exercise, this FS form button acts like a toggle, shifting the screen between the flow sheet view and the form view.

Locate and click on the button labeled “FS Form” in the Toolbar at the top of your screen. The form will redisplay. Compare your screen to Figure 8-13; notice the lab results in the center of the screen now have values that have been filled by using Cite.

![Figure 8-13 Hypertension Form redisplayed with cited data.](image)

**Here is a brief review of the buttons FS Flow and Cite:**

- **FS Flow Off** (button normal) displays the Form.
- **FS Flow On** (button orange) displays the Flow Sheet view.

When the flow sheet is displayed:

- **Cite Off** (button normal)—Clicking on a column header date invokes the narrative of that encounter.
- **Cite On** (button orange)—Clicking on a column header date invokes the findings from that encounter, which will be copied forward into today’s encounter.
- **Cite On** (button orange)—Clicking on an individual cell will copy only the specific finding forward into today’s encounter.
Step 16
To document the patient’s second problem, locate and click on the Forms button in the Toolbar at the top of your screen.

Select and load the form for diabetes (as shown in Figure 8-14).

Step 17
Compare your screen to Figure 8-15. Notice that vital signs and several of the fields on the diabetes form already contain data, because these findings were entered on the hypertension form. As mentioned earlier, any findings already in the current encounter will appear automatically as you change forms.

Step 18
Record the second diagnosis.

Locate the diagnosis Diabetes Mellitus Type II at the top of the form. Click on the check box next to the Y. A circle next to the finding will turn red.

Locate and click on the button labeled “Details” in the Toolbar at the top of your screen. This will open the Entry Details section over the bottom of the form.

In previous exercises, you have used the Details button to hide the details entry fields. In this step, we will display the fields so the status of the disease can be updated.
Locate the status field in the Entry Details section and click on the down arrow button in the field. Select the status “well controlled” from the drop-down list, as shown in Figure 8-16.

Click on the button labeled “Details” in the Toolbar at the top of your screen again, to hide the Entry Details section and to restore the full view of the form.
**Step 19**

Verify that the ROS button is still on, and then click on the button labeled “Negs” (Auto Negative) in the Toolbar near the top of your screen.

Compare your screen to Figure 8-17.

![Figure 8-18](image)

**Figure 8-18 Flow Sheet view based on Diabetic Form.**

**Step 20**

Not all findings from previous encounters are displayed in a form-based flow sheet. Only those findings that match the items in the form design are listed in the columns. Similarly, flow sheets based on a list only display findings that match the list. This step will demonstrate the difference a form design makes in a flow sheet.

Verify that the List Size is still set to 1; if it is not, then locate and click on the List Size button until it is 1.

Locate and click on the button labeled “FS Form” in the Toolbar at the top of your screen. The diabetes flow sheet will be displayed. Your screen should resemble Figure 8-18.

Turn back in your book and compare your screen with the earlier flow sheet shown in Figure 8-6. Notice that the diabetes flow sheet has a review of system section, which the hypertension does not. There also are differences in the tests ordered for the two diseases. From this comparison, you can easily see how the flow sheets for diabetes and hypertension differ.
Step 21

Locate and click on the button labeled “FS Form” in the Toolbar at the top of your screen. The diabetes form will be redisplayed. Locate and click on the tab at the top of the diabetes form labeled “Therapy.”

Locate and click on the button labeled “FS Form” in the Toolbar at the top of your screen. The flow sheet of the diabetes plan will be displayed.

Locate and click the Cite button on as you did early in this chapter (the button will appear orange).

Locate and click on the column header date 02/14/2012.

A small window of findings from that encounter will appear. Compare your screen to the review cite findings window in Figure 8-19. Notice that because these findings do not have numerical values, the gray ellipsis button is not present.

There also are fewer findings to cite. This is partly because of the items on the form, but also because the Cite feature is intelligent. It omits findings already recorded in the current encounter during previous steps of the exercise.

After you have looked at the findings that are displayed, click the button labeled “Post To Encounter” to cite the findings.

Because one of the items in the list is a prescription, the prescription writer window will be invoked automatically.
Step 22
The prescription is for metformin HCL. The prescription writer will display the Rx dosage inquiry window, as shown in Figure 8-20.

Locate and click on the Rx dosage **500 mg tab**; the window will next display a list of manufacturers.

Click on the default manufacturer when that window is displayed.

Step 23
Using what you have learned in Chapter 6, enter the following prescription information in the appropriate fields.

**Sig**
- **Quantity:** 1
- **Freq:** **Twice daily**
- **Per Day:** 2
- **Days:** 30

**Dispense**
- **Amount:** 60
- **Refill:** 3

**Generic**
Locate and click on the circle next to **Yes**.

Compare your screen to Figure 8-21. When everything is correct, click on the button labeled “Save Rx.”

Step 24
Locate and click on the button labeled “Cite” in the Toolbar at the top of your screen to turn Cite off.

Locate and click on the button labeled “FS Form” in the Toolbar at the top of your screen to return to the view of the form. If the form is not on the Therapy tab, locate and click on the tab labeled “Therapy” (at the top of the form).

Locate the section labeled “Dietary Orders” in the upper right corner of the form. Note that Weight Loss should already have a check next to the Y. This box was checked by citing the findings in step 21.

Click the check box next to **Y** for the following findings:
- **Y** Diabetic (diet)
- **Y** Controlled Carbohydrate
Figure 8-22 Diabetic Form—enter dietary orders.

Compare your screen to Figure 8-22.

Locate and click on the Encounter tab at the bottom of your screen.

Alert
Do not close or exit the encounter until you have a printed copy in your hand. You will lose your work if you exit before printing.

Step 25
Click on the Print button on the Toolbar at the top of your screen to invoke the Print Data window.

Be certain there is a check mark in the box next to “Current Encounter” and then click on the appropriate button to either print or export a file, as directed by your instructor.

Compare your printout or file output to Figure 8-23. If it is correct, hand it in to your instructor. If there are any differences, review the previous steps in the exercise and find your error.

You may stop at this point or, if time permits, you may continue with the next exercise without exiting.

Guided Exercise 51: Creating a Problem-Oriented Flow Sheet

In this exercise, you are going to view a flow sheet that is focused on a particular problem, rather than a form.
**Guy Daniels**

**Patient:** Guy Daniels  M: 3/25/1966; 5/24/2012 04:15PM

**Chief complaint**
The Chief Complaint is: 3 month check up.

**Review of systems**

**Systemic:** Not feeling tired or poorly and no recent weight change.

**Eyes:** No worsening vision.

**Genitourinary:** No increase in urinary frequency.

**Endocrine:** No polydipsia.

**Neurological:** No tingling of the limbs and no numbness of the limbs.

**Physical Findings**

**Vital Signs:***

<table>
<thead>
<tr>
<th>Vital Signs/Measurements</th>
<th>Value</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral temperature</td>
<td>99.2 F</td>
<td>97.6 - 99.6</td>
</tr>
<tr>
<td>RR</td>
<td>20 breaths/min</td>
<td>18 - 26</td>
</tr>
<tr>
<td>PR</td>
<td>68 bpm</td>
<td>50 - 100</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>125/85 mmHg</td>
<td>100-120/60-80</td>
</tr>
<tr>
<td>Weight</td>
<td>229 lbs</td>
<td>125 - 225</td>
</tr>
</tbody>
</table>

**Eyes:**

- General/bilateral:
  - Optic Disc: " Normal.
  - Retina: " Normal.

**Cardiovascular:**

- Heart Rate And Rhythm: " Normal.
- Murmurs: " No murmurs were heard.
- Heart Borders: " By percussion, heart size and position were normal.

**Tests**

**Urinalysis Was Performed:**

<table>
<thead>
<tr>
<th>Urinalysis Results</th>
<th>Value</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine protein</td>
<td>0 +</td>
<td></td>
</tr>
</tbody>
</table>

**Blood Analysis:**

<table>
<thead>
<tr>
<th>Blood Counts - CBC</th>
<th>Value</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin level</td>
<td>16.2 g/dl</td>
<td>14 - 18</td>
</tr>
</tbody>
</table>

**Blood Chemistry:**

<table>
<thead>
<tr>
<th>Electrolytes</th>
<th>Value</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium level</td>
<td>4.8 mEq/l</td>
<td>3.5 - 5.5</td>
</tr>
<tr>
<td>Total calcium level</td>
<td>9.8 mg/dl</td>
<td>8.5 - 10.5</td>
</tr>
</tbody>
</table>

**Endocrine Laboratory Tests:**

<table>
<thead>
<tr>
<th>Value</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random blood glucose level</td>
<td>110 mg/dl</td>
</tr>
</tbody>
</table>

**Metabolic Tests:**

<table>
<thead>
<tr>
<th>Serum creatinine level</th>
<th>Value</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total plasma cholesterol level</td>
<td>185 mg/dl</td>
<td>140 - 200</td>
</tr>
<tr>
<td>Plasma HDL cholesterol level</td>
<td>65 mg/dl</td>
<td>30 - 70</td>
</tr>
<tr>
<td>Plasma LDL cholesterol level</td>
<td>120 mg/dl</td>
<td>80 - 130</td>
</tr>
</tbody>
</table>

**Assessment**

- Hypertension
- Type 2 diabetes mellitus which is well-controlled

**Plan**

- Urinalysis
- CBC
- Hemoglobin level
- An electrolyte panel
- A lipid profile
- Random blood glucose level
- Weight loss diet
- Diabetic diet
- Controlled carbohydrate diet
- Metformin HCl

500 mg tab (1 bid 30) DISP:60 Refill:3 Generic:Y Using:Glucophage Mfg: Bristol

**Figure 8-23** Printed encounter note for Guy Daniels.
Step 1
If you are continuing from the previous exercise, proceed to step 3.

Otherwise, start the Student Edition software.

Click Select on the Menu bar, and then click Patient.

In the Patient Selection window, locate and click on Guy Daniels.

Step 2
Click Select on the Menu bar, and then click New Encounter.

Select the date May 24, 2012, the time 4:15 PM, and the reason Office Visit.

Make certain you set the date, time, and reason correctly. If necessary, refer to Figure 8-2.

Step 3
Locate and click on the Manage tab at the bottom of your screen.

If the left pane of your screen is not currently displaying the Problem List, click on the tab labeled “Problem List.”

(Note that the right pane of Figure 8-24 is showing the encounter note as if you were continuing from the previous exercise. If you are not, the right pane will contain less information; that is acceptable for this exercise.)
Step 4
Verify that the button labeled “List Size” in the Toolbar at the top of your screen is 1. If it is not, click on it until the list size is 1.

Locate and click the Details button on the Toolbar to hide the Details section.

Locate and click on the diagnosis **Type 2 diabetes mellitus** in the problem list (left pane). This will highlight the diagnosis as shown in Figure 8-24.

Locate and click on the button labeled “Flowsheet” in the Toolbar at the top of your screen. (Note that this is not the FS Form button that you used in the previous exercise.)

A flow sheet similar to that in Figure 8-25 will be displayed.

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Step 5
Turn back to Figure 8-16. Compare your screen to the flow sheet in that figure.

The purpose of a problem-oriented flow sheet is to provide a historical view of the patient’s data pertinent to the current problem. The difference in this type of flow sheet is that it is not constrained by the design of the form. Any finding related to the selected problem will be listed in the flow sheet.

The function of the Cite button is the same in either flow sheet. That is, Cite can be used to copy relevant findings into the current encounter.

As you learned in the previous chapter, most clinicians use a Problem List at some point during the examination. The ability to quickly view and cite from a flow sheet specific to the problem not only can speed up the documentation process but also can ensure that the clinician recalls significant findings from previous visits.
Step 6
Locate and click the Details button on the Toolbar to restore the Details Entry section.

Locate the following finding in the flow sheet and click on the red button in the column dated 05/24/2012.

- (red button) recent weight change

Locate the Value field in the Entry Details section and type -2 lbs. Press the enter key on your keyboard.

Compare your screen to Figure 8-26.

Step 7
Ask your instructor if you should print another copy of Guy Daniel’s encounter note. If so instructed, follow the directions in step 25 of the previous exercise. Note that if you did not continue from the previous exercise, your print out will contain less data. This is acceptable for the purposes of this exercise.

Use of Anatomical Drawings in the EHR

Another method of entering data about the patient into the EHR involves the use of anatomical drawings of the body and body systems. These drawings are used in two different ways, as an alternative method of navigating the Nomenclature or by actually annotating a drawing and including it in the patient record. In this chapter we will discuss both. Anatomical drawings are particularly easy to navigate or annotate on a Tablet PC, but the same or similar result can be achieved on a laptop or workstation computer using a mouse.
Navigation by Body System

Some EHR systems have navigation pages that allow the clinician to quickly locate findings by pointing to a particular body part in a drawing that opens a list of findings relevant to that body system. The clinician then selects the findings appropriate to the visit. In this case, the pictures do not become part of the patient note; they are just a visual tool for navigation (see Figure 8-27 for an example). Think of this as searching with pictures rather than words.

Annotated Drawings as EHR Data

Another type of EHR data is the visual representation of the finding. Certain specialties routinely record information about the physical exam in the form of drawings or sketches. Two examples are dermatologists, who sometimes note the location of nevi (moles) on an outline of the body, and ophthalmologists, who frequently document observations on a drawing of the eye. These annotated drawings have long been a part of the patient’s paper chart and most EHR systems today support a tool to annotate drawings in the computer. The images created using the tools in the EHR become part of the electronic encounter. Annotated drawings are also useful for patient education, as we shall see in a later exercise.

Annotated images in an EHR are often attached to the note using special findings. These images might be annotated with the size and location of nevi, but handwritten notes within the images are not codified data. This means that for the purpose of subsequent analysis of the EHR records, the system will be able to locate patient records with a finding that denotes an attached image, but it would not be able to find patients with “> 20 nevi” unless the clinician had entered them as findings in the narrative as well.

Guided Exercise 52: Annotated Dermatology Exam

This exercise will give you an opportunity to practice the annotation of a drawing using a simplified tool in the Student Edition software. As with previous exercises, the purpose here is to let you experience a function that is often available in commercial EHR systems. The drawing tools you will use here will be similar in principle but not identical to those you might use in your medical office. The method of invoking the annotation tool and the manner in which a drawing is subsequently merged into the patient note will vary by EHR vendor.

Case Study

Arnie Greensher is a 66-year-old male who has a large number of moles on his back, the result of years of working in the sun without a shirt. His doctor has been monitoring them through regular follow-up visits. In addition to the encounter notes created at those visits, the clinician finds it useful to save annotated drawings, which show the placement of the moles. In subsequent visits, the doctor will compare the drawings from past encounters to the current state of the patient’s skin to quickly identify new moles or changes from a previous visit.
Step 1
If you have not already done so, start the Student Edition software.

Click Select on the Menu bar, and then click Patient.

In the Patient Selection window, locate and click on **Arnie Greensher**, as shown in Figure 8-28.

Step 2
Click Select on the Menu bar, and then click Existing Encounter.

A small window of previous encounters will be displayed. Compare your screen to the window shown in Figure 8-29.

Select the encounter dated **5/24/2012 5:00 PM** (Follow-Up).

The encounter note from that date will be displayed as shown in Figure 8-30.

Step 3
In the right pane of your screen, locate and click on the underlined portion of the finding labeled “Lesions on the back” (circled in red). The left pane should change to Edit view, as shown in Figure 8-30.
Step 4

Locate the four buttons in the lower right corner of the window. The Context button is the second button from the right (circled in red in Figure 8-31).

Click on the Context button to display a list of advanced actions that can be used with a finding.

Click the first option in the list labeled “Add object to finding.” This will invoke the annotation tools in the right pane of the window (shown in Figure 8-32).

The software contains various anatomical illustrations, which may be selected for annotation. The right pane displays one of the images.

Above the image is a navigational bar consisting of three fields with drop-down lists. These are used to select images of other body systems and views.

- The first field can be used to select the body system to be presented (skin, circulatory, skeletal, and so on).
- The center field is used to select the image region within that system (full body, head and neck, lower extremities, and so on).
- The third field is used to select the view of the image (front, back, left, and so on).
- The gender of the image as well as the age range of the image is automatically determined by the demographics of the current patient. The default body system for the image is automatically determined by the selected finding.
Compare your screen to Figure 8-32; if the image is not of the back of a man’s trunk, click the down arrow of the center or right field to change the view. Select Trunk and Back from the respective drop-down lists.

At the bottom of the image is the drawing toolbar, which is shown enlarged in Figure 8-33. We will discuss each of the buttons on the drawing toolbar, from left to right.

Select Tool The first icon on the Toolbar shows the currently selected drawing shape or tool. The icon of the button will change according to the current selection. The down arrow next to the button displays a list of choices.

Step 5
Click the down arrow next to the Select button to display the list of tools.

Figure 8-34 shows the drop-down list of shapes of the drawing tool. Most are self-explanatory, except the first one, Select. The Select option is used to select items that have been added to the drawing so they can be deleted or modified.

Locate and click on the word “Circle.” The drawing tool button will display a circle in place of the pointer.

Step 6
Lock Button The icon resembles a padlock. This is used to “lock” the selected shape. When it is “locked,” the button background will be white and the selections you have made for shape or the other drawing tool buttons (discussed later) stay set. When it is
not “locked” (the button background is blue), the drawing toolbar buttons return to their default state after each use.

Locate and click on the “lock” button in the drawing toolbar.

**Step 7**

**Style** This button icon consists of different horizontal lines. This button invokes the Style Selection window, which sets the pattern and thickness of the tools you will use to annotate the drawings. The style sets not only the line but also the solidity and thickness of other shapes.

Locate and click on the Style button in the drawing toolbar. A window similar to Figure 8-35 will be invoked.

Locate and click on the following:

- **Draw Style:** Solid
- **Draw Width:** Three
- **Fill Style:** Solid

Compare your screen with Figure 8-35. Click on the OK button to close the window.

**Font** This button has an icon consisting of the letters a-b-c. It is used to set the font and size of type for the text tool.

You may, optionally, click on the button to view the window, but do not change any of the settings; alternatively, you may study Figure 8-36 without invoking the window.

**Step 8**

**Color** The Color button selects the color for the annotations. The button icon consists of four colored squares.

Locate and click on the Color button and select orange by clicking on the orange square, as shown in Figure 8-37. Click the OK button to close the Color selection window.

The next two buttons on the drawing toolbar are:

**Save** The icon for this button represents a computer disk. This button is not used in the Student Edition software.

**User Images** A camera button, this is used to import external images. This button is not used in the Student Edition software.

**Print** This is used at the end of this exercise to print a copy of your drawing. The icon resembles a printer. Do not click it until instructed.

**Step 9**

In this step, you will learn how to draw on the displayed image.

Position the mouse over the patient’s left shoulder in the drawing. The cursor should be shaped like a large plus sign. If it is, then hold down the left mouse key while making a slight movement. A circle should appear. The size of the
Figure 8-38 Draw a circle on the left shoulder to represent the position of a mole.

Note

Note that if your cursor is not a plus sign but instead a typical mouse pointer you probably do not have the Circle tool selected; repeat step 5.

circle is controlled by how far you move the mouse before releasing the mouse button. You are annotating the location of moles. Make a small circle.

Compare your screen to Figure 8-38.

Step 10

The remaining buttons on the drawing toolbar are:

- **Delete** (icon is an X and resembles other Delete buttons in the Student Edition software). It is used to delete a selected portion of the drawing.

- **Undelete** (icon is an arrow curved to the left). Used to restore the last item deleted from the drawing.

- **Exit** (icon resembles an X in a square box). Closes the drawing and restores the encounter note narrative view. Do not click it until instructed to do so.

In this step, you will learn how to delete an item you have added and how to use the Undelete button.

Restore the drawing tool to the Select pointer by clicking on the down arrow in the drawing toolbar and clicking the first option, “Select.”

Locate and click on the padlock to unlock the toolbar.

Position the mouse pointer over the mole created in step 9; the pointer should change to look like a small hand (as shown in Figure 8-39).
Click on the mole. It will change to an outline of dotted lines when selected.

Locate and click on the Delete button in the drawing toolbar (circled in red in Figure 8-39). The mole will be removed from your drawing.

The Undelete button may be used to restore the last deleted item on the drawing. In this case, you deleted a mole.

Locate and click on the Undelete button (the icon resembles a curved arrow). The mole should reappear. Your drawing should once again look like Figure 8-38.

Figure 8-40 Draw 15 small moles on the back.

Step 11
Using what you have learned in step 9, you will now illustrate the location of moles on Mr. Greensher’s back using the Circle tool.

Click on the down arrow in the toolbar and reselect the circle from the drop-down list as you did in step 5. Locate and click on the padlock to lock the circle shape.

Draw 15 small moles on the patient’s back, as shown in Figure 8-40. You do not have to place them exactly as they are in the figure; just get reasonably close.

Step 12
Clinicians also can annotate the images by adding text directly on the drawing canvas with the Text tool. The clinician also can select a different color for the text. It is wise to do so, as it will help the text stand out from the color and the background of the drawing.

Locate and click on the down arrow next to the Select button. Choose Text from the drop-down list.
Figure 8-41 Type “15 Nevi < 1 cm. Unchanged” in text box.

Locate and click on the Color button in the drawing toolbar. When the Color pallet window is displayed, select blue, and then click OK.

Now click over an empty portion of the drawing and a text box will appear, as shown in Figure 8-41.

If the text box is not positioned where you would like it, click elsewhere. It will move to wherever you click your mouse.

Type the following text in the box: **15 Nevi < 1 cm. unchanged**

**Step 13**
When you have finished typing, merge the text into the drawing by clicking the right mouse button anywhere on the drawing except in the text box. A drop-down menu will appear, as shown in Figure 8-42.

Locate and click on the option “Complete Text Entry.”

**Step 14**
Another useful drawing tool is the Line, which can be used to connect text to the drawing points.

Click on the down arrow in the toolbar and select Line from the drop-down list.

Position your mouse on the canvas just above the text. Hold down the left mouse button as you drag the mouse upward toward the moles on the back. When you release it, the line will end.

Compare your screen to Figure 8-43.
Step 15
In commercial EHR systems, you can merge your finished drawing into the narrative encounter notes for the patient visit. In the Student Edition you will only print your drawing, not merge it, because students from other classes share the data.
Figure 8-44 Print Data window is invoked from drawing toolbar.

Figure 8-45 Printout of annotated drawing for Arnie Greensher.
Click the Print button on the drawing toolbar, not the Print button on the main toolbar. The familiar Print Data window will be invoked.

Be certain there is a check mark in the box next to “Imager Drawing” (as shown in Figure 8-44) and then click on the appropriate button to either print or export a file, as directed by your instructor.

Compare your printout or file output to Figure 8-45.

When you have a printout of your annotated drawing in hand, close the Print Data window. Save the printed copy to give to your instructor along with the encounter note you will print in step 18.

**Step 16**

Return to the encounter note view by exiting the drawing tool.

**Figure 8-46** Exit drawing tool using X button circled in red.

**Figure 8-47** Recording free text and value in the encounter.

Locate and click on the Exit button in the drawing toolbar (circled in red in Figure 8-46). Use only this button in this step, not any other Exit button in the window.

**Step 17**

Annotated drawings provide an excellent means of recording the location and size of certain observed findings in a physical exam. However, as we have discussed several times, the contents of the image are not codified, searchable records. In this example, the text added to the drawing became part of the image and as such can only be read by a person, not the computer.
Therefore, the clinician also will record the text of the findings in the encounter note. This will result in the best of both worlds—codified data for the computer and a visual record of the location of moles for use in future exams.

With the finding “Lesions on the back” still selected for edit, you will add data to the finding.

Locate the Entry Details free-text field just below the right pane and type: **15 Nevi**.

Locate the Value field in the Entry Details section at the bottom of the screen and type: < 1.

Press the enter key. Compare your screen to Figure 8-47.

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**Figure 8-48** Printed encounter note for Arnie Greensher.

### Step 18

Click on the Print button on the Toolbar at the top of your screen to invoke the Print Data window.

Be certain there is a check mark in the box next to “Current Encounter” and then click on the appropriate button to either print or export a file, as directed by your instructor.

Compare your printout or file output to Figure 8-48. If it is correct, hand it in to your instructor. If there are any differences, review the previous steps in the exercise and find your error.
Critical Thinking Exercise 53: Examination of a Patient with Pressure Sores

In this exercise, you will use the skills you have acquired in the previous exercise to document a patient with pressure sores.

Case Study

Raj Patel is an 80-year-old male who presents complaining of sores on his back and buttocks. Two months ago he had surgery to repair cervical and thoracic spinal fractures that were the result of a motor vehicle crash. He was initially discharged to rehab, but has become sedentary post-therapy and is developing
pressure sores on his shoulder blades and buttocks. Because he cannot see his sores, he mistakenly believes his pain is at the sites of his spinal and iliac incisions.

**Step 1**
If you have not already done so, start the Student Edition software. Click Select on the Menu bar, and then click Patient. In the Patient Selection window, locate and click on **Raj Patel**.

**Step 2**
Click Select on the Menu bar, and then click New Encounter. Select the date **May 24, 2012**, the time **5:15 PM**, and the reason **Office Visit**.

Compare your screen to the date, time, and reason printed in bold type before clicking on the OK button.

**Step 3**
Enter the Chief complaint: “**Post-surgical sores on back and buttocks**.” When you have finished typing, click on the button labeled “Close the Note Dialog.”

**Step 4**
Begin the visit by taking Mr. Patel’s vital signs and history.

Locate the Forms button on the Toolbar and select the form labeled “**Vitals**.” Enter Mr. Patel’s vital signs in the corresponding fields on the form as follows:

- Temperature: 98.6
- Respiration: 28
- Pulse: 78
- BP: 150/90
- Height: 67
- Weight: 210

When you have finished, check your work; if it is correct, click on the Encounter tab at the bottom of your screen.

**Step 5**
Click on the Hx tab.

Expand the past medical history tree by clicking the small plus signs next to “past medical history” and “surgical/procedural.”
Locate and click on following finding

- (red button) prior surgery

Locate and click in the Entry Details field “Onset” and type: 60 days.

Press the Enter key and the software will automatically calculate the date 3/25/2012 and add it to the finding.

**Step 6**

Scroll the left pane downward to locate “social history.” Expand the tree by clicking the small plus signs next to “social history,” “habits,” and “exercise habits.”

Locate and click on following finding:

- (red button) sedentary

**Step 7**

Click on the Dx tab.

Locate and click on the small plus signs next to “Orthopedic Disorders” and “Fracture.”

Click on the description “Vertebral Column” to highlight it. Locate and click the History button on the Toolbar at the top of your screen.

In the free text below the right pane type “C7, T1, T2, T3” and press the Enter key.

Click on the description “Ribs” to highlight it. Locate and click the History button on the Toolbar at the top of your screen.

**Step 8**

Locate and click on the Search button on the Toolbar at the top of your screen. The Search String window will be invoked.

Type the search string “pressure sores” and click on the Search button in the window.

**Step 9**

Click on the Sx tab.

Locate and click on following finding:

- (red button) red sore blanches with pressure

**Step 10**

Click on the Hx tab.

Locate and click on following findings:

- (red button) difficulty inspecting body for pressure sores
**Step 11**
Click on the Px tab.

Locate and click on following finding:
- (red button) Lesions tender to direct pressure

Locate and click on the button labeled "Medcin" on the Toolbar at the top of your screen to restore the full nomenclature.

Scroll the left pane downward to locate and click on the small plus signs next to “Skin” and “Ulcer __ cm.”

Locate and click on following findings:
- (red button) On Shoulders
- (red button) Buttocks

**Step 12**
Click on the Dx tab.

Click again on the Search button on the Toolbar at the top of your screen. The Search String window will be invoked and should still display the search string “pressure sores.” Click on the Search button in the window.

Locate and click on the small plus signs next to “Chronic Cutaneous Ulcer Decubitus” and “Lower Back.”

Locate and click on following findings:
- (red button) Upper Back
- (red button) Coccyx

**Step 13**
Click on the Rx tab.

Locate and click on following finding:
- (red button) ADL Inspect body for pressure sores Short-Term

Locate and click on the button labeled “Medcin” on the Toolbar at the top of your screen to restore the full nomenclature.

Locate and click on the small plus sign next to “Basic Management Procedures and services.”

Scroll the left pane downward and click on the small plus sign next to “Orthopedic services.”

Locate and click on following finding:
- (red button) Regular exercise

Scroll the left pane further downward to locate and click on the small plus signs next to “Home care,” “Visit,” and “For Clinical Assessment.”

Locate and click on the finding description “Skin” to highlight it.
Locate and click on the Order button in the Toolbar at the top of your screen.

**Step 14**
Create an annotated drawing to illustrate the position of his incision scars and pressure sores for the patient.

Scroll the encounter note in the right pane to locate and click on the underlined finding “Lesions.” The left pane should change to the Edit tab.

Locate the context button (the second button from the right in the lower right corner of your window) and click on it. From the drop-down list displayed, choose “Add Object to Finding.”

The drawing window will be invoked in the right pane.

If the drawing of the trunk is not displayed, use the fields at the top of the drawing to select the Skin, Trunk, and Back view from the drop-down lists.

**Step 15**
Once the correct illustration template is displayed, use the toolbar in the drawing tool to set up the tool.

Locate and click on the down arrow next to the first button; then select “Ellipse” from the drop-down list.

Locate and click on the Lock button (with the padlock). It should have a white background.

Locate and click on the Style button in the drawing toolbar. A window similar to Figure 8-35 will be invoked.

Locate and click on the following:

- **Draw Style:** Solid
- **Draw Width:** Three
- **Fill Style:** Solid

Click on the OK button to close the Style window.

Locate and click on the Color pallet button. When the window is displayed, select red. Click OK to close the Color pallet window.

**Step 16**
As closely as possible, replicate the drawing in Figure 8-49.

Draw a large red circle over the right shoulder blade, a red circle over the coccyx, and a vertical oval over the left shoulder blade (as shown in Figure 8-49).

Change the drawing tool.
Locate and click on the down arrow next to the first button, then select “Line” from the drop-down list.

Locate and click on the Color pallet button. When the window is displayed, select orange. Click OK to close the Color pallet window.

Draw a short horizontal line from the edge of the left hip toward the coccyx as shown in Figure 8-49.

Draw a long vertical line from the base of the neck to the center of the shoulder blades as shown in Figure 8-49.

Change the drawing tool to annotate the drawing.

Locate and click on the down arrow next to the first button, then select “Text” from the drop-down list. Next, change the color to blue by selecting the Color pallet button.

Click in the upper left of the drawing and type “incisions” in the text box.

Right click anywhere on the drawing except in the text box to display a list of options; click on “Complete Text” from the list displayed.

Click on the right side of the drawing and type “pressure sores” in the text box.

Right click anywhere on the drawing except in the text box to display a list of options.

Change the drawing tool.

Locate and click on the down arrow next to the first button, then select “line” from the drop-down list.

Draw two blue lines from the word “incisions” to the orange lines you drew earlier.

Draw three blue lines from the phrase “pressure sores” to the red circles.

Compare your drawing to Figure 8-49. If you need to correct the line or circle, change the tool button to “Select” and click on the object. Use the Delete button in the Toolbar and then redraw the correct element.

**Step 17**

Click the Print button on the **drawing toolbar**, not the Print button on the main toolbar. The familiar Print Data window will be invoked.

Be certain there is a check mark in the box next to “Imager Drawing” and then click on the appropriate button to either print or export a file, as directed by your instructor.

Compare your printout or file output to Figure 8-49.

When you have a printout of your annotated drawing in hand, close the Print Data window. Save the printed copy to give to your instructor along with the encounter note you will print in step 18.
**Step 18**

Locate and click on the Exit button in the *drawing toolbar* to close the drawing tool and redisplay the encounter note.

Click on the Print button on the Toolbar at the top of your screen to invoke the Print Data window.

Be certain there is a check mark in the box next to “Current Encounter” and then click on the appropriate button to either print or export a file, as directed by your instructor.

Compare your printout to Figure 8-50. If anything is missing, review steps 1–13 and correct your mistake.

Hand in the printed encounter note or file output of Raj Patel’s encounter and the annotated drawing of his pressure sores to your instructor.
Chapter Eight Summary

This chapter showed how codified data in the EHR could be displayed in a format called a flow sheet.

Flow sheets present data from multiple encounters in column form. This format allows for a side-by-side comparison of findings over a period of time.

The flow sheet view resembles a spreadsheet made up of rows and columns of “cells.” The first column displays descriptions as well as red and blue buttons for findings on the current encounter. The date of the current encounter is at the top of the column. The remaining columns to the right display encounter data from previous visits.

The flow sheet rows are grouped vertically into logical sections that match the sections you are accustomed to seeing in the encounter note. The title of each section is printed in blue on a teal background.

The Student edition software allows you to create flow sheets three different ways based on:

◆ List
◆ Problem
◆ Form

You also used multiple forms during a single exam to document a patient with multiple chronic conditions. From this you have learned that you can change forms as often as you like during an examination without losing any of the data.

Citing means to bring a finding from a previous encounter note into the current encounter.

In this chapter you learned that some EHR systems have navigation pages that allow the clinician to quickly locate findings by pointing to a particular body part in a drawing, which opens a list of findings relevant to that body system. This was described as searching with pictures rather than words.

You also learned another method of entering data about the patient into the EHR with the use of anatomical drawings of the body and body systems. Annotated drawings often are included in the EHR at ophthalmology and dermatology practices. Annotated images created in the EHR become part of the electronic encounter, and are useful for patient education as well as documentation.

The Student Edition software includes a set of simple drawing tools for creating annotated drawings and associating them with findings in the encounter notes. The tools are invoked by clicking on a finding in the Edit view, then clicking on the Context button and then selecting Add Object to Finding from the drop-down list.

The software contains various anatomical illustrations, which may be selected for annotation. A special toolbar allows you to select the shape, line, thickness, and color of the drawing tool. You can also add text annotations to the drawing.
A Print button on the drawing toolbar (not the Print button on the main toolbar) is used to print your finished drawing.

<table>
<thead>
<tr>
<th>Task</th>
<th>Exercise</th>
<th>Page #</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to use a flow sheet</td>
<td>50</td>
<td>302</td>
</tr>
<tr>
<td>How to cite findings in a flow sheet</td>
<td>50</td>
<td>307</td>
</tr>
<tr>
<td>How to create a flow sheet from a problem list</td>
<td>51</td>
<td>316</td>
</tr>
<tr>
<td>How to create annotated drawings</td>
<td>52</td>
<td>321</td>
</tr>
<tr>
<td>How to print annotated drawings</td>
<td>52</td>
<td>330</td>
</tr>
</tbody>
</table>

**Testing Your Knowledge of Chapter 8**

1. What were the two chronic diseases for which Mr. Daniels was being monitored?
2. Why did the practice use separate forms for each disease?
3. Why were some items already filled in when you loaded the second form?
4. What form did you use to record dietary orders?
5. What is a flow sheet?
6. What does it mean to cite a finding?
7. Describe how to create a flow sheet from a form.
8. Describe how to create a problem-oriented flow sheet.
9. Describe how to cite a finding from a flow sheet.
10. What types of specialties typically incorporate annotated drawings in an encounter note?
11. Why did the two forms create different flow sheets?
12. If you click the date of a flow sheet column when the Cite button is off, what data is displayed?
13. If you click the date of a flow sheet column when the Cite button is on, what data is displayed?
14. How do you print an annotated drawing?
15. You should have produced three narrative documents of patient encounters and two annotated drawings. If you have not already done so, hand these in to your instructor with this test. These will count as a portion of your grade.