

LibreHealth EHR Student Exercises

1. Exercises with Test Patients created by students

a. Create a new **Encounter** using the Bronchitis form (template)

- i. While your patient's chart is open, go to either **New Encounter** in the upper right or go to **Patient/Client** in the upper menu and scroll down to **Visits >> Select Create Visit**
- ii. In the new window, in the left box, add a reason for the visit such as "bad cough". Visit category would be "established patient" or "office visit". Place of service and billing facility should be the same. Sensitivity is normal. Lastly, click the save button
- iii. Go back to the **Clinical** menu at the top, scroll down and select **Vitals** and input the patient's temperature (100), pulse (90), respirations (16) blood pressure (140/85) and oxygen saturation (95). Height and weight should be similar to last visit. Click Save form button
- iv. Next, select the **Miscellaneous** tab at the top, scroll down to the Bronchitis form and double click. Check the boxes the best you can and when you save the form you should see something like the following

Bronchitis Form for Hugh Abbott

2017-07-14 Encounter

Expand All Collapse All

Edit eSign **Bronchitis Form by Robert Hoyt (Collapse)**

Bronchitis Hpi: Three days ago the patient developed low grade fever and cough that was productive of light yellow sputum. He had very few chills and chest soreness that is sub-sternal and vague. Slight shortness of breath.

Bronchitis Ops Cough: yes

Bronchitis Ops Dyspnea: yes

Bronchitis Ops Appearance: light yellow

Bronchitis Review Of Medications: yes

Bronchitis Tms Normal Right: yes

Bronchitis Nares Normal Right: yes

Bronchitis No Sinus Tenderness: yes

Bronchitis Oropharynx Appearance: normal

Bronchitis Heart Grade: n/a

Bronchitis Heart Normal: yes

Bronchitis Lungs Crackles Bil: yes

Diagnosis1 Bronchitis Form: 466.0, Bronchitis, Acute NOS

Diagnosis3 Bronchitis Form: None

Bronchitis Treatment: Encourage fluids. Continue to monitor temperature and call if any of the symptoms worsen

Bronchitis Ops Fever: yes

Bronchitis Ops Chest Pain: yes

Bronchitis Ops Sputum: yes

Bronchitis Review Of Pmh: yes

Bronchitis Review Of Allergies: yes

Bronchitis Tms Normal Left: yes

Bronchitis Nares Normal Left: yes

Bronchitis Oropharynx Normal: yes

Bronchitis Heart Murmur: none

Bronchitis Heart Location: n/a

Bronchitis Lungs Bs Normal: yes

Bronchitis Diagnostic Tests: Chest X-ray EKG

Diagnosis2 Bronchitis Form: None

Diagnosis4 Bronchitis Form: None

Provided Education Resource(s)?

Provided Clinical Summary?

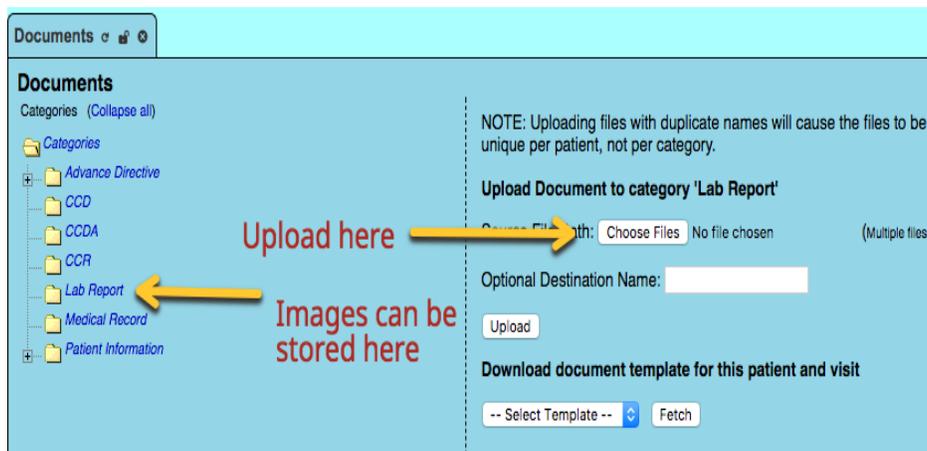
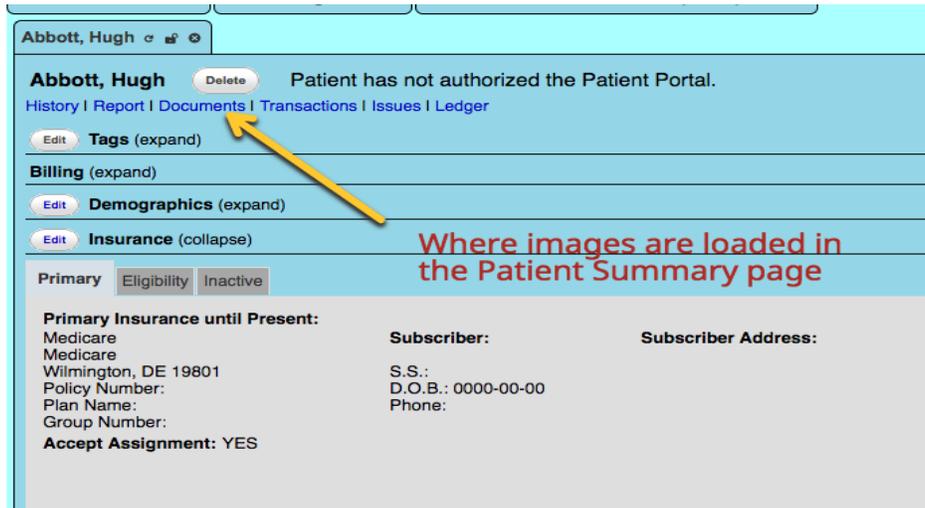
Transition/Transfer of Care?

Medication Reconciliation Performed?

eSign Log

- v. Go back to the **Past Encounter** box at the top and find today's encounter and you should have an encounter and vital signs to match the visit for acute bronchitis. Note that the diagnosis used is based on ICD-9 and not ICD-10
- vi. Next, go to Google Images and search for normal EKG and normal chest x-ray. Right click each image and select "Save Image As". Download both as images and upload to your patient's **Documents** which is located right

below the patient's name in the summary list.



- vii. Last, you can click the eSign button at the top of the encounter to indicate you are done. We will discuss how to bill for this visit later
- b. Create a second **Encounter** for your test patient using a SOAP note
 - i. Select **New Encounter** and give reason for visit (chronic low back pain), select office visit for the right clinic and physician. Click save.
 - ii. In the encounter menu select **Clinical** and then **Vitals** and input reasonable vital signs
 - iii. Next go to the Clinical tab, scroll down and select Review of Systems (which is a template)

- i. Select some history from the first section and then the musculoskeletal and neurology sections. The final form, once saved should look something like below

2017-07-14 Encounter α 🔒 🔍

Encounter Summary Miscellaneous Administrative Clinical

< Previous Next >

2017-07-14 Encounter* for Hugh Abbott

Expand All Collapse All

Review Of Systems by Robert Hoyt (Collapse)

Weight Change: NO Weakness: NO
 Fatigue: NO Anorexia: NO
 Fever: NO Chills: NO
 Night Sweats: NO Insomnia: NO
 Irritability: NO Heat Or Cold: NO
 Intolerance: NO Joint Pain: YES
 Musc Swelling: NO Musc Warm: NO
 Musc Stiffness: YES Musc Aches: YES
 Arthritis: YES Neuro Numbness: NO
 Neuro Weakness: NO Paralysis: NO

Provided Education Resource(s)?
 Provided Clinical Summary?
 Transition/Transfer of Care?
 Medication Reconciliation Performed?

Edit eSign eSign Log

- ii. Create new vital signs and save
- iii. We are now going to use a subjective, objective, assessment and plan (**SOAP**) note. Subjective means what did the patient complain of, objective means what did the clinician find on exam. Assessment is what do you think was wrong and how would you code it with ICD-10 and Plan is what you plan to do for the patient. When you are done the encounter note should look like something like the image below on the next page. Note for coding/documentation improvement purposes: In order to select the most appropriate Evaluation and Management CPT code for any encounter, the coder must be able to abstract from the documentation, the level of the history which is based on the patient's (subjective) description of the presenting problem (how long, how severe, does it get worse or better at rest or after eating etc.), a review of which body systems/areas the clinician asks about, and any responses if the clinician asks about past medical/surgical history including past and current medications, and, any responses if the clinician asks about social history such as marital status, employment, smoking/alcohol use etc.). Then, the coder must determine the extent of the physical exam. The choices for both the history and the exam are: problem focused, expanded problem focused, detailed or comprehensive. Finally, the coder must determine the complexity of medical decision making using the number of diagnoses or management options, amount and/or complexity of data to be reviewed such as past medical records, lab results etc., the risk of complications and/or morbidity or mortality and whether the decision making is straightforward, low complexity, moderate complexity or high. For an established patient (one who has seen the same physician or a physician with the same specialty and subspecialty in the same group within the last three years), the coder is able to disregard the lowest of these three key components and select the level of E&M code described

by the second lowest. For example, for an established patient, the code for a level 3 office visit is 99213 and must contain an expanded problem focused history and/or exam and medical decision making of low complexity. If the history was problem focused and the exam was expanded problem focused and the medical decision making was low complexity (as opposed to straightforward), the level 2 history would be dropped and the other 2 key components justify the level 3 code. For a new patient, the you may only assign the level of code that the lowest of the 3 key components meets. In the case of a new patient (which pays more), a level 3 requires a detailed history, a detailed exam AND medical decision making of low complexity. If any of these components do not meet the criteria, a lower code must be selected. The only exception is: if the time the patient was seen by any member of the clinical team is documented, the face-to-face time with the clinician is documented and the time the patient encounter ended is documented, and the clinician spent at least 50% of that clinical time face-to-face, each E&M code has a time factor that may be used instead of the H&P and Medical Decision Making. A level 3, for an established patient, for example, requires 15 minutes minimum spent face-to-face with the actual clinician and the total clinical time must then be equal to or less than 30 minutes (documented). The advantage is that sometimes the time criteria qualifies for a higher level of code than the level based on the three key components. The reason this is important is that the coder must work with the clinician to ensure the documentation contains all the criteria – including specific and complete descriptions of all applicable signs, symptoms and diagnoses to enable the coder to select all the most specific ICD-10-CM codes to reflect the full picture of the medical necessity of the level of E&M code selected. For example, if the physician documents a patient has bronchitis and diabetes, the coder should have the clinician document whether the bronchitis is an acute exacerbation of chronic, obstructive bronchitis or if it is acute bronchitis without COPD. They should also indicate whether or not the patient uses or has a history of tobacco use or exposure to secondary smoke. Finally, they need to indicate whether the diabetes is type 1 or type 2 (default for coding is type 2) and whether there are any diabetic complications.

- iv. Lastly, we are going to send a patient summary to the physical therapist and give a copy to the patient
- c. For extra credit create an **Encounter** using speech dictation (voice recognition). First create a new encounter as you did before. Under the clinical tab select speech dictation and a new form with a large empty box appears. Most of the voice recognition software in the average Windows or Mac computers is adequate to attempt a note.
- d. **Order a medication:** Add a new medication Ibuprofen to prescriptions. On the Patient Summary list select the **Prescription** option and the edit. In the new window select Add. Check currently active, select the date and provider. For the

Drug type in Ibuprofen, quantity = 100, Medicine units 800 the mg, Take 1 tablet per oris (orally) prn. 3 refills. Add to medication list = yes and in the last drop down, select substitution allowed. When you are finished, click save and then you have the option to download PDF, view html or download FAX. (See screen shot)

SOAP Note (Encounter)

Patient: **Hugh Abbott(8040)**
DOB: 1949-12-23 Age: 67

SOAP

Vitals by Administrator Administrator (Collapse)

Blood Pressure: 144/90 **Weight:** 212.00 lb (96.16 kg)
Height: 67.00 in (170.18 cm) **Temperature:** 98.00 F (36.67 C) ← **Vitals**
Pulse: 84 per min **Respiration:** 16 per min
BMI: 33 kg/m² **BMI Status:** Obesity I

eSign Log
No signatures on file

SOAP by Administrator Administrator (Collapse) ← **SOAP**

Subjective: Patient has known chronic low back pain due to lumbar spondylosis. He has never had surgery and has not been diagnosed with spinal stenosis. He denies radiculopathies or numbness or weakness but notices chronic stiffness and aching, particularly in the morning. He has run out of his Ibuprofen and has been inactive at the computer which might explain why his back is worse
Objective: There is questionable scoliosis to the right. No tenderness or obvious spasm. Straight leg raising test is negative. He has pain with forward flexion but not extension. DTRs are 2+ and equal. No Babinski signs
Assessment: Chronic low back pain due to lumbar spondylosis
Plan: Rewrite Ibuprofen 800mg q 6 hours prn for pain (take with snack). Referred again to physical therapy for standard back exercises

eSign Log
No signatures on file

Review Of Systems by Administrator Administrator (Collapse)

Weight Change: NO	Weakness: NO	← Review of Systems
Fatigue: NO	Anorexia: NO	
Fever: NO	Chills: NO	
Night Sweats: NO	Insomnia: NO	
Irritability: NO	Heat Or Cold: NO	
Intolerance: NO	Joint Pain: YES	
Musc Swelling: NO	Musc Redness: NO	
Musc Warm: NO	Musc Stiffness: YES	
Muscle: NO	Musc Aches: YES	
Arthritis: YES	Seizures: NO	
Neuro Numbness: NO	Neuro Weakness: NO	
Paralysis: NO	Dementia: NO	

Prescription for Ibuprofen

Prescriptions | **Add/Edit** | Save | Back

Currently Active

Starting Date: July 15, 2017

Provider: Robert Hoyt

Drug: Ibuprofen (click here to search)

Quantity: 100

Medicine Units: 800 mg

Take: 1 in tablet Per Oris p.r.n.

Refills: 03 # of tablets: 100

Notes: [Text Area]

Add to Medication List: No Yes substitution allowed

E-Prescription?
 Checked Drug Formulary?
 Controlled Substance?

e. Order a new lab test:

- i. Go to **Procedures** tab at top, scroll down to **Configuration** and this will show you what tests are currently available to order. The first test NHANES Lab Panel is what most patients in LibreHealth EHR already have, so it is a convenient choice. The other two tests were ordered for the sample patients.
- ii. First you must create a new encounter and for the reason for visit type in “Lab Test”. Fill in date, established patient, etc.
- iii. Access the **Administrative tab** under **Encounter** and scroll down and select **Procedure Order**. Make out the form similar to what is shown in the following screen shot. Well order the NHANES lab panel and opt to save and transmit it to the lab. We’ll also give it a ICD-10 code.

Procedure Order for Hugh Abbott on 2017-07-14

Encounter Summary | Miscellaneous | Administrative | Clinical

Procedure Order for Hugh Abbott on 2017-07-14

Ordering Provider:	Robert Hoyt
Sending To:	NHANES Data
Order Date:	2017-07-14
Internal Time Collected:	2017-07-14 15:38
Priority:	Normal
Status:	Pending
Clinical History:	Follow up lab
Procedure	NHANES Lab Panel
Diagnosis Codes:	ICD10:E78.5

Select lab test → Laboratory Test | Add Procedure | Save | Save and Transmit | Save

- iv. Go to Procedure tab at top on main menu, scroll down to pending review and enter factitious results for the patient, today’s date for reported and ext time collected. Under status select “Reviewed” and finally hit the Sign Results button at the bottom, which indicates the physician or nurse have

looked at the results

- v. Last, go to Procedure tab and scroll down to Patient Results and you will see the old and new panel results (see screen shot)
- f. Generate a **HL7 message** for sending the lab request to the lab. When you selected “Save and Transmit” it should have downloaded a HL7 message to your computer. View the message using TextEdit for the Mac or Notepad for Windows computers. Note the type of information in the message below. HL7 messages are used to send a variety of electronic messages. For more information on HL7 messaging, visit this [site](#). (See screen shot)

Lab results from December 2016 and July 2017

Date	Name	Reported	Ext Time Collected	Specimen	Status	Code	Name	Abn	Value	Units	Range	?
2016-12-31	NHANES Lab Panel	2016-12-31 00:??	2016-12-31 00:??		Reviewed	3016	TSH			uIU/	0.5 - ?	
						2160	Creatinine	No	0.84	mg/l	0.8 - ?	
						3094	BUN	No	15	mg/l	8 - 21	
						3453	Urine Albumi	No	10.6	mg/l	0 - 17	
						2085	HDL	Low	25	mg/l	40 - ?	
						1345	LDL			mg/l	85 - ?	
						2571	Triglycerides			mg/l	50 - ?	
						2093	Total Choles	No	134	mg/l	0 - 211	
						6690	WBC	No	5.5	1000	4 - 11	
						718-7	Hemoglobin	No	14.3	g/dL	13 - 17	
						4544	Hematocrit	No	41.6	%	40 - 50	
						777-2	Platelet Cou	No	191	1000	150 - 400	
						4548	Glycohemog	High	6.6	%	0 - 6	
						2345	Fasting Bloo			mg/l	65 - 100	
6280	Fasting Bloo			uU/r	0 - 21							
	GST Combined G				88.2	kg						
2017-07-14	NHANES Lab Panel	2017-07-14 00:??	2017-07-14 00:??		Reviewed	3016	TSH		111	oth		
						2160	Creatinine		1	mg_		
						3094	BUN		1	mg_		
						3453	Urine Albumi		1	oth		
						2085	HDL		1	mg_		
						1345	LDL		1	mg_		
						2571	Triglycerides		1	mg_		
						2093	Total Choles		1	mg_		
						6690	WBC		1	thou		
						718-7	Hemoglobin		1	g.dl		
						4544	Hematocrit		1	perc		
						777-2	Platelet Cou		1	thou		

HL7 Message

```

MSH|^~\&|||20170714155227||ORM^001|17923|D|2.3
PID|1|8040|8040||Abbott^Hugh||19491223|M||^|31950|||
PV1|1|||^Hoyt^Robert|||31950|||
IN1|1|31919|Medicare|Medicare^Wilmington^DE^19801|||self|00000000|^|1|
GT1|1|Abbott^Hugh|^|19491223|M|self|
ORC|NW|17923|||20170714155227|^Hoyt^Robert|||2
OBR|1|17923|1^NHANES Lab Panel|R|20170714153800|||Hoyt^Robert||I|||0
  
```

- g. Set up the **Patient Portal** for your test patient. On the patient summary page, go to demographics section and then the Privacy tab. In the first section “Allow Patient Portal”, change from Unassigned to Yes. (this is a good time to also look at the other choices and allow your patient access to several other EHR features). Select the Save button. When you return to the main Summary page you will note to the right of the patient’s name it will now say “Create Onsite

Current Patient  

Current Patient

Demographics

Face Sheet | Contacts | **Privacy** | Employer | Social Statistics

Allow Patient Portal: Unassigned  Change to Yes 

Trusted Email:

Allow Voice Message: Unassigned 

Allow Mail Message: Unassigned 

Allow Email: Unassigned 

Allow Immunization Info Sharing: Unassigned 

VFC: Unassigned 

Reason Deceased:

Privacy Notice Received: Unassigned 

Leave Message With:

Allow SMS: Unassigned 

Allow Immunization Registry Use: Unassigned 

Allow Health Information Exchange: Unassigned 

Date Deceased: 0000-00-00

Portal Credentials". Select that button and you will see that the system created a User Name and Pass Phrase for the patient. Click Save and this will print out the portal web address, username and password to hand to the patient. Go to the portal web address and log in using the credentials for your patient or use a sample patient like Jimmy Jennings Username = **Jimmy93** and Password of **Portal7** (see screen shot) The patient can now access the portal to view their profile (demographics), Lists (medications, diagnoses, allergies and lab; Patient Documents (example, living will); Appointments (pending); Accounting (financial statement); Reports (CCD, CCR and customizable reports); Secure Messages (how you can contact the clinic via email) (see screen shot)

LibreHealth EHR Patient Portal Login

User Name

Pass Phrase

Language 

Powered by LibreHealth EHR

New messages  Jimmy Jennings

MENU

Welcome Jimmy Jennings
Online

- Profile
- Lists
- Patient Documents
- Appointment
- Accountings
- Reports
- Secure Messaging
- Secure Chat
- Signature on File
- Logout

MEDICATIONS

Drug	Start Date	End Date	Referrer
ALBUTEROL 2 puffs q 6 hours prn			
DILTIAZEM 180mg TID			
HYDROCHLOROTHIAZIDE 25mg qd			
INSULIN GLARGINE 45 units q day			
MOMETASONE 1 puff both nostrils BID		2017-08-29	
MONTELUKAST 10mg qd			
PANTOPRAZOLE 10mg prn for reflux			
PIOGLITAZONE 45 mg qam			
CETIRIZINE 10mg q 6 hrs prn for allergies		2017-07-29	

MEDICATIONS ALLERGY LIST

Title	Reported Date	Start Date	End Date	Referrer
Statin induced myalgias	2017-06-09 19:23:54	2017-04-09		

ISSUES LIST

Title	Reported Date	Start Date	End Date
Unspecified osteoarthritis, lumbar spine 2015	2017-04-24 20:43:01		
Heart failure, non-systolic 2014	2017-04-24 20:43:01		
Emphysema, unspecified, moderate 2000	2017-04-24 20:43:01		
Unspecified chronic bronchitis 2000	2017-04-24 20:43:01		
Essential (primary) hypertension 1996	2017-04-24 20:58:59		
Pure hypercholesterolemia, unspecified 1996	2017-04-24 20:58:59		
Obesity 1990	2017-06-29 20:29:39		
spondylosis	2017-07-11 21:40:58		
Type 2 diabetes mellitus without complications 1996	2017-04-24 21:16:06		
Mild intermittent asthma, uncomplicated 2005	2017-04-24 20:43:01	2005-07-13	

- h. **Billing and Coding.** First, select your test patient and select one of the encounters you created in the Past Encounter List. Access the Fee sheet, either above the Encounter, under the Administrative tab or in the top menu, under Fees. Notice the two drop down menus, one for a New Patient and the other for the Established Patient. Select the latter and choose Detailed Visit. This will generate a CPT code of 99213 automatically below. Under the Search option select ICD-10 Diagnosis and in the window to the right search for the diagnosis (e.g. low back pain). We will search for low back pain and look above the word Search and you will see Search Results (1 item). Double click that and select M47.816 for lumbar spondylosis without myelopathy or radiculopathy. for low back pain and perhaps M54.5 for low back pain. Click on the Justify drop down and select M54.5 so the CPT code is now linked to the ICD-10 code. Click Save. Now go to Patient/Client in the top menu and scroll down to select and open Visits and then Visit History and you will see the encounter now is associated with the billing codes.

Encounter Summary Miscellaneous Administrative Clinical

Fee Sheet

New Patient Established Patient  **Select "Detailed" from Drop down list**

Search Results (0 items)

Review Add Copy Search  **Search for ICD-10 Code here**

ICD9 Diagnosis
CPT4 Procedure/Service
HCPCS Procedure/Service
ICD10 Diagnosis

Type	Code	Modifiers	Price	Units	Justify	Note Codes	Auth	Delete	Description
CPT4	99213			0	1	ICD10 M54.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
ICD10	M54.5						<input checked="" type="checkbox"/>	<input type="checkbox"/>	Low back pain

Justify option

Providers: Rendering Hoyt, Robert Supervising -- N/A --

Referring -- N/A --

Price Level: Standard

Save Mark as Billed Refresh Cancel

Clients, then Patient List Creation. Change **From** date to something before 2016-12-31 and the **To** date as today's date. Select age range 75-90 and the Option set on demographics. Gender is unassigned. Click **Submit**. You should now have a list of patients and at the top of the list it should say "Total Number of Patients: xxx. How many did you find? Now you want to know how many have diabetes. Now change the Option drop-down to **Problems** and repeat the search. Note that the total found is less than on the first search because not everyone had a diagnosis. Also, many patients have multiple diagnoses. You can sort by either ICD-10 code or Diagnosis Name. (see screen shot) Click on Diagnosis Name and it should sort alphabetically. Scroll down and count those with either Type 2 diabetes with unspecified diabetic retinopathy (E11.319) or those without complications (E11.9). Total these number of diabetic patients and divide by the total number of patients you found in ages 75-90. What percent are diabetic and might benefit from screening in your office?

Report - Patient List Creation

From: 2016-11-17 To: 2017-07-17 **Option menu**

Age Range: From 75 To 90 Gender: Unassigned **Submit**

Total Number of Patients: 586 **Total** **Sort Up and Down Arrow**

Diagnosis Date	Diagnosis	Diagnosis Name	Patient Name	PID	Age	Gender	Provider
2017-04-24 20:42:55	ICD10:M19.90	Unspecified osteoarthritis, unspecified site	Burton, Rene	13	80	Male	
2017-04-24 20:42:55	ICD10:K76.9	Liver disease, unspecified	Burton, Rene	13	80	Male	
2017-04-24 20:42:55	ICD10:C44.99	Other specified malignant neoplasm of skin, unspecified	Burton, Rene	13	80	Male	
2017-04-24 20:42:55	ICD10:M19.90	Unspecified osteoarthritis, unspecified site	Welch, Freddie	17	80	Male	
2017-04-24 20:42:55	ICD10:E07.9	Disorder of thyroid, unspecified	Welch, Freddie	17	80	Male	
2017-04-24 20:42:56	ICD10:C76.8	Malignant neoplasm of other specified ill-defined sites	Mccoy, Charles	21	75	Male	
2017-04-24 20:42:56	ICD10:K76.9	Liver disease, unspecified	Mccoy, Charles	21	75	Male	
2017-04-24 20:42:58	ICD10:M19.90	Unspecified osteoarthritis, unspecified site	Beck, Debbie	54	77	Female	
2017-04-24 20:42:58	ICD10:I50.9	Heart failure, unspecified	Beck, Debbie	54	77	Female	
2017-04-24 20:42:59	ICD10:J45.20	Mild intermittent asthma, uncomplicated	Nunez, Justin	67	75	Male	
2017-04-24 20:42:59	ICD10:M19.90	Unspecified osteoarthritis, unspecified site	Nunez, Justin	67	75	Male	
2017-04-24 20:42:59	ICD10:K76.9	Liver disease, unspecified	Nunez, Justin	67	75	Male	
2017-04-24 20:42:59	ICD10:M10.9	Gout, unspecified	Nunez, Justin	67	75	Male	
2017-04-24 20:43:00	ICD10:I25.9	Chronic ischemic heart disease, unspecified	Wolfe, Aaron	90	80	Male	

- b. Next you want to know how many young diabetics between ages 2 to 20 you have in the clinic. Select Reports in top menu, select Clients and then Clinical. This should bring up the following (screen shot). Search all facilities, Age Range 2-20, gender, race and ethnicity are unassigned. Change the From date to something before December 30, 2016. Click on Problem Dx and under ICD-10 look for diabetes and select E11.9. (see screen shot) Now hit the Submit button. How many returns? To determine whether these are type 2 diabetics, access each patient's summary list and check medications. If they are taking metformin, they are type 2. If they are only taking insulin, they are type 1. Next access their Lab results in the Summary list. Locate glycohemoglobins by Toggle all or look just at 4548-4 (LOINC code). they should be 7 or less (ideally). Are the type 2

diabetic patients better or worse controlled? Lastly, check everyone's BMI. Overweight is > 25, obese is > 30. Who is heavier, type 1 or type 2?

- c. **For clinical students:** You are rotating through this clinic for a month and need to do a research project. You have decided to investigate renal dialysis patients. How many are there? What is their age and ethnicity? What are the underlying causes of their renal failure? Are there any common threads? First, you go to **Reports >> Client >> Clinical**. You will search on all Facilities, From 2016-10-31 to the current date. Age Range will be 50-80, Gender, Race and Ethnicity is Unassigned. For Problem DX, you click the box, select ICD-10 (drop-down menu) and input Z99.2 (dependence on renal dialysis). How many patients did you find? Alternately, you can go to Reports >> Client >> Patient List Creation, input age 50-80 and under Option select problems. In the Diagnosis Name column, filter alphabetically and then count everyone with the diagnosis of "dependence on renal dialysis".

Next, create a spreadsheet. In the first column is patient name, second column age, third column gender, fourth column ethnicity/race and last column diagnoses. This can be accomplished reasonably quickly by having the patient finder and clinical reports options open. Search for the name and the summary appears and you scroll down to look at diagnoses. After you have finished inputting the data, summarize it in a paragraph. What is the most common scenario of patients on renal dialysis?

- d. **For HIM students:** Repeat the same exercise but review the diagnoses and medications and in a separate column add any more detailed ICD-10 diagnoses that are missing.

Report - Clinical

Facility: -- All Facilities --

From: 2016-07-17 11:25

Patient ID:

To: 2017-07-17 11:25

Age Range: From 2 To 20

Problem DX: ICD10:E11.9

Gender: Unassigned

Drug:

Race: Unassigned

Ethnicity: Unassigned

Immunization:

Lab Result:

Option: Select

Communication: Select

Sort By: Patient Name Age Allergies Medical Problems Drug NDC Number Lab Results Communication

Submit

3. Create a new **Clinical Decision Rule**. Access the Administrative tab at the top, scroll down and select **Rules**. This should take you to the following screen (see screen shot). Note that there are already 20 Rules in the system, some are related to diabetes and the others are general preventive rules. Click on Cancer Screening: Colon Cancer Screening before we create a new **Rule**. Notice the different categories that have to be decided before a rule is written.

Plans Configuration   

Plans Configuration

Rules Configuration  Click Add new

Name	Type
Adult Weight Screening and Follow-Up	Reminder
Assess Penicillin Allergy	Reminder
Cancer Screening: Colon Cancer Screening	Reminder
Cancer Screening: Mammogram	Reminder
Cancer Screening: Pap Smear	Reminder
Cancer Screening: Prostate Cancer Screening	Reminder
Coumadin Management - INR Monitoring	Reminder
Data Entry - Social Security Number	Reminder
Diabetes: Eye Exam	Reminder
Diabetes: Foot Exam	Reminder
Diabetes: Hemoglobin A1C	Reminder
Diabetes: Urine Microalbumin	Reminder
Hypertension: Blood Pressure Measurement	Reminder
Influenza Immunization for Patients >= 50 Years Old	Reminder
Measure Blood Pressure	Reminder
Measure INR	Reminder
Pneumonia Vaccination Status for Older Adults	Reminder
Tobacco Cessation Intervention	Reminder
Tobacco Use Assessment	Reminder
Weight Assessment and Counseling for Children and Adolescents	Reminder

We opted to look at a government site for preventive care for possible new rules. Go to <https://epss.ahrq.gov/ePSS/search.jsp> and search on recommendations for anyone 65 or over. Our choice for a new Rule is Osteoporosis screening, even though, it is a B, not A recommendation. Click on details and it discusses the rationale. This is likely to be a one-time screening. Click New and here is how I added the New Rule. Click Save and then you are taken to a new window. You must name the new rule, click active, passive and patient reminder. Input any funding source, release version and web reference (see screen shot).

Rule Add   

Rule Add

Summary

***Title**

Type Active Alert Passive Alert Patient Reminder

Developer

Funding Source

Release

Web Reference

*Required fields

I next selected the reminder interval and chose a warning of 2 weeks and an overdue warning at 1 month. (see screen shot)

Rule Edit [Cancel](#)

Add criteria

- [Age min](#)
- [Age max](#)
- [Sex](#)
- [Medical issue](#)
- [Diagnosis](#)
- [Medication](#)
- [Allergy](#)
- [Surgery](#)
- [Lifestyle](#)
- [Custom Table](#)
- [Custom](#)

Rule Edit [Cancel](#) [Save](#)

Reminder intervals

Type	Detail		
*Clinical	Warning	2	Week
*Clinical	Past due	1	Month
*Patient	Warning	2	Week
*Patient	Past due	1	Month

*Required fields

Now under demographics category (see screen shot) I selected **Age min** and inputted 65 years, Optional No, Inclusion Yes. Save. I then selected **Age Max** and inputted 80 years. Under Sex I inputted Female. Notice the other choices (see screen shot). We are ready to move on to Target/Action Groups (see screen shot). Click on Target and then Custom. Complete the information (see screen shot). Save

Rule Detail [Back](#)

Summary [\(edit\)](#)
Osteoporosis Screening: Women 65 or Older (Active Alert, Passive Alert, Patient Reminder)
 Developer: Robert Hoyt
 Funding Source: Informatics Education
 Release: V 1.0
 Web Reference: <https://epss.ahrq.gov/ePSS/search.jsp>

Reminder intervals [\(edit\)](#)

Type	Detail
Clinical	Warning: 2 Weeks, Past due: 1 Months
Patient	Warning: 2 Weeks, Past due: 1 Months

Demographics filter criteria [\(add\)](#)

	Criteria	Characteristics	Requirements
(edit) (delete)	Age Min (Years)	Required Inclusion	65
(edit) (delete)	Age Max (Years)	Required Inclusion	80
(edit) (delete)	Sex	Required Inclusion	Female

Target/Action Groups

Clinical targets [\(add\)](#)

Actions [\(add\)](#)

Rule Edit Cancel Save

*Category: Examination
(change)

*Item: Osteoporosis Screening: Women 65 or Older
(change)

*Completed?: Yes

*Frequency: = 1

*Optional: Yes No

*Inclusion: Yes No

*Interval: 5 Year

*Required fields

Last, select Action and the category and item are the same. Provide a web link for education. Select custom input No and save. To test it we navigate to Janis Bass (70-year-old lady) and below is what we find. (see screen shot). Now select a new rule from the EPSS web site and create a new rule.

Bass, Janis Delete Patient has not authorized the Patient Portal.

History | Report | Documents | Transactions | Issues | Ledger

Alerts/Reminders Close

Examination: Osteoporosis Screening: Women 65 or Older (Past Due)

New Items (see above for details):
Examination:

most recent vitals from: 2018-12-31 02:00:00

Blood Pressure: 116/64
[Click here to view and graph all vitals.](#)

Active Alert

Now in the list

Clinical Reminders (collapse)

Examination: Osteoporosis Screening: Women 65 or Older (Past Due) ?
Assessment: Colon Cancer Screening (Past Due) ?
Measurement: Mammogram (Past Due) ?
Examination: Pap Smear (Past Due) ?
Treatment: Influenza Vaccine (Past Due) ?
Treatment: Pneumococcal Vaccine (Past Due) ?

Appointments (collapse)

None

Medical Problems (collapse)

Pure hypercholesterolemia, unspecified

Allergies (collapse)

Nothing Recorded

Medications (collapse)

Nothing Recorded

Surgeries (collapse)

Nothing Recorded

Immunizations (collapse)

None

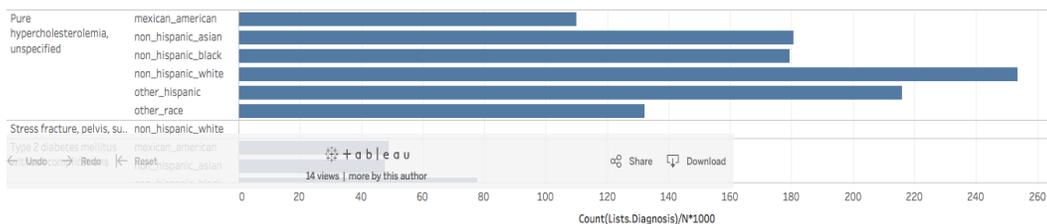
Prescription (collapse)

- Data exercise with visualization.** Data for the EHR came from the 2011-2012 NHANES data collection period. The breakdown of ethnicity and race are as follows:

14.1% Mexican Americans, 10.8% Other Hispanic, 30.4% White, 27.7% Black, 13% Asian and 4% Other race (multi-racial). More NHANES details are available [here](#). One of the developers Dr. Kevin Yeh did a SQL query to determine the breakdown of diagnoses (ICD-10) by race/ethnicity. The result is a CSV file stored on [Google Drive](#). For this exercise, you will use this file. First create a visualization of the following diseases by race, using [Tableau Public](#). You can add filters to the spreadsheet so you only see the following:

- Type 2 diabetes, without complications
- Chronic ischemic heart disease
- Disorder of thyroid
- Emphysema
- Essential hypertension
- Gout
- Malignant neoplasm of the prostate
- Mild intermittent asthma
- Pure hypercholesterolemia

As with most analytical exercises you begin with studying the data to look for missing values or errors. You would then visualize the data to look for possible interesting trends (visual analytics) (see screen shot of just pure hypercholesterolemia, unspecified). Examine the data in Tableau and report several observations you believe are significant. You must next prove they are statistically significantly different by looking at Z population proportions, calculated with an online Z score calculator ([Social Science Statistics](#)). For example, essential hypertension appears to be more common in “other Hispanics” than Mexican Americans. Input the raw data into the calculator and see if it is really different. Submit your Tableau result and report 4 observations you analyzed with the calculator.



5. Future exercises

- Analyze EHR data with IBM Watson Analytics
- Analyze EHR data with machine learning software WEKA
- Build SMART apps for the EHR using the FHIR standard
- Perform exercises pertinent to the new reimbursement standards known as MACRA/MIPS