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More Than a Transcription Service: Revolutionizing the Practice of Medicine with Electronic Medical Records (EMR) which Evolve into Electronic Patient Management

by James L. Holly, MD

When I was a child, medical records were kept on a 3x5-file card. The information essentially reflected the patient's name, the date and a one-word statement of what transpired in the visit to the doctor, often related merely to a shot or medicine. Patients paid a dollar for the visit, a dollar for the shot and a couple of dollars for the medication. Expectations were low and expenses were, also. The physician kept most of the important patient information in his/her head. Therefore, when the physician wasn't available, data on the patient wasn't available.

This system was extremely personal and was often very satisfying for the patient and the physician. When I was born, Dr. Robert Culpepper was my family doctor. In 1949, my family moved to a new community and did not use Dr. Culpepper as a physician again. In 1973, when I graduated from medical school, I called Dr. Culpepper and said, "Dr. Culpepper, I wanted to say hello and tell you I have graduated from medical school." Dr. Culpepper was in his early eighties and said spontaneously, "How are Bill and Irene," calling my parents by their first names, after not having seen them in 24 years. Dr. Culpepper had a wonderful mind, but it could only be in one place at a time.

The pharmaceutical era of healthcare was still young in 1949 and records didn't seem all that important. Things have changed since then. Expectations and expense in healthcare have increased. Medical records have evolved from file cards, to handwritten notes, which were and are mostly illegible, to dictated and transcribed records and now to electronic medical records.

My own pilgrimage to electronic medical records started forty years ago. When I started practice, I bought a Dictaphone, but couldn't make it work so I returned it. A few months later, my records on a patient were subpoenaed for a court case in which the patient was suing a fast-food chain. Not being terribly busy, I took my medical record and showed up in court. When I was sworn in, the judge asked if I had my records. I passed them to him. Looking over his glasses, the judge turned to me and asked, "Can you read this?" I looked and said, "No, sir." To which he responded, "Son, I recommend that you get a Dictaphone." I did; I repurchased the same

instrument I had returned three months before. For the next 24 years, my method of documenting patient encounters with dictation and transcription.

Prior to EMR, the best one could hope for in medical records was legibility, accuracy and a complete account of a visit to the doctor; but, the information was:

- **Static** - there was no data in the record which could be correlated or analyzed over time;
- **Geographic** - the record stayed in one place;
- **Non-integrated** - the record couldn't interact with other systems in the medical office.
- **Non-interactive** - attempts at evaluating quality performance was time consuming and laborious.

The inadequacies of paper records

A number of incidences illustrate the nature of paper charts. Even when charts had problem lists, allergy tables and medication lists at the front - and most probably did not - the following limitations decreased the value and effectiveness of ordinary paper charts:

1. If a drug were recalled, there was no effective way of determining which patients were on the drug therefore being able to notify each one to stop it, and to call the office for a substitute.
2. There was no systematic way of seeing how many patients with diabetes and hypertension were on an ace inhibitor, which is protective of renal disease. The same applied to many other disease states.
3. There was no effective way of continually bringing the family, social and past medical history forward in the chart to make it an interactive part of every patient encounter.
4. There was no way of determining how many patients had not had a pap smear, mammogram or occult blood screen, short of asking those questions when the patient came for a different illness. Therefore, preventive healthcare was driven by acute healthcare, which essentially didn't work. And, even when the provider kept excellent records, there was no way to access that information short of picking up and examining each patient record.
5. If the healthcare provider were at a different location than where his/her charts were stored, the paper chart, no matter how extensive and well organized, was little improvement over the 3x5 card. The patient and provider were dependent upon the memory of the provider for continuity of care.
6. Patient allergies, drug interactions and the use of drugs in certain disease states were dependent upon the physician's knowledge and/or memory, not on the interactivity of various capacities of the medical record.
7. Everyone wanted quality in healthcare, but it was difficult to define and almost impossible to prove.

EMR: Toy or Tool?

A toy is fun to work with or is used for play. A tool enables a task to be done more efficiently, less expensively or more excellently. If EMR is used simply to substitute for dictating medical records, it is more a toy than a tool. In fact, EMR is the only method of record keeping, which matches:

- The patient's expectation,
- With the provider's desire for excellence and
- With the payer's concern for the cost of care and
- Will, in the 21st Century will be required. for data analytics to achieve population management

Patient's Expectation

In 2001, the mother of a prominent citizen in our community became our patient. After completing an extensive history and physical utilizing the EMR, I asked this lady, "After a single visit, do you think I now know you well enough to make appropriate decisions about your healthcare?" She responded, "You know more about me than the doctor who has taken care of me for twenty years. He has never asked me all those questions." This testimonial can be repeated multiple times. EMR creates tremendous confidence in the patient that an accurate and complete database is available to the healthcare provider.

As an extensive database is created on each patient, the patient's confidence in the provider's decision-making increases. As the computerized patient record is "sold" to the patient, the patient becomes the provider's greatest ally in producing an excellent record, which is complete and accurate. Also, when the encounter is completed and a copy of the record is given to the patient:

- The patient is able to review the record, further gaining confidence that "if my doctor knows all of this about me, he/she must be making the right decision."
- If any data is inaccurate or has become invalid, the patient can correct the record, becoming a partner with the provider in the process of producing a complete, accurate, valid and current medical record.
- When the record is properly design, in the face of shared-decision making with a patient, this document can contribute to the creation of an activated and engaged patient.

At another time, an elderly patient came to the emergency room at 5:30 AM. As she walked in, I met her. When she sat down in the exam room, she pulled out of her purse a copy of her EMR record from her last visit to my office. It was complete and had all of her past history, allergies, medications, diagnoses and physical examination. I had known this patient for twenty-five years and knew by memory many of the details of her life and care, but this record was more complete than my memory. I was able to quickly assess her condition and safely allow her to return home, after dictating an emergency room encounter, which appeared as if I had spent hours with the patient rather than a few minutes.

Over the intervening fifteen years, SETMA has expanded the use of the EMR to:

1. All hospitals
2. Nursing homes
3. Clinics
4. Homes
5. Physical therapy
6. Hospice
7. Home health

With every patient encounter, by every provider in every facility or location being documented in the same data based, the continuity of care record and the enhanced quality of care were maximized.

Changing Healthcare Delivery

An integrated healthcare delivery system (IDS) produces collaboration between every person participating in the care of a patient and the sharing of information on that patient at every point of the patient's entry into the healthcare system. It means that the primary care physician and the specialist have common goals and that they share the same information about the patient. It means that the home health agency, hospice, physical therapy, reference laboratory and long-term care facility have a common vision and a seamless interface when dealing with the patient.

The IDS model is realized when each member of the healthcare delivery team has access to the patient's record and when the patient's record is updated and available to other members of the team at and from every encounter with another IDS team member. Without this sharing of information, at best the patient's care will be segmented and inconsistent.

What truly differentiates the continuum of care model of healthcare delivery from the others is that a current, valid, complete patient data drives patient care. If the patient's record is available at every point of contact with the healthcare system, there will not be:

- **Redundancy** - repeating the same test or procedure simply because one healthcare provider does not know that another provider has the information.
- **Inefficiency** - collecting the same information about the patient - past medical history, family history, etc. - multiple times simply because there is no effective means for sharing that information from provider to provider.
- **Excessive cost** - A plan of care has always been a part of healthcare. Sometimes that plan of care will be treatment and instruction to return if the patient doesn't improve; sometimes it will be referral to a specialist, and sometimes it will be observation and testing if the patient doesn't recover. Whatever the plan of care, it should be:
 - **Documented** - EMR allows this to be done every time.
 - **Discussed with the patient** - EMR allows for this to be documented every time.
 - **Followed** - EMR allows the provider to follow-up the patient, even if the patient doesn't keep his/her follow-up visit.

- **Baton** – it is the tool whereby responsibility for care is passed from the provider to the activated, engaged patient.
- **Defensiveness** - the best defense against an accusation of inadequate or substandard care is a complete history and physical and an agreement between the provider and the patient as to a plan of care. EMR allows the provider to document a plan of care with which the patient agrees. When that plan is based on sound medical judgment and an excellent record, the need for excessive and often expensive tests to prevent lawsuits will be eliminated.
- **Lack of follow through** - Patients often discontinue treatment and/or fail to seek follow-up when they begin to feel better. EMR allows the provider to track patient follow-up and to make certain the patient's treatment or evaluation is completed.

The sharing of a common database and the ability to make updates of that database instantly available to every other member of the healthcare team is the backbone of SETMA's delivery system. The reality is that whether a family physician, a cardiologist, or an endocrinologist, the initial information needed on a patient is the same: chief complaint, history of present illness, review of systems, allergies, past medical history, family history, social history, and habits. If this information can be shared, it will make the care delivery more efficient and more effective, and that will increase the excellence of the care.

Information systems also enable the healthcare provider to drive the delivery process because of the data, which is available. Traditionally, healthcare providers only responded to the care request of their patients. Now, providers can structure, initiate and deliver preventive care and routine care, which is more cost sensitive and higher quality.

Healthcare driven by the provider is: higher quality, more cost-effective, preventive and more effective. The only way the healthcare provider can drive health care is with records, which give him/her the capacity:

- To measure outcomes,
- To monitor preventive care and
- To share information with other healthcare partners.

Learning

What most physicians need in order to participate in 21st Century care is "a change of mind." In *The Fifth Discipline*, Peter Senge discussed what he calls "a learning organization" and he identified what he believes is the most important word in a learning organization: *metanoia* and it means "a shift of mind."

"To grasp the meaning of *metanoia* is to grasp the deeper meaning of 'learning,' for learning also involves a fundamental shift or movement of mind...Learning has come to be synonymous with 'taking in information.'...Yet, taking in information is only distantly related to real learning. This then is the basic meaning of a learning organization...continually expanding its capacity to create its future. For such an organization, it is not enough merely to survive. 'Survival learning' or what is more

often termed 'adaptive learning' is important - indeed it is necessary. But for a learning organization, 'adaptive learning' must be joined by 'generative learning,' learning that enhances our capacity to create."

Doctors need to learn new technological ways of organizing and conducting the business of medicine. They need to allow the power of information systems to change the way they approach healthcare. They need to maintain personal contact; patients are people first and last, but doctors need to see EMR as a powerful tool and not simply as a new and expensive toy. If they do, they will begin the 21st Century with an ability to impact the delivery of healthcare in America.

Healthcare providers must never lose sight of the fact that they are providing care for people, who are unique individuals. These individuals deserve our respect and our best. Healthcare providers must also know that the model of healthcare delivery, where the provider was the constable attempting to impose health upon an unwilling subject, has changed. Healthcare providers progressively are becoming counselors to their patients, empowering the patient to achieve the health the patient has determined to have. This is the healthcare model for the 21st Century and the computerized patient record is the tool, which makes that model possible.

Managed Care and the Computerized Patient Record

Managed Care is the free-market's response to the realities of the healthcare industry. The first reality is that there is no possibility of healthcare financing and management ever returning to the *laissez faire* style practiced up until thirty years ago. Someone is going to control and manage healthcare. The only real question is, "Who?" The financing of healthcare will never return to a system where the medical decision making process takes place in isolation and independent from the question of "Who is going to pay for the services?"

Second, because of the expense of technology and of increasing access to healthcare by a larger population, it is possible for healthcare alone to bankrupt the United States government. Unchecked, the cost of healthcare delivery can prevent the balancing of the Federal budget. The financing of healthcare will never return to a system where the medical decision making process takes place in isolation and independent from the questions of, "How much is a service worth and how much is society willing to pay for it?"

Third, this means there are limited resources to continue to provide the excellent healthcare, which the citizens of this country presently receive. Someone has to allocate those resources. Who? The financing of healthcare will never return to a system where the medical decision making process takes place in isolation and independent from the question of, "What is society's responsibility to its most vulnerable citizens as far as access to affordable healthcare is concerned?"

Fourth, the government has assumed, by law, the responsibility of providing healthcare to a certain segment of our population, and the government is not going to surrender that responsibility.

Quality in Healthcare Delivery

EMR can help physicians begin to objectively address the issue of quality in healthcare delivery. "Quality," everyone wants it; but no one knows exactly what it is. At least one thing that quality is is preventive care. Southeast Texas Medical Associates has over 60,000 patients who look to us for primary healthcare. With paper records, if we wanted to check for currency of immunizations, it would take a year. But with EMR, we can do it in minutes, if not seconds. EMR increase patient satisfaction, which is one of the principle measures of quality by making it possible to give the patient a copy of their medical record at the time of its creation. This enables the patient:

- To see how thorough we are.
- To take a copy immediately to a consultant.
- To correct any errors in the database.
- To have a plan of care and a treatment plan to follow

Showing the patient how we review their past medical history, social history, habits and family history every time they come into the office gives the patient confidence that all available information is being utilized in their care. This review ability also upgrades the provider Evaluation and Management coding level, not only maintaining HCFA compliance, but also maximizing appropriate reimbursement. Another measure of quality is the maintenance of a continuum of care in which the patient's records are available at every point of care. This is important to patients and payers alike because it reduces redundancy of services and inappropriate testing.

What You Measure, You Value

At first, SETMA measured and reported daily:

- Productivity,
- Tests ordered,
- X-rays ordered, etc.

Quickly, we recognized that as dysfunctional. In a reimbursement environment, which focused on results rather than tests and procedures, we were promoting failure. In the managed care environment, more attention needs to be placed on:

- Outcome - how rapidly a person recovers from an acute illness and how effectively we managed chronic illness.
- Cost - total cost - including testing, repeat visits, prescribing habits, etc - is a critical factor in how successfully we will make the "turn" which we face. Remember: A curve is not the end of the road unless you fail to make the turn.
- Volume - the above two issues address the quality-of-care-side of the healthcare equation under managed care. As more and more patients have access to care through managed care, success on the business side of medicine will result from our capacity to have excellent outcomes, in a cost-effective way, while taking care of a larger number of patients.

Every healthcare provider will need to consider the following with every patient he or she sees:

- Can I treat this patient without expensive testing? This required a detailed and documented "plan of care" which was difficult to achieve with a paper chart created either by handwriting and/or by transcription.
- Can I select a less expensive medication?
- Will I be paid for this test? Because of the schizophrenia of healthcare reimbursement today, many companies do not pay for test, which they demand that healthcare providers perform. The ultimate standard of whether we perform a test is whether or not it is good for our patients, but the reality is that if we are never paid for a test or if we are seldom paid for a test, eventually, we will have to cease doing that test.
- Can I follow-up this patient with a telephone call rather than a repeat visit? If the answer is "yes," make certain that that call is made or responded to in a timely fashion.

Each of these needs required a new form of record keeping. Each of them demanded a "real time" generation of a thorough and complete chart, which:

1. Was completed before the patient left the office.
2. Was available for follow-up from the office, the hospital or the provider's home.
3. Captured a new "data set" than had previously been the focus of the patient visit.
4. Could be reviewed by the patient to insure accuracy and thoroughness.

Only EMR achieves all of these goals and more.

Moving from EMR to Electronic Patient Management

Formed in August, 1995, Southeast Texas Medical Associates, LLP (SETMA) recognized that excellence in 21st-Century healthcare was not possible with 19th-Century-medical-record methods, i.e., pencil and paper, or with 20th Century methods, i.e., dictation and transcription.

SETMA believed that the future of healthcare was going to be driven by quality performance and rejected the model of care where the healthcare provider was the constable attempting to impose health upon a passive recipient, the patient. As a result, SETMA developed a model where the patient is an active member of his/her healthcare team and the healthcare provider is a consultant, a colleague, a collaborator to facilitate healthy living, with safe, individualized and personalized care for each patient. SETMA's model is also driven by the fact that we serve a population which received disjointed, unorganized, episodic care, focused upon things done to, or for patients who have limited resources with which to support their health care goals.

Four Seminal Events

In October, 1997, SETMA attended the Medical Group Management Association meeting to preview electronic-health-record (EHR) solutions. In March, 1998, SETMA signed a contract with an EHR vendor. We deployed the enterprise practice management (EMP) side of the system in August, 1998 and the EHR on January 26, 1999. By Friday, January 29th, we

documented every patient encounter in the EHR. In May, 1999, four seminal events transformed SETMA's healthcare vision and delivery.

First, we concluded that EHR was too hard and too expensive if all we gained was the ability to document an encounter electronically. EHR 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 EHR 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 from an EMR to electronic patient management; 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

In 2009, we would discover that these principles are essentially the principles of patient-centered medical home and that the past ten years had prepared SETMA to formally become a patient-centered Medical home. Between 2009 and 2014, SETMA would become accredited as a medical home by NCQA, AAAHC, URAC and The Joint Commission.

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](#)". The first eight pages of this current paper were developed from an update of this paper.

As we began defining and developing critical supports required for success in Performance Improvement, we found them to be:

1. Care where the same data base is being used at ALL points of care.
2. A robust EHR to accomplish the above.
3. A robust business-intelligence analytics system, which allows for real-time data analysis at the point of care.
4. A laser printer in every examination room so that personalized evaluational, educational and engagement materials can be provided to every patient at every encounter, with the patient's personal health data displayed and analyzed for individual goal setting and decision making.
5. Quality metric tracking, auditing and statistical analysis.
6. Public Reporting of quality metric performance by provider name.
7. Quality Improvement initiatives based on tracking, auditing and analysis of metrics.
8. Shared vision among all providers, support staff and administrators - a personal passion for excellence -- which creates its own internalized, sustainable energy for the work of healthcare transformation.
9. Celebratory culture which does not compete with others but continually improves the organization's own performance, using others as motivation but not as a standard.
10. Monthly peer-review sessions with all providers, to review provider performance and to provide education in the use of electronic tools.
11. Adequate financial support for the infrastructure of transformation.
12. Respect of the personal value of others and the caring for people as individuals.
13. An active Department of Care Coordination and a hospital-care support team which is in the hospital twenty-four hours a day, seven days a week.
14. Aggressive end-of-life counseling with all patients over fifty, and active employment of hospice in the care of patients when appropriate.

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.

Updated on March 29, 2012, "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 seem quaint but to those of us who form the bridge between the before EMR and after EMR, it is significant.

What about the Cost of EMR?

In the intervening fourteen years since SETMA purchased the EMR, we have spent an additional \$8,000,000 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.

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.

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 www.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.

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.

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. That will be in 2019, when I will be 76 years old.