



PRAXIS[®]
The Template-Free EMR

DATUM+[™]





DATUM+TM

A Feature Within Praxis EMR That Makes MACRA, PQRS
and any Other Quality Reporting Program Easy

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(818) 592-2900 support@praxisemr.com

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Dear Colleague,

Governments and private employers across the globe are facing the challenges of an aging population, sedentary lifestyles and poor diets and the resulting tsunami of chronic disease which is a primary driver of ever increasing health care costs. We physicians have to be frank and recognize that we have to be the biggest part of the solution but we often lack the tools and clinical workflows and processes to do that. The payers are trying to address these problems through so called “value-based contracting” which attempts to reward physicians for cost effectively achieving superior outcomes. Whenever there are financial rewards they have to be backed up by some system of measurement and, as a result, we’re all being inundated with new reporting requirements. Moreover, these requirements may mandate the use of very complex coding systems such as LOINC and SNOMED CT. While laudable in concept this approach can place a huge new burden on already busy practices.

Ideally our EHRs would come to our rescue but, for the most part, they were designed for a different era and they don’t manage clinical data at the level of sophistication necessary to help physicians efficiently adapt to these new practice realities. Praxis is different. From the day I first conceived of it I was guided by these fundamental goals:

- To help physicians accurately document the care they deliver in LESS time than was required on paper.
- To allow each physician to automatically create their own approach to care for the problems they see as a byproduct of their charting, i.e. to allow the charting to assist in the practice of medicine.
- To use that approach to remind physicians to remember to do what they intend to do for each of their patients no matter how busy they may be, and reduce emotional stress.

Achieving these goals required us to implement two unique features in the Praxis EHR. First, as you document in Praxis, you create your own “clinical concepts” in text. Praxis associates them with the type of patient you’re treating and, over time, it learns enough to automatically present them to you whenever you see a similar patient. Second, there are always “factoids” that are specific to a patient (their name, birth date, etc.) as well as to their care (their blood pressure or serum glucose at this visit). These are represented as what we call “Datum” and Praxis knows you need to review and edit them so that incorrect or inappropriate information isn’t carried forward into the next visit which is a common problem with the so-called “templates” used by most other EHRs.

The good news that we're conveying in this document is that we've been able to enhance Datum into what we're calling Datum+ and it will report for you to Medicare and private insurers using their coding approach with little or no extra effort on your part! In essence we've linked the Datum we've had for years to the necessary codes so that, as you chart the way you always have, Praxis is doing the reporting for you. We've also been able to use Praxis to make practice guidelines a seamless part of charting. Once we've linked them to the Praxis clinical concepts and Datum+ they automatically help populate your note and approach to care, again with no extra effort on your part.

I don't blame you if you feel this all sounds too good to be true. So, read on and see that it is true - but only with the Praxis EHR.



Richard M. Low MD
Founder and CEO
Praxis Electronic Medical Records

Introduction

Praxis Electronic Medical Records (EMR/EHR) is widely regarded as the best charting tool in healthcare today. Due to its template-free design, Praxis facilitates speed and accuracy in clinical documentation, enabling excellence in medical quality and the highest levels of physician-user satisfaction.

With the imminent introduction of the new **Datum+** Quality Reporting engine, Praxis will revolutionize quality reporting for MACRA, MIPS, APMs, PQRS and any other current or future merit or value-based “pay-for-performance” program from Medicare or other third parties.

We believe that Datum+ will become the great equalizer for independent medical practices, and will help engender the re-emergence of America’s independent physician. Datum+ will make a meaningful contribution to physician quality reporting, and help usher in a new era of independent physician growth and practice autonomy.

As you will see, the problem is not with the reporting regulations themselves; they are ambitious and praiseworthy. The difficulty stems from the implementation of these regulations by EHRs, which force providers to do tasks that should be automated. These requirements, if unassisted by your EHR, are impractical. They second guess your method of practicing medicine and require you to work as a data entry clerk; something you neither have the time nor the interest to do. If not handled properly by your EHR, these reporting regulations waste provider time and effort and require an army of clerical staff, potentially threatening the viability of the independent practice. Therefore, now more than ever, it is imperative that the EHR you use adequately manages today’s reporting requirements for you. The latest quality reporting alternatives are creating havoc for the practice of medicine. Of course, we all know this!

Nevertheless, the regulations could be positive and even welcomed if:

1. They are not intrusive.
2. They cut out bureaucracy.
3. They allow the practice of better and faster medicine.
4. They generate higher earnings.

Datum+ will be the only medical tool capable of achieving all these goals. It will be the only viable solution for independent medical practices because it solves the

reporting dilemma: how to query and share discrete data without turning providers into data-entry clerks.

In this paper we discuss what Datum+ is and how it works to ensure that you score the highest performance ratings available—close to 100% and way above the “thresholds” set by Medicare and other third parties for top compensation—with almost no wasted time or effort.

With Datum+, your Quality Reporting and Population Health Management will be automated. Then, the more regulations that are added, the easier they will be to comply with, and the better patient care you will provide (not to mention the increased revenues)!

Now, let’s take a look at what Datum+ is; then we will show you how it resolves all merit and value-based programs reporting with ease.

What is Datum+?

Praxis is a program that works with free text rather than templates. This means that you can write whatever you wish and Praxis remembers and instantly recalls what you wrote for use with other patients. Its “Concept Processor” does not recall “templates” but rather “units of thought” that are unique to your thinking process.

In this way, the Concept Processor inside Praxis represents a shorthand for your medical thought process. It charts at the speed of your mind, and often even faster. It reminds you to do things you feel are important by learning from the best teacher in the world: yourself. As we often say, **it is far easier to do what you wrote than to write what you did.**

If you have not seen the Praxis Full Demo yet, we invite you to do so here:

<http://www.praxisemr.com/demo>

As you will see, Praxis works with free text, as opposed to templates that rely on hard-coded text, which must then be edited to fit your approach to patient care. Templates are time consuming and unwieldy at best. Templates use a myriad of pick-lists, and each one of may have to be reworked, wasting provider time and usually creating a partial solution to charting. In short; templates don’t work. We all know that!

The real question is how can Praxis EMR, based on free text, help you comply with the regulations based on computer codes, as easily as it can help you chart medicine your way.

Discrete Data

Discrete data, also known as “data points” has special capabilities that turn your computer into a powerful ally. Discrete data can display in your flowcharts; it can generate billing (CPT’s/HCPS/ICD-10s); it can be queried and be included in your quality reports; and, for the purpose of Meaningful Use and all the future “pay-for-performance” programs, it can trigger practice advisories that will alert you with recommendations at the point of care.

The most important thing, however, is that with Praxis you do not have to go looking for these “factoids”; instead, with Datum+ the codes are already part of the free text automatically brought forward with your assessment. When seeing the same or a different patient with a similar condition, your assessment pulls up all relevant text including its embedded discrete data via Datum, saving you a huge amount of time and effort.

As shown in figure 1, each Datum element is a flexible “object” that you easily embed within your free text. This would be prohibitively tedious without the Concept Processor, which instantly rebuilds your note for the next patient, including all the exact data points created before. At this point, your chart comes alive and automates all required discrete data on your behalf.

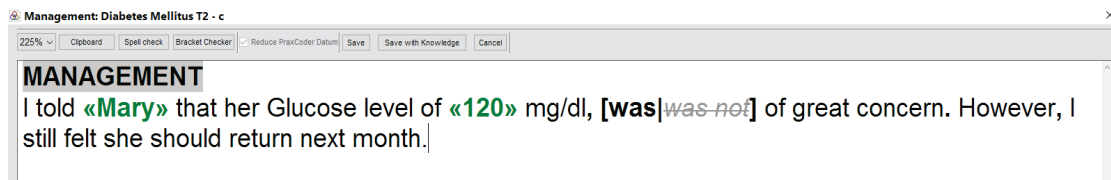


Figure 1. Notice how the name of the patient and the latest laboratory result appear instantly without you doing a thing. The data points are embedded right within the free text. The text and its embedded discrete data are created appropriately, instantly and automatically. This advanced approach saves time and helps improve the accuracy of documentation so it is used throughout Praxis.

Datum allows five kinds of discrete data input:

1. Patient demographic information, such as the name, the age, and the street address.
2. Encounter-related Clinical Parameter information.
3. Patient related discrete data.
4. Incoming Laboratory Information.
5. Formulas that include one or two of the above data points.

Here are examples of each:

1. Patient Demographic Information

The screenshot shows the Datum+ interface for a patient visit. The main window displays a list of medical orders and assessments. A pop-up window titled "Agent: LFTs in three months - Provider: Clayton Reynolds, MD" is open, showing the patient's demographic information and a text box containing the message: "I have ordered a lipid panel in three months". A blue arrow points from the "Hepatitis screen" order in the main window to the agent window.

Figure 2. Note that the patient demographic information is instantly filled out as part of your automatic letter. When you click inside the free text regarding returning in three months, you open an "Agent," essentially your electronic assistant, that goes to sleep for exactly three months, and then generates a letter to your patient requesting she return for a Lipid Panel. There is nothing more for you to do. You cannot forget to create your letter or to send it three months later. This agent ("I have ordered a repeat Lipid Panel in 3 months") appears automatically whenever you select the appropriate assessment for today's visit. You had decided on this letter long ago when you created it for the first time for use with a different patient who required the same letter for the same reason, and are done!

This also allows you to write “ <<Mary>> is a <<34 yo.>> <<white>> Female that presents with...” The information within the double brackets is automatically updated for each new patient you see.

2. Encounter Related Clinical Parameter Information

This allows you to use the same double bracket syntax for information such as the current weight, abdominal circumference, and pedal edema measurement by your assistant.

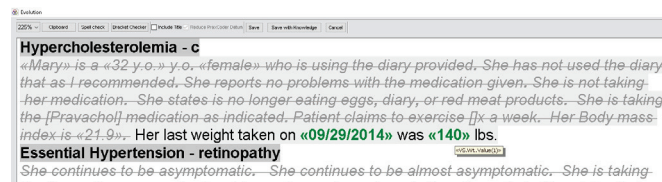


Figure 3. The previous weight is displayed automatically with the free text. You may create and then place discrete data fields for any kind of vital sign or clinical parameter you wish. In fact, you can invent any new fields you need on the fly (see our later discussion on Dynamic Fields). The next time you see this or a different patient with the same condition, your free text will include the similar previous weight information instantly and automatically, but updated for that patient, of course.

3. Patient Related Discrete Data

This is information such as the race, the date of injury, and the smoking status of the patient coming in from the Dynamic Fields that you design.

Essential Hypertension - retinopathy

She continues to be asymptomatic. She continues to be almost asymptomatic the Procardia as prescribed and has not experienced any further discomfort she is using salt substitute in her diet as ordered. She continues to take I pressure, which she has found to be under [] systolic and [] diastolic, with «Mary»'s last potassium level was «3.8» taken on «09/29/2014». Before t was «3.8» taken on «09/29/2014». «Mary» «does not smoke».

Diabetes Mellitus T2 - c

«DF.Smoker Value»

Figure 4. Smoking status may be Medicare required information entered by your assistant that then instantly displays within your notes, merging seamlessly with your free text.

4. Incoming Laboratory Information

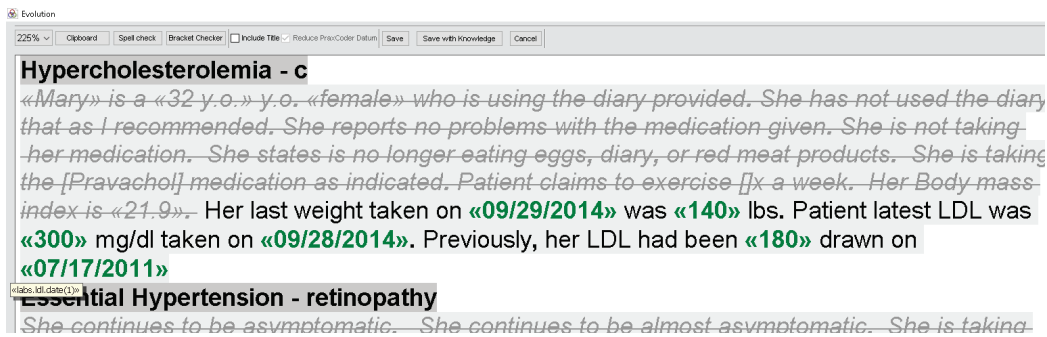


Figure 5. Accurate laboratory information appears exactly where you wish to see it within your free text, and without any errors. Note that your chart automatically compares the most recent lab result with an earlier one to denote progress. You had established this comparison for a previous patient presenting with the same condition and now Praxis automatically does it again for this patient.

5. Formulas Using One or More of the Above Data Points

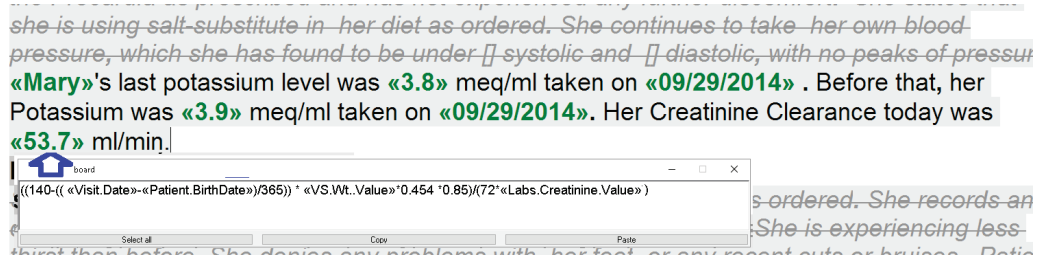


Figure 6. Here Praxis uses the Female Creatinine Clearance Formula to calculate the correct value derived from the patient's date of birth (age), weight, and latest Creatinine lab value, and then places the answer right where you wish to see it. You can create any formulas you wish. You do it once, and Praxis never forgets it.

Datum Also Works as a Recorder

Datum not only displays discrete data, but can edit and record new data on the fly. Clicking within any Datum element (except the incoming lab values that obviously may not be changed), allows you to instantly access the exact field to enter or change any displayed information. This is faster than searching for the actual field in the appropriate window. In essence, Datum takes you to the right field with a single click. This is true even if you have thousands of fields to select from. There is really nothing to search. It is all displayed exactly when and where you need to see it.

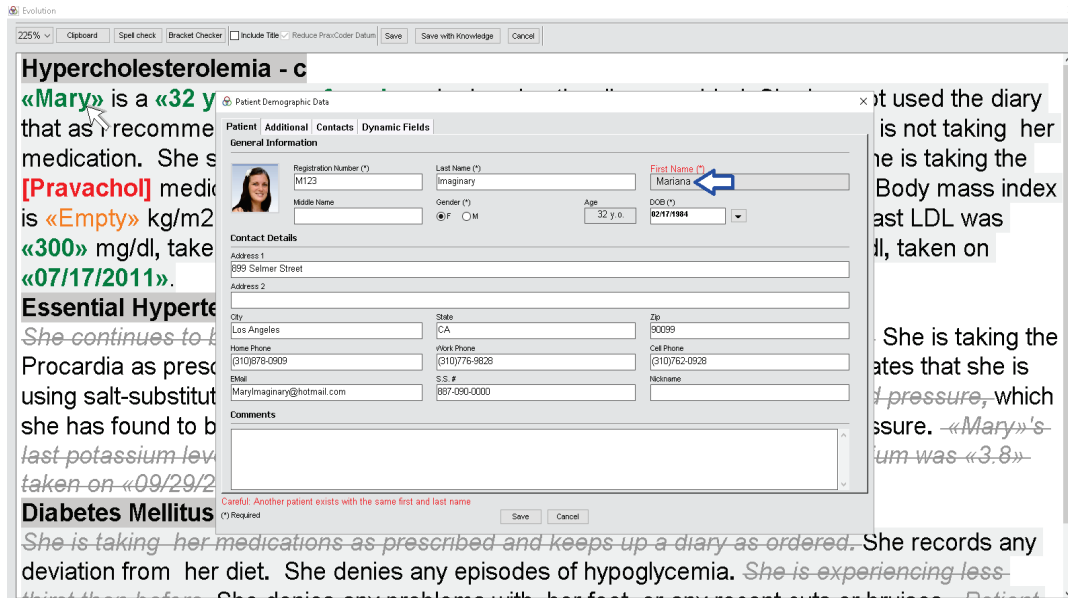


Figure 7. Left clicking on “Mary” inside the text accesses the appropriate demographic window for editing. Here we are changing it to “Mariana” on the fly. If a field is empty you may enter the value the same way. Imagine how easy is to fill out or edit a Vital Sign, a Clinical Parameter or a Practice Advisory even if you had thousands of different ones.

Dynamic Fields

As just mentioned, Datum uses both Clinical Parameters and the Dynamic Fields. Both are discrete data fields that you may create on the fly in Praxis and then use at will. They differ in that **Clinical Parameters are visit-related** whereas **Dynamic Fields are patient-related** and include several other powerful features. We will focus now on what Dynamic Fields can do.

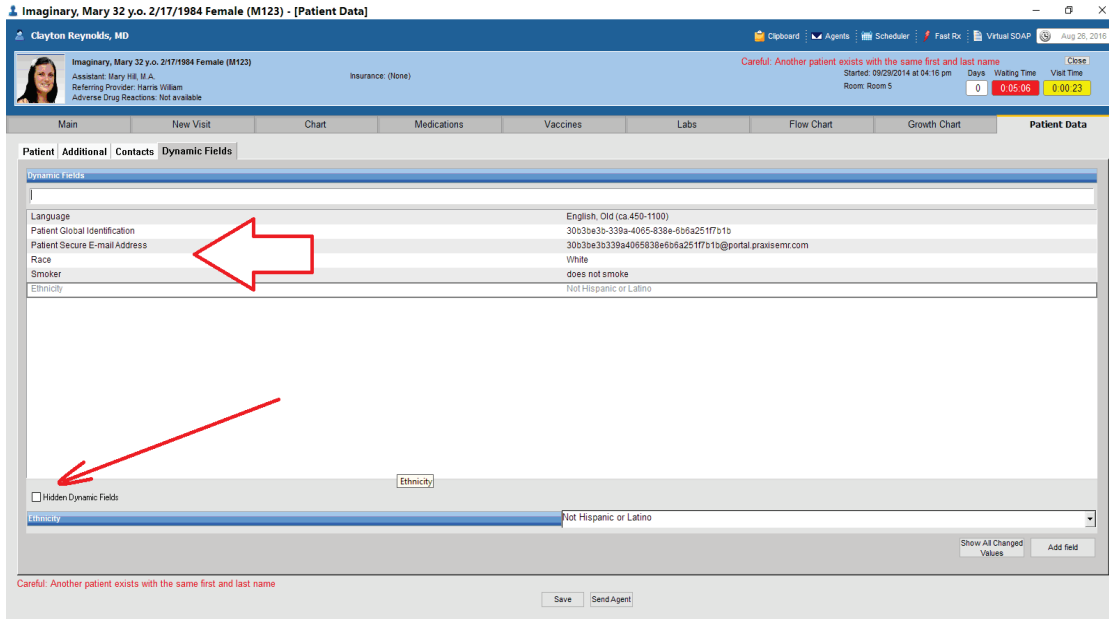


Figure 8. Dynamic Fields displayed in a patient record. You may create any field you wish on the fly and then use it with Datum for your everyday charting. More importantly, you can use whatever terminology you wish and Praxis will remember it and link it to official foreign tables (see next). Only a few fields are displayed for your front office to fill out before you see the patient, but hundreds may be hidden (see red arrow). No worries, the datum element will have them exactly where you need them as soon as you open the patient note generator.

You could think of Dynamic Fields as discrete data fields on steroids: They recall the text you've entered in the past so you need not retype it, but also so that queries and Practice Advisories can use it. Even more importantly, Dynamic Fields may be linked by you to foreign or external databases, such as the ones provided by Medicare. This last benefit makes the Dynamic Fields feature an amazing tool and you will soon see why.

ID	CODINGSYSTEM	OFFICIALFIELD	OFFICIALFIELDTEXT	OFFICIALVALUE	OFFICIALVALUETEXT	NAME	PATIENTID	DYNAMICF	DYNAMICF	REORDER	TEXTUAL	DATE
234	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	236	1	4	0	does not smoke	07/16/2016
233	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	236	1	4	0	does not smoke	07/16/2016
232	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	236	1	4	0	does not smoke	07/16/2016
231	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	59	1	4	0	does not smoke	07/15/2016
230	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	59	1	4	0	does not smoke	07/15/2016
229	2.16.840.1.113883.6.96	SMOKER	Smoker	449868002	Current every day smoker	Smoker	170	1	1	0	smokes every day	09/29/2014
228	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	170	1	4	0	does not smoke	09/29/2014
227	2.16.840.1.113883.6.96	SMOKER	Smoker	449868002	Current every day smoker	Smoker	120	1	1	0	smokes every day	09/29/2014
226	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	120	1	4	0	does not smoke	09/29/2014
225	2.16.840.1.113883.6.96	SMOKER	Smoker	449868002	Current every day smoker	Smoker	130	1	1	0	smokes every day	09/29/2014
224	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	130	1	4	0	does not smoke	09/29/2014
223	2.16.840.1.113883.6.96	SMOKER	Smoker	449868002	Current every day smoker	Smoker	232	1	1	0	smokes every day	09/29/2014
222	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	232	1	4	0	does not smoke	09/29/2014
221	2.16.840.1.113883.6.96	SMOKER	Smoker	449868002	Current every day smoker	Smoker	218	1	1	0	smokes every day	09/29/2014
220	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	218	1	4	0	does not smoke	09/29/2014
219	2.16.840.1.113883.6.96	SMOKER	Smoker	449868002	Current every day smoker	Smoker	66	1	1	0	smokes every day	03/03/2014
217	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	227	1	4	0	does not smoke	05/17/2013
210	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	234	1	4	0	does not smoke	05/14/2013
209	2.16.840.1.113883.6.96	SMOKER	Smoker	449868002	Current every day smoker	Smoker	132	1	1	0	smokes every day	11/14/2011
208	2.16.840.1.113883.6.96	SMOKER	Smoker	449868002	Current every day smoker	Smoker	132	1	1	0	Current every day smoker (Recod	11/14/2011
197	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	135	1	4	0	Never smoker (Recode: 4)	07/08/2011
192	2.16.840.1.113883.6.96	SMOKER	Smoker	266927001	Unknown if ever smoked	Smoker	66	1	6	0	Unknown if ever smoked (Recod	07/08/2011
191	2.16.840.1.113883.6.96	SMOKER	Smoker	77176002	Smoker, current status unknow	Smoker	66	1	5	0	Smoker, current status unknow	07/08/2011
190	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	66	1	4	0	Never smoker (Recode: 4)	07/08/2011
189	2.16.840.1.113883.6.96	SMOKER	Smoker	8517006	Former smoker	Smoker	66	1	3	0	Former smoker (Recode: 3)	07/08/2011
188	2.16.840.1.113883.6.96	SMOKER	Smoker	42041000124106	Smoker, current status unknow	Smoker	66	1	2	0	Current every day smoker (Recod	07/08/2011
187	2.16.840.1.113883.6.96	SMOKER	Smoker	449868002	Current every day smoker	Smoker	66	1	1	0	Current every day smoker (Recod	07/08/2011
84	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	83	1	4	0	Never smoker (Recode: 4)	04/22/2011
83	2.16.840.1.113883.6.96	SMOKER	Smoker	449868002	Current every day smoker	Smoker	15	1	1	0	Current every day smoker (Recod	04/22/2011
61	2.16.840.1.113883.6.96	SMOKER	Smoker	266927001	Unknown if ever smoked	Smoker	84	1	6	0	Unknown if ever smoked (Recod	03/12/2011
60	2.16.840.1.113883.6.96	SMOKER	Smoker	77176002	Smoker, current status unknow	Smoker	84	1	5	0	Smoker, current status unknow	03/12/2011
59	2.16.840.1.113883.6.96	SMOKER	Smoker	266919005	Never smoker	Smoker	84	1	4	0	Never smoker (Recode: 4)	03/12/2011
58	2.16.840.1.113883.6.96	SMOKER	Smoker	8517006	Former smoker	Smoker	84	1	3	0	Former smoker (Recode: 3)	03/12/2011

Figure 9. Query of Dynamic Fields linked to external (foreign) tables. Note the Textual Column (fourth arrow). You use the exact words you wish, and that is what Datum displays within your charting text automatically (e.g. “<<Mary>> <<does not smoke>>”). However, the government calls it “never smoker,” (third arrow from left) which is abstruse terminology at best and does not really flow within clinical text (Sometimes, the terminology used is even stranger than this). More importantly, the code the government wants to see is “266919005” (second arrow) of the specific SNOMED Coding system “2.16.840.1.113883.6.96” (first arrow), which no human can possibly remember. However, once linked in Dynamic Fields, displayed with Datum, and recalled by the Concept Processor for similar patients, the third parties are happy, and more importantly, you don’t waste time dealing with any of this. The appropriate code generation becomes automatic.

Some foreign or external tables, such as CPTs and the ICD-10s, are already well known to you. Others are less well known. We will review later in this paper.

Each of these foreign tables is really a dictionary that consists of at least two fields: One field displays a unique value code, and the next field displays its precise definition, although these definitions may sometimes be written in confusing bureaucratic verbiage, as you know from your ICD-10s!

One such table is the Logical Observation Identifiers Names and Codes (LOINC®), developed by the Regenstrief Institute, which not only standardizes all the distinct incoming laboratory results such as “Hemoglobin” (718-7), describes clinical observations you make, such as “Pulse” (8867-4) and “Systolic Blood Pressure” (8480-6).

LOINC : Table				
ID	QDM_Category	Description	Code	
132	Diagnostic Study	Breast - left Mammogram W air	38091-5	
133	Diagnostic Study	Breast - right Mammogram spot	38807-4	
134	Diagnostic Study	Breast implant - right Mammogram	38820-7	
135	Diagnostic Study	Breast - left Mammogram magnification and spot	38854-6	
136	Diagnostic Study	Breast - left Mammogram true lateral	38855-3	
137	Diagnostic Study	Breast FFD mammogram Post Localization	39150-8	
138	Diagnostic Study	Breast FFD mammogram diagnostic	39152-4	
139	Diagnostic Study	Breast FFD mammogram screening	39153-2	
140	Diagnostic Study	Breast - bilateral FFD mammogram diagnostic	39154-0	
141	Diagnostic Study	Breast - right FFD mammogram diagnostic	42168-5	
142	Diagnostic Study	Breast - left FFD mammogram diagnostic	42169-3	
143	Diagnostic Study	Breast - bilateral FFD mammogram screening	42174-3	
144	Diagnostic Study	Breast - bilateral Mammogram Post Wire Placement	42415-0	
145	Diagnostic Study	Breast - left Mammogram Post Wire Placement	42416-8	
146	Diagnostic Study	Breast - bilateral Mammogram Single view	46335-6	
147	Diagnostic Study	Breast - left Mammogram Single view	46336-4	
148	Diagnostic Study	Breast - right Mammogram Single view	46337-2	
149	Diagnostic Study	Breast - unilateral Mammogram Single view	46338-0	
150	Diagnostic Study	Breast - unilateral Mammogram	46339-8	
▶	151	Diagnostic Study	Breast FFD mammogram	46342-2
	152	Diagnostic Study	Breast - unilateral Mammogram diagnostic	46350-5
	153	Diagnostic Study	Breast implant - bilateral Mammogram displacement	46351-3
	154	Diagnostic Study	Breast - right FFD mammogram screening	46354-7
	155	Diagnostic Study	Breast - left FFD mammogram screening	46355-4
	156	Diagnostic Study	Breast - unilateral Mammogram screening	46356-2
	157	Diagnostic Study	Breast Implant - unilateral Mammogram	46380-2
	158	Diagnostic Study	Breast implant - bilateral Mammogram diagnostic	48475-8
	159	Diagnostic Study	Breast implant - bilateral Mammogram screening	48492-3
	160	Diagnostic Study	Breast implant - left Mammogram diagnostic	69150-1
	161	Diagnostic Study	Breast Mammogram Post Wire Placement	69251-7
	162	Diagnostic Study	Breast implant - right Mammogram diagnostic	69259-0
	163	Diagnostic Study	Bone Scan	25031-6
	164	Diagnostic Study	Bone Scan W In-111 tagged WBC IV	25032-4
	165	Diagnostic Study	Bone Scan limited	39627-5

Record: 151 of 4154

Figure 10. LOINC Codes Table Displaying Types of X-Ray Reports received by your clinic. Note the “Breast FFD mammogram.” The code is displayed in the fourth column (“46342-2”), whereas its definition is found in the third column. We discuss this example later in this paper.

The Systematized Nomenclature of Medicine (SNOMED CT) codes developed by the American College of Pathologists is another such table with more than 120,000 concepts. It attempts to describe “codes, terms, synonyms and definitions used in clinical documentation and reporting¹”.

¹ Wikipedia: https://en.wikipedia.org/wiki/SNOMED_CT

ID	QDM_Category	Description	Code
4651	Individual Chara	Never smoked tobacco (finding)	266919005
4652	Individual Chara	Ex-trivial cigarette smoker (<1/day) (finding)	266921000
4653	Individual Chara	Ex-light cigarette smoker (1-9/day) (finding)	266922007
4654	Individual Chara	Ex-moderate cigarette smoker (10-19/day) (finding)	266923002
4655	Individual Chara	Ex-heavy cigarette smoker (20-39/day) (finding)	266924008
4656	Individual Chara	Ex-very heavy cigarette smoker (40+/day) (finding)	266925009
4657	Individual Chara	Ex-cigarette smoker amount unknown (finding)	266928006
4658	Individual Chara	Ex-cigarette smoker (finding)	281018007
4659	Individual Chara	Intolerant ex-smoker (finding)	360890004
4660	Individual Chara	Aggressive ex-smoker (finding)	360900008
4661	Individual Chara	Aggressive non-smoker (finding)	360918006
4662	Individual Chara	Intolerant non-smoker (finding)	360929005
4663	Individual Chara	Current non smoker but past smoking history unknown (finding)	405746006
4664	Individual Chara	Tolerant ex-smoker (finding)	53896009
4665	Individual Chara	Non-smoker (finding)	8392000
4666	Individual Chara	Ex-smoker (finding)	8517006
4667	Individual Chara	Tolerant non-smoker (finding)	87739003
4668	Intervention	Pregnancy smoking education (procedure)	171055003
4669	Intervention	Stop smoking monitoring first letter (procedure)	185792005
4670	Intervention	Stop smoking monitoring second letter (procedure)	185793000
4671	Intervention	Stop smoking monitoring third letter (procedure)	185794006
4672	Intervention	Stop smoking monitoring verbal invite (procedure)	185795007
4673	Intervention	Stop smoking monitoring telephone invite (procedure)	185796008
4674	Intervention	Smoking cessation education (procedure)	225323000
4675	Intervention	Smoking effects education (procedure)	225324006
4676	Intervention	Smoking monitoring invitation (procedure)	310429001
4677	Intervention	Referral to stop-smoking clinic (procedure)	315232003
4678	Intervention	Smoking cessation assistance (regime/therapy)	384742004
4679	Individual Chara	Light cigarette smoker (1-9 cigs/day) (finding)	160603005
4680	Individual Chara	Moderate cigarette smoker (10-19 cigs/day) (finding)	160604004
4681	Individual Chara	Heavy cigarette smoker (20-39 cigs/day) (finding)	160605003
4682	Individual Chara	Very heavy cigarette smoker (40+ cigs/day) (finding)	160606002
4683	Individual Chara	Rolls own cigarettes (finding)	160619003
4684	Individual Chara	Snuff user (finding)	228494002

Figure 11. SNOMED CT codes purport to describe any clinical act in medicine. But, how is the provider supposed to know that sending a first letter to a patient telling them they are monitoring their smoking habits and that they should quit smoking qualifies for meaningful use under MACRA (SNOMED Code: 185792005)? With Praxis you don't have to remember any of this.

Ok, now we have reviewed Discrete Data, Datum, and the self created fields in Clinical Parameters and found that they can link to foreign or external databases.

How will all this help you with the myriad of quality guidelines being thrown at you?

Let's look at the quality guidelines in the form of Electronic Clinical Quality Measures (eCGM).

The "Meaningless" Use Dashboards

The eCQM or Electronic Quality Measures form the basis to measure provider performance. However these quality measures aren't available in a form that practitioners can work with. We have appended a discussion of what eCQM are and how they work and the end of this paper¹.

Given the complexity of quality measures and the fact that they are provided in forms that providers can't work with, the only way you can tell how well you are doing with this setup is to look at so-called "Meaningful Use Dashboards," which many other EMRs provide. The algorithms simply measure the information in your EMR database and place it in a dashboard **after the fact**, to provide you with performance indicators on the different guidelines. In fact, the source code for doing these calculations is also provided by the Federal government contractor, MITRE, so it is identical in all certified EMRs. Clearly this is not helpful to you as the provider. Your real need is to know **what is expected of you at the point of care**, not after the patient has left your clinic. This does not assist you in any way to carry out your task at hand, even if you agreed the guideline was appropriate. You are left on your own to comply with the guideline.

Solution: The 3Rs (Recommendation, Record, and Review)

Doctor Clayton Reynolds, the developer of the 3Rs Theory ("Reminder, Record, and Review") is not only a Board Certified Expert in Quality Medicine/Utilization Review, but also has been a long time Praxis user (he is the first provider ever to use Praxis!).

His wonderful article on the 3Rs can be viewed at the following link:

http://www.praxisemr.com/downloads/articles_downloads/Clayton_Reynolds_MD_The_three_Rs_of_medical_quality.pdf

At the end of this paper we include a letter Doctor Reynolds wrote to Doctor Low, our founder, where Doctor Reynolds reminds Doctor Low how his idea came about. We include it here because we believe you will find it interestingⁱⁱ.

Now let's see how Datum+ will do it for you the easy way.

What is Datum+?

Datum+ is not a change in Datum currently in Praxis. The change happens underneath, but that makes all the difference.

We are about to dramatically change Dynamic Fields by incorporating all the textual and numerical Clinical Parameters inside the Dynamic Fields.

This change will provide your textual clinical parameters (including vital signs) with the same link to the official tables that the Dynamic Fields currently have within Praxis. Datum will work in the same way as before, however. It will also have the ability to link and magically generate all these new codes. As a result, it will be called Datum+, or Datum on steroids. Datum+ allows you to add all the foreign tables required by Medicare as well as any other foreign table of your choice.

In essence, Datum+ will provide automated memorization of data and links to external data parameters to items in the current visit. Most importantly, Datum+ does this behind the scenes so you don't even have to deal with it!

In addition, we are making major improvements both in the Practice Advisories and in the agents to help you pass MACRA with flying colors and with almost no effort on your part. Let's start with the Practice Advisories

Practice Advisories - Algorithms and Agent Manipulation

If you look at the line items on Figure 12, you see that the Practice Advisory line item recommendation automatically generates many of the foreign or external database codes we mentioned earlier. All you have to do is agree with the line item recommendation, and your foreign or external code is instantly generated as well.

Please note that the line item recommendation is not written as a recommendation at all (“Patient has been queried about the use of tobacco today”). Following the Reynolds 3 Rs approach, it is written as a fait-accompli attestation. Once you agree with it, you’ve just charted it!

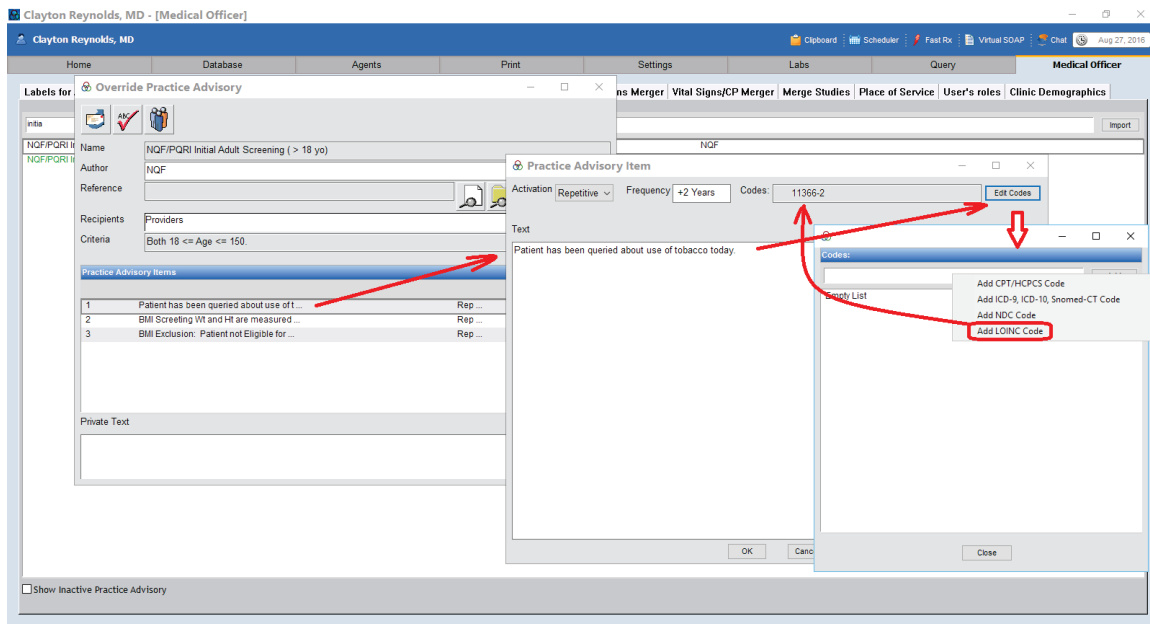


Figure 12. Practice Advisory line item that magically appears to remind the provider every two years as required. If agree, you have just charted the text displayed and most importantly, generated the appropriate LOINC code that will satisfy the guideline. This is done as you see patients so no “after the fact.” No Meaningful Use Dashboard is needed for your score to be close to 100%!

When you select 'Done' on this text, Praxis, charts it for you, and generates LOINC code 11366-2 (History of tobacco use narrative), this in turns complies with Medicare Value Set 2.16.840.1.113883.3.526.3.1278 or Tobacco Use Screening and therefore matches the numerator for the eCQM (see appendix i.).

You are now finished and your performance is 100%. Again: It is far easier to do what you wrote, than write what you did!

New Practice Advisory Criteria

We will add several new criteria that will allow you to trigger not only the SNOMED, LOINC and other codes mentioned above when you select a line item Practice Advisory, but also line item recommendations from any other Practice Advisory. This may not sound very exciting but it is the most interesting new feature of the Practice Advisories yet because it opens up the wide field of Practice Guideline algorithms.

1. Pick any specialty of medicine you want (e.g. your own).
2. Search in Google for the specialty you pick and add the phrase "practice guideline algorithms".
3. Click "images" in the Google search options.

Behold!

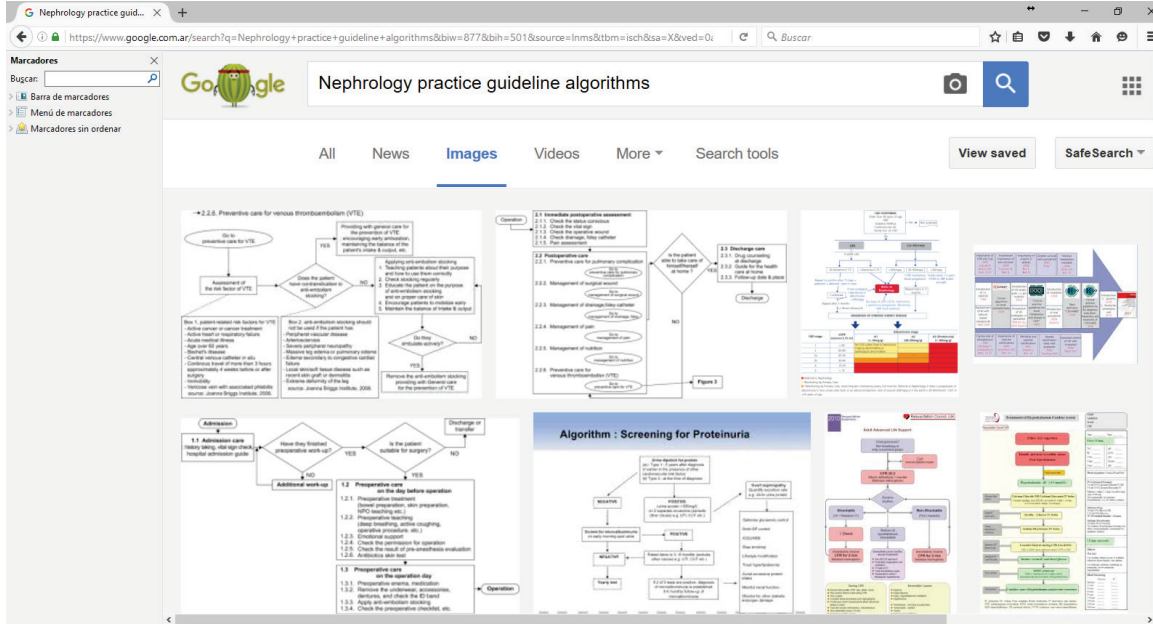


Figure 13. Graphic images of Nephrology Practice Guideline Algorithms. If you go to this page you will find literally hundreds of them. This will be the same for any specialty you pick.

What all these images have in common is that for each given path, other Practice Advisories open. Guess what? That is exactly what the line item trigger criteria will do for Praxis. As you agree on a line item recommendation, you will not only be instantly charting with no effort, and generating its appropriate foreign code so you score highly with MACRA, but you will also trigger a new Practice Advisory based on the selection you just made, thus forming a logic tree or an algorithm similar to the graphic images above.

All this will happen at the point of care in seconds. Of course, you may be thinking, “but what if the guideline asks me not only to chart the note stating that I told the patient not to smoke, but it asks me to check for a mammogram report or order a lab, or even do something if the lab comes back abnormal? Won’t I have to do these things?

Well, not really. All you will need to do is to approve Praxis doing it for you.

With Agents, the 3 Rs become the 4 Rs

Currently in Praxis, the line items are just recording items following the Reynolds's 3R's approach (Reminder, Record, Review). You simply do what you wrote you have done. As you know with Praxis simply doing what you have written is far easier and faster than writing what you have done. So if the item states "I reminded the patient not to smoke," doing so is rather straightforward.

However, what if the line item states "I have ordered a mammogram today", but what the powers that be wish to know is whether the mammogram was, in fact, **performed**? We can say the same for a Hemoglobin A1C, or a referral to an ophthalmologist. As we all know, patients are not 100% compliant; Just because you ordered something does not mean it gets done. Moreover, even if it was done, it does not mean that the report got back to you in a timely manner. This is a central part of the treatment of chronic care. So yes, you are being measured, and paid, for care your clinic provides outside of the office visit.

The solution is elegant and simple. What if the line item not only records the event as it does today, but also triggers a specific agent so it can do its thing on your behalf, and even record the time you and your staff spend on this issue, so that you can qualify for the chronic care monthly bonus?

The new Praxis Agents being released will do this for you. In this manner, the Reynolds 3Rs becomes 4Rs ("React"). If you agree with the line item, it will not only record it for you, but actually do the task on your behalf.

Let's take a look.

Praxis Agents

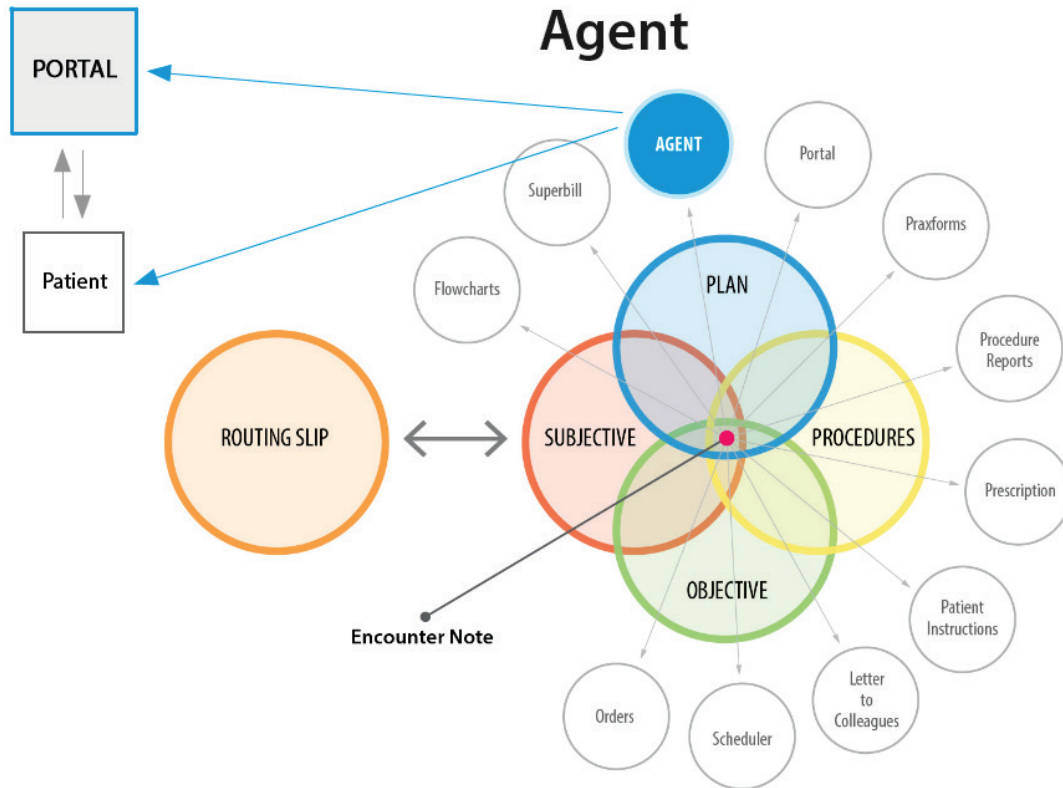


Figure 14. Because of the Concept Processor, agents are far more than a communication device. The Assessment recalls what agents to activate when. Now we will also link Practice Advisories line items to Agents to do the same thing, so that if you agree with a recommendation it simply opens the appropriate agent that gets it done on your behalf. (...and generates the SNOMED CODE to boot! Just look at the letter example in the figure 12. If the agent is sent as a Nursing Task, as soon as your assistant prints the letter and selects "DONE", the appropriate SNOMED code is generated in the background. MEDICARE will be happy...and so will you! Nothing else to do on your part.

As you can see, currently the Concept Processor does far more than charting. It can generate your prescriptions automatically; open up flow charts, schedule patients, and do many other things on your behalf. The Agents can remind your assistants to call the patient, order treatments, check for lab results, etc at a given time in the future. When the text appears in your progress note brought in by your Assessment

of the case, all you do, agree, and the task gets done when you said it should get done. The Agent gets activated and does its thing, either at the end of today's visit, at a pre-set time in the future, or under a **pre-set condition** (e.g. "Next Appointment").

The **pre-set condition** opens up a world of possibilities. Note that Agents may already be made to trigger on "Next Appointment", "when the patient returns and meets X" (X a given user or a user type you define, including yourself as a self-reminder), but that is just the beginning.

1. The agent can be set to trigger during the next appointment, AFTER a specific period of time has elapsed (Thank you, Doctor John Davis, of Grayson Family Practice, for this great idea). So if you set it for one year, it does nothing for one year, and then after a year-end, as soon as the patient returns to the clinic and meets X, which could be you, it displays the reminder.
2. An agent can be set to trigger if a glucose report is abnormal, or if a certain patient enters into a new age range (i.e. older than 75), or a Value Set (see below), or a combination of these (if a patient's age is within a given range, and a lab falls in a certain range, then it triggers).

Agents will generate time and codes

Medicare currently pays clinics in Primary Care for reviewing and handling issues for a patient **outside of the formal office visit**, provided that the clinic can document spending more than a given amount of time per month (currently set to 20 minutes). When an assistant opens a timed agent (i.e. an agent that triggers at a time other than at the end of the visit), the timer starts, when the assistant closes the agent, the timer is halted, if the assistant reopens the agent, the timer continues counting time..... (we thank Doctor Stephen Hsieh, of High Rock Internal Medicine, a great Praxis user, for his wonderful idea).

The generation of codes may seem a bit confusing but is crucial for MACRA and quite straightforward. As mentioned, the SNOMED and LOINC codes displayed in the previous figures are almost impossible to remember, much less to use as they are. However, you don't have to remember them. The developer of the agent can include the appropriate SNOMED or LOINC code. Note that the developer of the agent need not be you. We at Infor-Med will create agents for you and transfer them to your Praxis EMR via the Knowledge Exchanger, and it will include all the codes you need to comply.

Many eQMs require that reports on studies and referrals be received back by the provider “in a timely manner”. But how does the eQM engine know that the report was received in a timely manner? More importantly, how can you ensure that you receive the report in a timely manner with little or no effort on your part as a provider?

The example we used previously was Breast Mammogram (Figure 8). The agent waits for a “reasonable period of time,” say three weeks, and then requests your assistant to check for the presence of the FFD mammogram report in the patient record. Of course, as you review the incoming report as attachment to agents from Scanaway, you may also activate the pending nursing task agent early, otherwise, the intended receiver will see this agent when the three weeks have elapsed. If the report has not returned in three weeks, then the agent can be returned to you, or your assistant can contact the patient and or the referral, etc. While your assistant does all this, the agent timer is indicating time elapsed for purposes of chronic care compensation. On the other hand, as soon as either you or your assistant clicks DONE on the nursing task agent, it will fire off the appropriate code into the database (“46342-2”), so that when the eQM attestation engine later does your attestations, you receive, close to 100 percent performance with almost no effort, and yes, this should result in improved medical care!

Datum+ generating information on the fly

Praxis developed a Knowledge Exchanger, which is a way to transfer the knowledge base of a provider to another provider to help with some of the more standard documentation (i.e. Social History, Review of Systems, Surgical History, etc) but, most importantly, as a heuristic model to learn how an expert Praxis user in your field uses the Concept Processor effectively.

THE NEW PRAXIS 4 KNOWLEDGE EXCHANGER

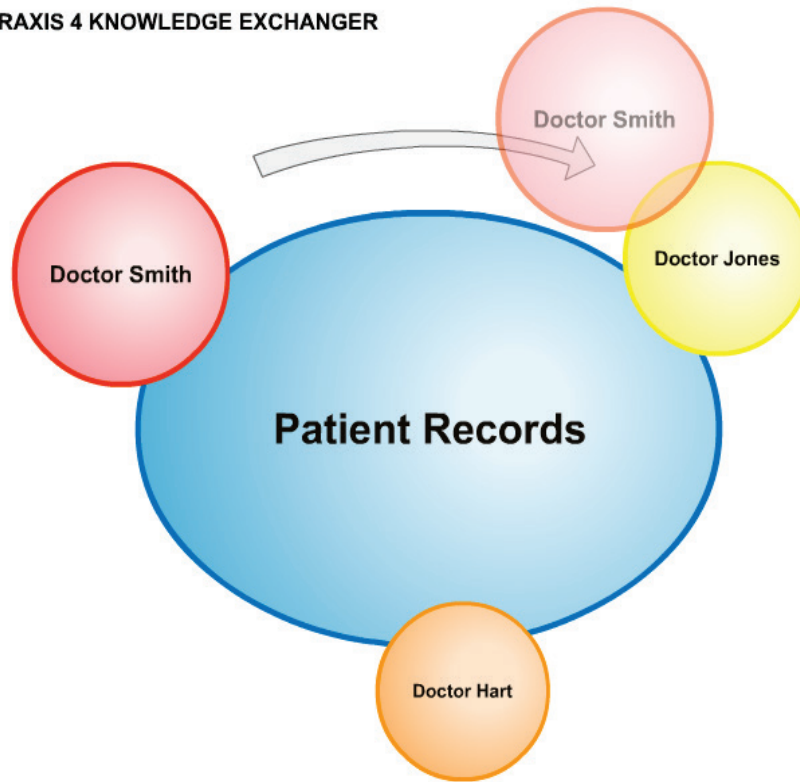


Figure 15. *Praxis Knowledge Exchanger. Here you see how the medical knowledge of Doctor Smith can be passed to Doctor Jones so that she need not start from scratch. Please view the Praxis demo to see exactly how this works.*

Via the Knowledge Exchanger, you will be provided with a Medicare knowledge base that will include the required Agents, Patient Specific Information text with their Datum+ elements, such as a fully coded family history. It turns out that Medicare wishes to see the family history in coded form to be able to perform studies on familial diseases.

The good news is that you do not have to set up any of this. We will of course provide you with the Practice Advisories and Queries that will generate the reports for PQRS and MACRA, together with related coded nursing tasks agents. Thus, the reports you send off to third parties, including Medicare, will be close to 100% performance. Why not 100%? A patient may present with terminal cancer, and you won't recommend they don't smoke, so your compliance may not be exactly 100%, but it will be quite close!

In conclusion, Datum+ is an interface connecting what we humans do best with what computers do best. This simple interface allows you to practice medicine freely while saving you more time and eliminating the need for you to work as a data-entry clerk. Most importantly, Datum+ will make you shine with the third parties who are looking for performance based on factoids. They will not believe how well you scored until they see Praxis in action themselves. With Praxis in hand and Datum+ as wind in your sails, we invite you to take part in the resurgence of American medicine.

For more information, please look at the Praxis demo

(<http://www.praxisemr.com> or contact us at 1- (800) 985-6016

Thank you,

Praxis EMR
The templates free EHR
"Praxis makes perfect"

ⁱ Anatomy of an eCQM (Electronic Clinical Quality Measure)

An eCQM or Electronic Clinical Quality Guideline may be developed by anyone, but in general they are created by experts. Then they are sent to you by agencies such as Medicare and may be downloaded from their website. The only requirement of an eCQM is that the guideline follow a precise standard so that any certified EMR can

incorporate it to measure your performance against it. Medicare eQMs may be viewed at, and downloaded from, the following link:

https://www.cms.gov/regulations-and-guidance/legislation/EMRincentiveprograms/ecqm_library.html

If you download a set of eQMs and unzip, you see something like this:

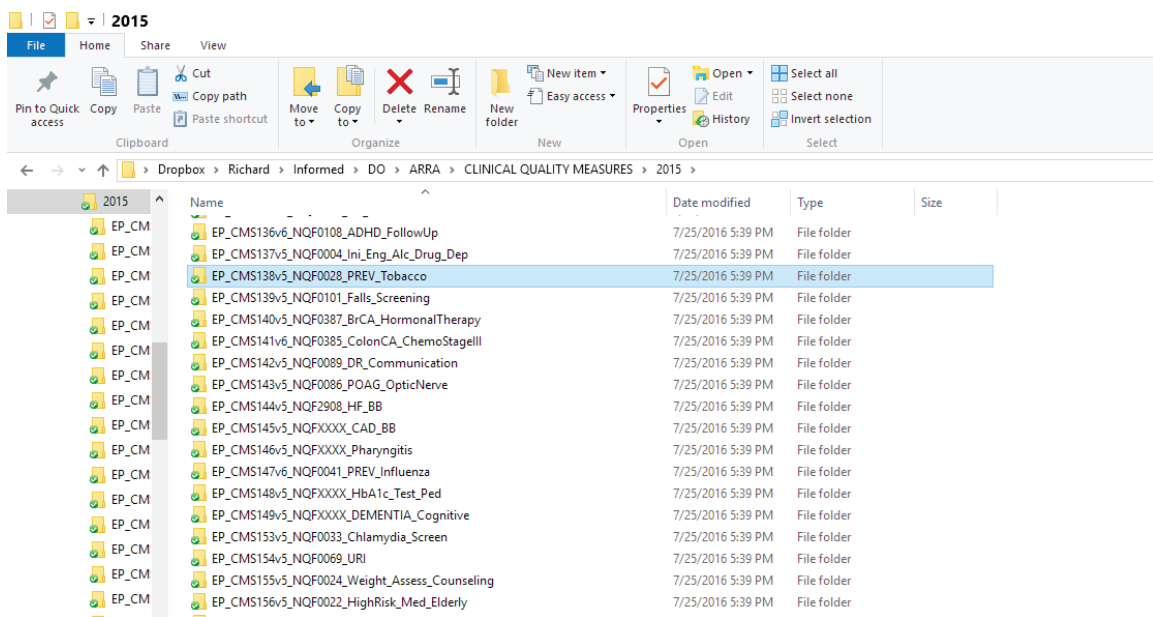


Figure 1. Each folder contains one individual eQM. Note the Tobacco Screening Folder

As an example, let's look inside the Tobacco Screening Folder eQM ("CMS138 v5"). You will see three files displayed.

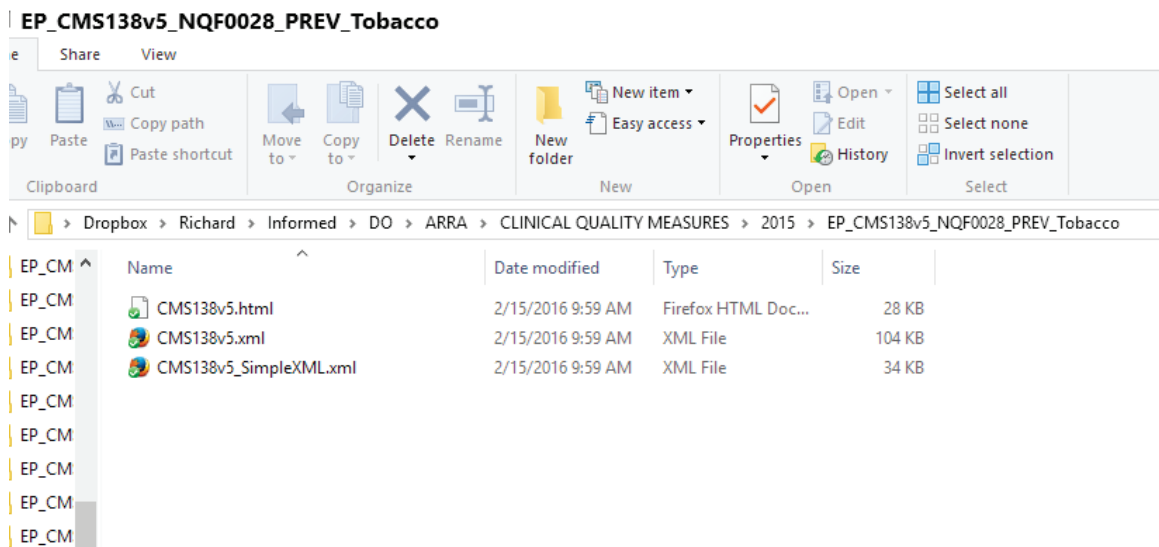


Figure 2. Note the three files that compose the measure. The first one (*html*) is human readable; the next two (*xml*) are computer readable.

Let's look at the html file.

eMeasure Title		Preventive Care and Screening: Tobacco Use: Screening and Cessation Intervention	
eMeasure Identifier (Measure Authoring Tool)	138	eMeasure Version number	5.0.000
NQF Number	0028	GUID	e35791df-5b25-41bb-b260-673337bc44a8
Measurement Period	January 1, 20XX through December 31, 20XX		
Measure Steward	PCPI(R) Foundation (PCPI[R])		
Measure Developer	American Medical Association (AMA)		
Measure Developer	PCPI(R) Foundation (PCPI[R])		
Endorsed By	National Quality Forum		
Description	Percentage of patients aged 18 years and older who were screened for tobacco use one or more times within 24 months AND who received cessation counseling intervention if identified as a tobacco user.		
Copyright	Copyright 2015 PCPI(R) Foundation and American Medical Association. All Rights Reserved.		
Disclaimer	<p>The Measures are not clinical guidelines, do not establish a standard of medical care, and have not been tested for all potential applications.</p> <p>The Measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes, eg, use by health care providers in connection with their practices. Commercial use is defined as the sale, license, or distribution of the Measures for commercial gain, or incorporation of the Measures into a product or service that is sold, licensed or distributed for commercial gain.</p> <p>Commercial uses of the Measures require a license agreement between the user and the PCPI(R) Foundation (PCPI[R]) or the American Medical Association (AMA). Neither the American Medical Association (AMA), nor the AMA-convened Physician Consortium for Performance Improvement(R) (AMA-PCPI), now known as the PCPI, nor their members shall be responsible for any use of the Measures.</p> <p>AMA and PCPI encourage use of the Measures by other health care professionals, where appropriate.</p> <p>THE MEASURES AND SPECIFICATIONS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND.</p>		

Figure 3. Human readable eCQM in html format. All attestations use this format.

The other two files are identical to this one but they are written in computer language (xml) so that any certified EMR can incorporate it automatically to determine how well you comply with the measure. Below, we see an example of the precise logic used to measure provider performance against this Tobacco Use measure.

rd/Informed/DO/ARRA/CLINICAL QUALITY MEASURES/2015/EP_CMS138v5_NQF0028_PREV_Tobacco/CMS138v5.html

- **Initial Population =**
 - AND: Age >= 18 year(s) at: "Measurement Period"
 - AND:
 - OR: Count >= 2 : Union of:
 - "Encounter, Performed: Psych Visit - Diagnostic Evaluation"
 - "Encounter, Performed: Health and Behavioral Assessment - Initial"
 - "Encounter, Performed: Health and Behavioral Assessment, Reassessment"
 - "Encounter, Performed: Health & Behavioral Assessment - Individual"
 - "Encounter, Performed: Occupational Therapy Evaluation"
 - "Encounter, Performed: Office Visit"
 - "Encounter, Performed: Psych Visit - Psychotherapy"
 - "Encounter, Performed: Psychoanalysis"
 - "Encounter, Performed: Ophthalmological Services"
 - "Encounter, Performed: Home Healthcare Services"
 - during "Measurement Period"
 - OR: Count >= 1 : Union of:
 - "Encounter, Performed: Preventive Care Services - Group Counseling"
 - "Encounter, Performed: Preventive Care Services - Other"
 - "Encounter, Performed: Preventive Care Services-Initial Office Visit, 18 and Up"
 - "Encounter, Performed: Preventive Care Services - Established Office Visit, 18 and Up"
 - "Encounter, Performed: Preventive Care Services-Individual Counseling"
 - "Encounter, Performed: Face-to-Face Interaction"
 - "Encounter, Performed: Annual Wellness Visit"
 - "Encounter, Performed: Speech and Hearing Evaluation"
 - during "Measurement Period"

- **Denominator =**
 - AND: Initial Population
- **Denominator Exclusions =**
 - None
- **Numerator =**
 - AND:
 - OR:
 - AND: "Risk Category Assessment: Tobacco Use Screening" <= 24 month(s) starts before end of "Measurement Period"
 - AND: "Occurrence A of Patient Characteristic: Tobacco Non-User" <= 24 month(s) starts before end of "Measurement Period"
 - AND NOT: "Patient Characteristic: Tobacco User" satisfies all:
 - <= 24 month(s) starts before end of "Measurement Period"
 - starts after end of "Occurrence A of Patient Characteristic: Tobacco Non-User"
 - OR:
 - AND: "Risk Category Assessment: Tobacco Use Screening" <= 24 month(s) starts before end of "Measurement Period"
 - AND: "Occurrence A of Patient Characteristic: Tobacco User" <= 24 month(s) starts before end of "Measurement Period"
 - AND NOT: "Patient Characteristic: Tobacco Non-User" satisfies all:
 - <= 24 month(s) starts before end of "Measurement Period"
 - starts after end of "Occurrence A of Patient Characteristic: Tobacco User"
 - AND: Union of:
 - "Intervention, Performed: Tobacco Use Cessation Counseling"
 - "Medication, Active: Tobacco Use Cessation Pharmacotherapy"
 - "Medication, Order: Tobacco Use Cessation Pharmacotherapy"
 - <= 24 month(s) starts before end of "Measurement Period"
- **Numerator Exclusions =**
 - None
- **Denominator Exceptions =**

Figure 4. Logic used to measure provider performance according to this Quality Guideline on Tobacco Use Screening. The numerator indicates that the provider should have asked every patient that meets the initial population criteria about his or her use of tobacco products at least once in the last 24 months. We see the Initial Population conditions above which define precisely the inclusion of the appropriate patient to meet the criteria (i.e. the patient must be older than 18 years of age).

Now, it is not difficult for EMR vendors to “translate” this code and certify for Meaningful Use. In fact, the Federal Government contracted MITRE, a software company that actually developed the source code that is used to “consume” this data and allow any EMR to calculate percentages accurately and exactly like any other. Mitre then provides this source code algorithm free of charge to all vendors as part of its contract with the federal government. However, for you as the end user, this is not very helpful at all.

ii LETTER FROM CLAYTON REYNOLDS MD, THE DEVELOPER OF THE 3Rs APPROACH THAT IS USED IN PRAXIS, TO OUR CEO ON HOW HIS IDEA CAME ABOUT

Richard,

It's amazing and humbling to know how far those simple ideas have come since 1999 and how far they have taken us!

I well remember the day at LA County facility in Lancaster, when I first articulated the concept. I had taken over as Chief of Ambulatory Care in June of 1999, the position at first being part-time because I was still contracted to work with Lakeside Medical Group for a few months. One of my first tasks was to review charts "for quality" when a particular patient had suffered an adverse outcome. The problems included neurologic injury and hypertension.

At the time there was no Review Sheet with itemized contents. We had what we called a review sheet "For clinical pertinence". But it had only gross categories such as: Was the history (Subjective) adequate? and Was the physical examination (Objective) adequate? There was no specification of items that more than one reviewer could agree on as being present or absent. The review was based more on an overall impression than on specific criteria.

I looked at some publications in quality evaluation but no luck- there were no item-specific review sheets. I called a couple of contacts in the large medical centers in LA but they were no more sophisticated than I was. They were using the same gross measurement tool.

So I decided to create my own itemized review tool (later to be known as a query). For neurology I made the tool specific to the diagnosis or assessment. In other

words, if the diagnosis was "Stroke," I selected a certain set of elements from a "complete" neurological exam. That set was different from the set that I chose for "Peripheral neuropathy," for example. For hypertension I chose a set of elements that I thought should be recorded (over a period of time) for all cases in which the primary diagnosis was "Hypertension". For this diagnosis the initial list had 13 items. I obtained 10 charts with primary diagnosis of Hypertension and started the review process.

I soon realized that, since I had to review paper charts (this was, after all just 1999) and I had to do the statistics by hand (I hadn't learned whatever passed for MS Excel in that era; I recall it was "Lotus"), I should make it easy on myself and use 10 criteria. Much more natural to deal with groups of 10 than 13! So I set out and reviewed 10 charts on each of 10 providers. That was 100 charts. Since each review sheet or tool had 10 items to be scored, I had to scour those paper-based medical charts for 1000 items!

The reward for that tedious chore was a set of data that could be analyzed on its own merit and a tool that could be applied to any provider's chart in any institution that delivered longitudinal care (exclude Walk-in, Urgent Care and Emergency Rooms).

Leaving the Neurology part of my story aside, I'll mention that I presented the Hypertension Review (query) findings, anonymized but resplendent with precise details, at a meeting of the healthcare providers at the Department of Ambulatory Care (LA County facility in Lancaster, California). That was in December 1999. I told the providers that the charts that I had reviewed "failed" to include many of the items that I considered represented "quality of care". I gave each of them a sheet of paper that had the review criteria listed 1 to 10, exactly those criteria that I had used in performing the query.

A nurse practitioner in the meeting asked: "How could you expect us to follow those criteria? No one had told us about them. In fact, they didn't exist until you created them. And you weren't even here [with LA County Department of Health] when the cases were managed."

My answer was: "I didn't expect you to do well on the review. But I will expect you do

well on review of any cases handled from now on. And you will do well if you follow the list of criteria and record the information in the chart. Later I'll do a review which will match your write-up which will, I hope, match the criteria." I did not at that moment make the crucial leap to the 3 Rs. That occurred a few days later when I met you at Denny's Restaurant in Northridge, just outside of LA.

There, during one of our typical brain-storming sessions [does anyone use that expression any longer] I recounted the above experience and it became obvious that the three steps were identical: the Review criteria were simply labeled "Reminder [to the provider of what to do for hypertension]". The provider followed the Reminder and wrote or otherwise included the information in the "Record". Someone then came by and applied the original, reminder criteria in the form of a "Review". All three elements were the same. What could be simpler? Why had someone not seen this relationship before?

I don't know why we hadn't but, as soon as you heard the explanation, you said that Praxis could handle this theory and turn it into reality. The concept processor could hold all the criteria specific to Hypertension. They would appear when Hypertension was the primary diagnosis. The Praxis user could follow the criteria or Reminder or Recommendation. A review could be done in the electronic medical record and voila you've got the "Theory of the 3Rs".

That's all the time I've got for reminiscing today. Thank you for friendship and collaboration over the past 24 years.

Clay