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SETMA's Journey Toward Electronic Health Records
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Fifteen years! In August, 1997, SETMA decided to pursue electronic medical records (EMR). In October, 1997, SETMA's three founding partners attended the Medical Group Management Association meeting to preview EHR solutions. In March, 1998, SETMA signed a contract with an EMR vendor. We deployed the enterprise practice management (EMP) side of the system in August, 1998 and the EMR on January 26, 1999. By Friday, January 29th, we documented every patient encounter in the EHR.

Four Seminal Events

In May, 1999, four seminal events transformed SETMA's healthcare vision and delivery. **First**, we concluded that EMR was too hard and too expensive if all we gained was the ability to document an encounter electronically. EMR was only "worth it," if we leveraged electronics to improve care for each patient; to eliminate errors which were dangerous to the health of our patients; and, if we could develop electronic functionalities for improving the health and the care of our patients. We also recognized that healthcare costs were out of control and that EMR could help decrease that cost while improving care. Therefore, we began designing disease-management and population-health tools, which included "follow-up documents," allowing SETMA providers to summarize patients' healthcare goals with personalized steps of action through which to meet those goals. We transformed our vision from how many x-rays and lab tests were done and how many patients were seen, to measurable standards of excellence of care and to actions for the reducing of the cost of care. We learned that excellence and expensive are not synonyms.

Second, from Peter Senge's *The Fifth Discipline*, we defined the principles which guided our development of an EHR and the steps of our practice transformation; they were to:

1. Pursue Electronic Patient Management rather than Electronic Patient Records
2. Bring to every patient encounter what is known, not what a particular provider knows
3. Make it easier to do "it" right than not to do it at all
4. Continually challenge providers to improve their performance
5. Infuse new knowledge and decision-making tools throughout an organization instantly
6. Promote continuity of care with patient education, information and plans of care
7. Enlist patients as partners and collaborators in their own health improvement
8. Evaluate the care of patients and populations of patients longitudinally
9. Audit provider performance based on endorsed quality measurement sets
10. Integrate electronic tools in an intuitive fashion giving patients the benefit of expert knowledge about specific conditions

The **third** seminal event was the preparation of a philosophical base for our future; developed in May, 1999, this blueprint was published in October, 1999. It was entitled, *More Than a Transcription Service: Revolutionizing the Practice of Medicine With Electronic Health Records which Evolves into Electronic Patient Management.* This document is published on our website under *Your Life Your Health* (see Related Articles below).

Fourth, we determined to adopt a celebratory attitude toward our progress in EMR. In May, 1999, my cofounding partner was lamenting that we were not crawling yet with our use of the EMR. I agreed and asked him, "When your son first turned over in bed, did you lament that he could not walk, or did you celebrate this first milestone of muscular coordination of turning over in bed?" He smiled and I said, "We may not be crawling yet, but we have started. If in a year, we are doing only what we are currently doing, I will join your lamentation, but today I am celebrating that we have begun." These four seminal events have defined SETMA's EMR pilgrimage and are the foundation of our success.

Fourteen Years ago Tomorrow

Fourteen years ago, tomorrow, on March 30, 1998, the partners of SETMA signed a $675,000 contract to purchase an EMR system which would revolutionize our delivery of healthcare. There were only three of us and our accountant said, "You guys are surely now joined at the hip until death do you part." He laughed at our foolishness. Colleagues in the community said, "What a waste; all that money, and no benefit to the patient!"

Now, fourteen years later, SETMA is a national leader in the use of EMR to improve the quality of patient care and in the advancement of healthcare with electronics. SETMA's integration of EMR, laboratory data, hospital records, nursing home records and the new field of telemetrics, are all evidences that we made the right decision in 1997, which is when we decided to buy an EMR. No one is laughing any more and many lament the fact that they did not join us in this pilgrimage soon to be fifteen years ago.

With the use of an EMR, SETMA has become a recognized and accredited Patient-Centered Medical Home. SETMA has built a website which represents the cutting edge of EMR use. Thought leaders in healthcare transformation from across the nation, use SETMA's website as a source for creative and innovative ideas about the future of healthcare. We are currently deploying glucometers which reports the patient's blood sugar to our EMR the instance the patient measures it in their home.

From a personal standard point, in the 36 years I have maintained a private clinic before and including SETMA, 39% of the time I have used EMR as a means of documenting a patient encounter and as a means of improving the quality of care delivered in those clinics. If I practice for eight more years (a total of 44 clinic years), I will have practiced 22 years or 50% of my career with an EMR. To the next generation of healthcare providers, this observation will seen

quaint but to those of us who form the bridge between the before EMR and after EMR, it is significant.

1. What about the Cost of EMR?

In the intervening fourteen years since SETMA purchased the EMR, we have spent an additional $7,000,000 on health information technology but the return on investment has been enormous. And, while this seems like a lot of money, and it is; compare that with our dictation and transcription costs. In 1997 when we purchased the EMR, SETMA was paying almost $16,000 a month for dictation and transcription for the seven physicians and nurse practitioners in our practice. If that cost had grown in proportion to our provider base, today, we would be paying $80,000 a month for the same services. Assuming that is an exaggerated amount, assume that our cost would be $40,000. That is $480,000 a year for medical record creation. Dividing our EMR cost by the 168 months since we purchased the EMR, we have paid $41,666 a month for ALL costs related to the creation and maintenance of medical records. Also, the cost attributed to dictation and transcription does not include the cost of maintaining and using the paper medical records.

And, while SETMA purchased one of the three best EMRs in the country, it is possible for healthcare providers to get electronic records for much less than SETMA has paid. The less expensive EMRs will not do as much and are not as powerful but almost any EMR is better than paper records.

2. What about the Availability of the EMR?

The greatest frustration of traditional, paper medical records was that they were bound to a single location. One large medical group which opened an office in Beaumont years ago perfectly illustrated the point. Bound by paper records, the group had multiple drivers on the highway every day going east and west to make patient records available where the patient was being seen on that day. Even for those of us in one town the problem was the same. When a patient went to the emergency department (ED), even if their healthcare provider had excellent medical records, the records were locked up in the medical office and did the patient no good in the ED.

With EMR, when the patient shows up in the ED, their complete record is available to SETMA's providers. And, when the Southeast Texas Health Information Exchange (HIE) matures, which principally operates by joining different clinics' EMR together, all patients' records will be available for their care. Imagine the value to you! You are seen by your healthcare provider in the afternoon and have lab tests. Your condition worsens and you go to the ED in the middle of the night. Now, with EMR and HIE, the record of your visit is available to the ED to make sure that your care is excellent.

3. What about the Power of the EMR?

All of the information in an EMR can be aggregated for auditing and for examining provider performance. Computations which took twenty minutes with paper records can be done in one second with electronic records. Things which could not be done with paper records are easily done with EMRs. For instance, if a medication is taken off the market, it is possible to search an EMR in a matter of minutes and to generate a letter and/or a telephone call to all patients taking that medication to tell -them to stop it. It is possible to follow that record query in one month to be sure that all patients stopped the medication. Imagine the problem with paper records. If you have sixty thousand patients, it can take a year to go through all the charts to make sure that all patients are alerted to stop the medication in question. This addresses both the power and the safety of EMR.

SETMA's Model of Care has five steps:

1. Tracking over 250 quality metrics on every patient seen.
2. Auditing those same metrics by patient, by panel of patients and by population.
3. Statistically analyzing the provider performance to find leverage points for improving care.
4. Publicly reporting by provider name performance on these metrics.
5. Designing quality of care improvement initiatives based on these four points.

This would be impossible without the EMR; with it, the process becomes simple.

SETMA has also designed multiple electronic patient management tools, all of which are listed on our website at wwwe.jameslhollymd.com under *Electronic Patient Management Tools*. Currently, there are 67 tutorials for electronic patient management tools posted there. These apply the power of electronics to the quality of care every patient receives at SETMA. Every patient's cardiovascular risk is calculated at every visit. Rather than calculate one cardiovascular risk score every five years as recommended by the American Academy of Family Practice, SETMA calculates all 12 risk scores every time we see a patient. How can this be done? With the power of EMR, rather than taking thirty minutes, it takes one second. And with the power of the EMR, the results of that calculation can be given to the patient at the time of the patient encounter.

Another issue related to the power of EMR is in regard to elimination of ethnic disparities of care and the making sure that all patient are treated to goal. Statistical analyses of patient outcomes allow SETMA to identify patients whose treatment is two or three standard deviations from the mean. These patients can then be identified and entered into a program for special attention to get them to goal. That cannot be done consistently without an EMR.

4. What about the Safety of EMR Care

Patient safety is critical in the complex healthcare system we have today. Nothing is more important to patient safety than medications. The most fundamental issue of medications, beyond appropriateness of prescription, is the maintaining of an accurate and complete medication list for all patients. This process is called "Medication Reconciliation" and is the most complex problem facing healthcare providers. With paper records, it is a task which is almost impossible. Imagine when a patient is being treated at seven different locations – clinic, hospital, nursing home and multiple providers, primary and specialty. Each location maintains a medication list and most of the time, they are all different.

When an EMR is used, the problem remains complex but becomes manageable. A patient is seen at the hospital. The clinic medication list is available in the ED or hospital. The medication lists are reconciled. The patient is discharged from inpatient to outpatient and at the discharge medication reconciliation is done. Because, the EMR is used in all locations, the reconciled medication list is instantly displayed at all points of care. The day following the discharge from the hospital, the SETMA team calls the patients, and among other things, once again reconciles the medication list. When the patient is seen in the office, usually within six days, the medication list is reconciled once again.

The same safety issue applies to the maintenance of an accurate and complete problem list. This makes sure that all of the important conditions for which a patient needs care are brought to the attention of the provider by the system, making the neglecting of an important issue less likely. The same applies to screening, prevention and surveillance services needed by each patient With the EMR, these are brought to the provider's attention automatically which increases the patient's confidence that appropriate and needed care is provided.

Another safety issue which relates to medication are drug/drug interactions. There are multiple problems in this regard:

1. Drug/drug interactions
2. Patient drug allergies
3. Patient condition and drug interactions

Almost all EMRs alert the provider to these interactions. In SETMA's system, we have an important additional drug interaction function which we have designed. Of the twelve principles as to how to avoid drug/drug interactions, the first and most important is "relying upon memory as to which drugs interact." In fact all twelve of the pitfalls of drug/drug interactions are resolved by EMR and the electronic function of alerting the provider to drug/drug interactions.

5. What about the Security of EMR Care?

Early in the adoption of EMRs, there was great concern about the security of records and there are still significant issues which are related to security concerns. However, any concern about the security of electronic records must be tempered with the lack of security of paper records. Most paper record storage is not secure. A stranger, and certainly, an employee can walk in, pick up a paper record, walk out with it and no one would ever know it was missing until the record is needed. Worse yet, a person could review the record for personal reasons, use the information and never be identified. EMR records on the other hand cannot be reviewed anonymously. Recently, SETMA had a situation where a question was raised about whether an employee had looked at a record inappropriately. An electronic footprint search was done and to our delight it was discovered the person had not looked at the chart but we had a record of everyone who had. We must always be vigilant, but with 128-bit-encryption it is improbable that a record will be "broken into."

Conclusion

This pilgrimage has been hard, expensive, productive, worth while, and imperative. I look forward to seeing where SETMA will be in the use of the EMR when I have been using it for 50% of my clinical career.