



From Clipboards to Keyboards

*Electronic Medical Record (EMR) helps maintain large number of records for decades, aids in updating and editing the records and allows easy access to information. **Nancy Singh** finds out how IT will overthrow the paper regime.*

One in 10 patients world-wide fall prey to medical errors, estimates World Health Organisation (WHO). Most of the times, these errors are preventable. The errors usually occur due to incomplete information about patients' past health records.

"Information Technology (IT) adoption in the healthcare industry is around five per cent. This is hardly much, compared to the neighbourhood grocery store or fast food restaurant that utilises around 40 per cent of IT resources for database management," says Dr Rahul Shetty, Founder-President, Mezocore Technologies, Canada.

The lack of storage facilities of healthcare records and retrieval has increased the number of medical errors, which affects around 1,00,000 patients annually in the US, according to a landmark study by the Institute of Medicine in 1999. Not to forget the financial impact of such accidents. "When we compare this to the aviation industry, it is akin to a small mid-sized aircraft crashing every day!" says Shetty.

While technology has embraced every aspect of most industries, the healthcare providers continue to pore over enormous amounts of paper records even today. But with the rising competition and emphasis on quality, corporates are realising the importance of EMR. A benchmark in quality standards, the Joint Commission for Accreditation of Healthcare Organisation (JCAHO) has stringent quality guidelines regarding maintenance of medical records (standard IM-7.6), wherein, each indoor patient's medical history and physical examination findings must find documentation within 24 hours of admission.

It can also be an effective measure to avoid unnecessary litigations. "The most important benefit is the patient's records. Record keeping is mandatory as per Medical Council of India (MCI) guidelines. Thus, not keeping records may make one liable to negligence in the Consumer Protection Act," says Dr Shashi Gogia, President of the Indian Association for Medical Informatics. Most hospitals, healthcare institutions, and even the family doctor maintain some form of medical records of their patients to the extent that they consider appropriate for their use. "Legally every one of them is bound to make these records available to the patient on demand. It means that the patient should have access to his medical records no matter wherever he is treated and when he needs it. In reality, this remains a pipe dream for most patients," avers Rajiv Tatkar,



"IT adoption in healthcare is just five per cent. This is much less compared to the neighbourhood grocery store or fast food restaurant"

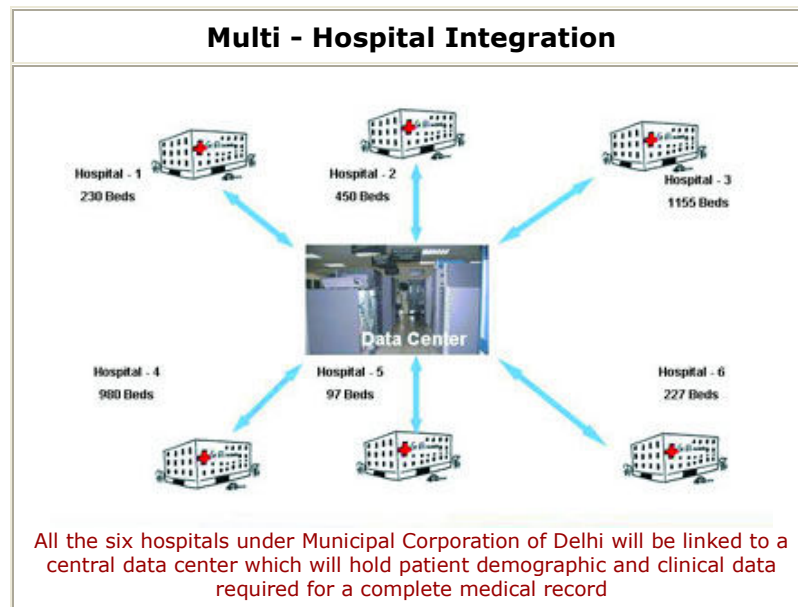
- Dr Rahul Shetty
Founder-President
Mezocore Technologies
Canada

Principal Consultant, 21st Century Health Management Solutions, Mumbai.

India has a distinct advantage when it comes to Electronic Medical Records. "There are no precedents to go by, thus making it easy to set our own standards. We also do not have the baggage of legacy systems thus making it easy to provide a state-of-the-art solution from day one. In fact we could be even ahead of most of the world in implementing EMR," comments Tatkar.

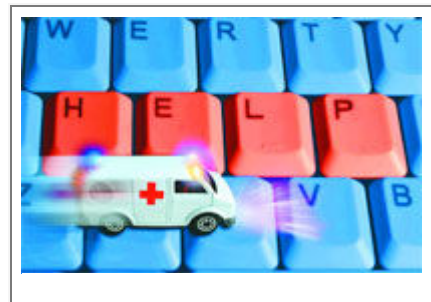
India has been at the forefront of intercontinental medical transcription, but ironically is yet to see a digital revolution and continues reeling under heavy files. "I simply fail to understand, when we transcribe it for the US, why not in our own country," asks Dr Seema Gupta, Domain Consultant, Wipro Healthcare, Mumbai.

The average use of IT by hospitals even in the US is less than 10 per cent and overall 16 per cent physicians are taking the help of IT to solve their problems, hence the situation is not very encouraging. But the winds of change are creeping in, though slowly.



Electronic versus Paper

"Why is it that I can access and transact on my bank account in downtown Mumbai from the a wayside store in Elko in the middle of Nevada desert, a good 20000 kilometres away from the location of my bank, but cannot provide the doctor in Midtown Mumbai with my medical records from a hospital located two kilometres away?," asks Tatkar, . "The difference is simple - electronic records v/s paper records. You don't have to despair at the state of affairs in your country - the situation is no different in most parts of the developed world as well. It is only in 2004 that the President of the US mandated that all the patient records will be in electronic form by 2013!" laments Tatkar.



Maintaining records is a logistical nightmare and the situation looks grave when we remember that we are in a country that has just six beds for every 10,000 people. In such a scenario, there is little space that hospitals would underutilise. Computerisation of medical record means the need to keep the hard copy in terms of tonnes of paper

record is taken away. "Computerisation will reduce space requirements for patient chart storage," agrees Dr Anil M, Senior Manager, Sobha Renaissance, Bangalore.

Apart from this, if a patient has to visit more than one department in the same hospital, then separate records are recreated, which is a waste of manpower, time and energy.

For instance, hardcopy record storage strained facilities and space in the file room at a premier hospital in Pune. "Areas which could have been utilised for provision of care became a warehouse. Records were stored on large rolling racks," says Dr Anil.

EMR thus means "large number of records can be maintained, distributed and accessed in an organised manner for decades without letting rats or termites get at it. Updating and editing is much easier and neater than paper records," believes Dr Pawan Kumar, Head, Department of Community Medicine, Kasturba Medical College, Manipal.

Apollo Health Street's Money Matters



India has very limited experience with deployment and adoption of EMR - even more limited than the US or the UK or the EU countries. Sugato Basu, Vice-president, Business Development, AHS, recounts the monetary benefits of implementing EMR.

Increased profit: In order to increase profit one needs to take into account all the possible benefits and compare them to the new costs that will be incurred after implementing EMR. Some benefits such as improved care, patient satisfaction, and office image are difficult to quantify. All these contribute to higher profits from increased patient referrals and better patient retention.

Improved coding: Down-coding and poor charge capture can both be improved through an EMR's E&M Coder. A study by Medical Economics magazine estimated that a physician who is regularly down-coding may be losing \$40,000 to \$50,000 annually. For example, if we will use a conservative improvement rate of 2.5 per cent to factor in a reduction in down-coding, errors will result in an increase in income of approximately \$25,000 per year.

Transcription: Reduced transcription costs as EMR provide an easier means for patient documentation and report writing. This can translate into big savings as offices could be spending as much as \$1,500 per month per provider.

Chart management: Chart management costs can be reduced through lower chart creation costs, lower chart storage costs and fewer chart pulls. The cost to create a new chart is estimated at \$2 per chart and the cost to pull a chart is \$5, according to a study by Partners HealthCare Clinic.

Prescription refills: A study by Journal of Healthcare Information Management showed that the time spent on an Rx refill can be reduced from 15 minutes to three minutes. At seven refills per day, that would be savings of 84 minutes per day.

Patient cost savings: According to a study published in The American Journal of Medicine, the benefits of clinical decision support resulting in the reduction of Adverse Drug Effects (ADE's), lab and radiology tests and the ability to offer alternative medications showed that a conservative estimate of \$29,000 could be saved on implementation of EMR.

Faster Delivery

Faster retrieval and better efficiency and providing service within 45 minutes is what Manipal Cure and Care (MCC), the retail venture of Manipal Health Systems, wanted. Says Ramesh Rao, Finance Controller, MCC, "EMR benefits both the medical institution and the consumer."

This is exactly why Artemis Health Institute (AHI) too opted for EMR. "The access is faster, more simplified, quicker to retrieve," says Dr Sanjeev Gupta, Controller, Medical-Services, AHI.

EMR Vs Paper



EMR:

- The need to keep hard copy in terms to tonnes of paper record is eliminated.
- Large number of records can be maintained, distributed, and accessed in an organised manner.
- Updating and editing is easier.
- Information can be accessed, correlated and helps generate reports faster.
- Time and event alerts can be incorporated.
- Helps in timely communication and feedback to people concerned.
- Less time consuming and can be accessed anywhere through intranet/Internet and can be shared with clinicians/tertiary level healthcare facility for specialist consultations and opinions.
- The load to be carried to the field by the field worker will be less if complemented with handheld devices
- In clinics, along with OPD records, personal health records can be supplemented for better understanding of illness and their management.

Paper Records:

- They can be easily transported.
- Offers freedom in reporting style.
- Easy data browsing.
- Requires no special training.
- Never 'down' as computers sometimes are.

Detecting Errors

One area where EMR scores over paper is in aiding reduction in medical error. "EMR detects incorrect/harmful prescriptions inadvertently prescribed. For example, a physician may prescribe a drug that may cross react with another medicine as he might have overlooked an allergy, diabetes status, etc. EMR will notice such errors," says Dr Pushwaz Virk, Healthcare Management Fellow, Harvard University Health Services, Cambridge, US. This is good news when one considers that 44,000-98,000 preventable deaths each year result from medical errors and 70 per cent of the Adverse Drug Effects (ADEs) are preventable. Potential mistakes include wrong drug name, form or dose, illegible handwriting, transcription error, poor patient understanding and compliance.

Dr Shetty says, "One of the pitfalls of increased dependence on paper-based records is lack of rapid access to details in an emergency. I have first hand experience with terminally ill individuals who had no records of previous medications or treatments. Since these patients were not Indian, language and culture barriers only made it worse to retrieve past information."

A handwritten document also becomes illegible and there could be errors in interpretation. There is a huge delay when it comes to retrieval of the old files.

The Business Angle

Many EMR vendors incorporate features so that patients can view their medical information, schedule/cancel appointments, and complete forms ahead of time via the organisation's website. "This is good for business and helps reduce the load on staff," says Sugato Basu, Vice President, IT Services, Apollo Health Street, Hyderabad & US. It also means more office space available for treatment.

Prompt insurance re-imburement is another result of better coding and billing procedures. Being in closer touch with patient's treatment plans and filing documentation at the right time can help maximise reimbursement. EMRs also help reduce costs. "EMR significantly reduces and often eliminates transcription and medical record costs," says Dr Anil M. Complete and correct documentation with an EMR can allow doctors to charge insurance companies a higher rate while avoiding liability. Banner Health, US, witnessed a staggering 96 per cent cut in document storage costs and 76 per cent reduction on medical insurance claims. Banner Health is a not-for-profit healthcare system, based in Phoenix, Arizona with over \$3 billion in annual net revenues.

Automated patient records also mean quality assurance as clinical data can be used for quality assurance, quality improvement and various studies.

Myths

There are many apprehensions and myths enshrouding EMR. **Rajeev Tatkar**, Principal Consultant - 21st Century Health Management Solutions, Mumbai shatters a few myths.

Myth No.1: Computerised records are not secure.

Reality check: Nothing is further from truth. If this were to be true no bank, stock market or any commercial organisation would ever have computerised their records. Worldwide, the chance of leakage of information or improper accessibility

of the records has dropped since they were computerised.

Myth No.2: It takes a long time to feed the data

Reality check: On the contrary, computerised systems are designed to take away the drudgery of having to repeat data entry and use shorthand methods to enter data.

Myth No.3 : Availability of the data on electronic media is counterproductive for our own business

Reality check: This is a typical case of fear of the unknown and holding back information as a method for holding back a client. This method does not work in the present context where a dissatisfied patient will in any case go to another service provider. It is often openness that helps both the patient and the service provider.

Myth No.4: Electronic data can get lost very easily due to power failure, virus attack etc.

Reality check: This is true provided adequate and well known methods of backup and recovery are not used. There are well-established methods ensuring that such losses do not happen. There are no shortcuts to good practices, no matter whether the records are computerised or otherwise. Most of the health and hospital management systems worldwide have addressed these issues long ago and moved on. They have moved on from such elementary objections towards establishing standards that must be followed by each healthcare service provider. Standards such as ICD10, SNOMED-CT, ICPC, UMLS and GALEN, HL7, DICOM and XML are used in various parts of the world that make it easy to transfer data across the world and be understood in the same manner by all healthcare service providers.

Let's Talk About Money

It is a fact that unless something does not promise profit, there will be no takers. The American Medical Journal advocates that the implementation of an EMR system in primary care can ensure financial return on investment. The magnitude of the return is sensitive to several key factors. The researchers performed a cost-benefit study to analyse the financial effects of EMR in ambulatory primary care settings from the perspective of healthcare organisation. The reference strategy for comparison was the paper-based medical record. The primary outcome measure was the net financial benefit or cost per primary care physician for a five-year period. The estimated net benefit from using an EMR for a five-year period was \$86,400 per provider. Benefits ensue primarily from savings in drug expenditures, improved utilisation of radiology tests, better capture of charges, and decreased billing errors. The net benefit varied from a low of \$8,400 to a high of \$1,40,100.

A five-way sensitivity analysis with pessimistic and optimistic assumptions showed results ranging from a \$2,300 net cost to a \$3,30,900 net benefit. But some fears remain.

Will digitisation and automation make the staff redundant? Not at all, says Rao, "EMR has created more opportunities and also increased the productivity of the staff since it has freed them to concentrate on their tasks rather than restricting them to boring clerical work."

nancy.singh@expressindia.com



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