EMR, its relevance, its benefits and options available

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Introduction

The ideal of health care in the information age must be to create a situation where “competent clinicians spend more time creating knowledge from clinical information than they spend time managing clinical situations”.
What is EMR?

- The term electronic medical record (EMR) means the electronic collection of clinical narrative and diagnostic reports specific to an individual patient.

- A true EMR should allow physicians and nurses to practice in a paperless fashion.
EMR facilitates

- Access of patient data by clinical staff at any given location
- Accurate and complete claims processing by insurance companies
- Building automated checks for drug and allergy interactions
- Clinical notes
- Prescriptions
- Scheduling
- Sending to and viewing by labs
Provide Better Patient Care

- Clinical Guidelines
  - To treat patients according to current clinical guidelines.

- Pharmaceutical Related
  - Prevent Dosage Errors
  - Prevent Handwriting misrecognition
  - Prevent medication conflict with allergies
  - Prevent medication conflict with other medications
  - Prevent medication conflict with medical conditions
  - Prevent medication conflict with family history (ex: Malignant Hyperthermia.)
Special situations

- In the event of a drug recall, such as with Vioxx, recently, using an EMR will allow you to immediately, and automatically contact each of your patients who is currently taking a recalled medication.
Levels of Electronic HealthCare Record (EHCR)

- **Level 1**: Automated Medical Record
  paper-based record with some computer-generated documents.

- **Level 2**: Computerized Medical Record (CMR)
  makes the documents of level 1 electronically available.

- **Level 3**: The Electronic Medical Record (EMR)
  restructures and optimizes the documents of the previous levels ensuring inter-operability of all documentation systems.

- **Level 4**: The Electronic Patient Record (EPR)
  patient-centered record with information from multiple institutions.

- **Level 5**: The Electronic Health Record (EHR) adds general health-related information to the EPR that is not necessarily related to a disease.
EMR - Ophthalmology

- Ophthalmologists have been reluctant to embrace an EMR for a long time.
- Most of the information recorded in drawings and photographs is difficult to capture and store with older technology.
- Advances in computer speed, storage media, and digital cameras & scanners have made EMR adoption more feasible.
Why purchase EMR?

- Cost & Time saving
Cost

- Actual costs
  - Hardware
  - Software
  - Upgrades
  - Technical support

Large Initial investments

True savings occur after 5-10 yrs
Cost

- Eliminate costs for Paper Charts
  - Cost of paper itself
  - Cost for employees pulling and filing charts
  - Cost and liabilities of looking for and transfer of lost charts
  - Cost of storage of paper charts
  - Cost of destruction of paper charts

- Eliminate Transcription Costs
Time saving

- Templates for entering the data for the most common patients with normal findings
- Bring forward past examination findings that may not have changes
- Complicated histories and examinations may take more time or same as required for paper records.
Virtual Case Sheet

Sanakara Nethralaya
Medical and Vision Research Foundation
18 college Road,
Nugmahkam, Chennai

MRD No. 1234567
Name: Mr Venkataswamy
Age: 25 yrs
Gender: Male
Date of Birth: 2.4.1981
Address: A6 Apara Apartments
37 Ramanujam ST
T. Nagar
Chennai - 6000017

Occupation: Software engineer
Marital Status: Married
Email: venkatsubs@gmail.org
Tel: 23456789

Workup done: Ms. Dharani
Date: 23 May 2006

Presenting Complaints: Regular Work up

Past Ocular History: NIL / Present

Past Medical History: Nil / Present

Family History: No significant history / Significant history


Refraction:

Extra ocular movements: Full Free and Painless / Abnormal

Pupil: OU Reacting to light briskly / abnormal

External Examination:

Slit Lamp Examination:

Lids: Normal / abnormal

Conjunctiva: Normal / abnormal;

Cornea: Normal / abnormal

Anterior Chamber: Normal / abnormal

Iris: Normal / abnormal

Lens: Normal / Abnormal

Slit Lamp drawing:

Iop:

Gonioscopy:
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<tr>
<th>MRD No</th>
<th>500089</th>
<th>Age</th>
<th>40</th>
<th>Gender</th>
<th>MALE</th>
<th>Date &amp; Time</th>
<th>23/06/2005 00:04:36</th>
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<tbody>
<tr>
<td>Patient Name</td>
<td>NUN MEHA</td>
<td>Allergy</td>
<td>No Allergy</td>
<td>User Name</td>
<td>SURENDER</td>
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**Lid/Lash and Conjunctiva**

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<td><img src="%E2%98%90" alt="Cicatrisation" /></td>
</tr>
</tbody>
</table>

**Visit Date:** 23-06-2005 By SURENDER
**User:** Suren
**Screen ID:** EMRSIT1
**Mode:** Cancel
Time saving

- Templates for entering the data for the most common patients with normal findings
- Bring forward past examination findings that may not have changes
- Complicated histories and examinations may take more time or same as required for paper records.
Clinical Aspect

- Intuitive
  - Auto-Draw
  - Retinal Drawing
  - Vital Sign Charts
  - IOP Trend

OD: Horse shoe tear at 12’ O clock
Clinical Aspect

- Intuitive
  - Reference
  - Expert Opinions
    - Preferred Practice Pattern
    - WebMD
  - Similar Cases
- Differential Diagnosis
Clinical Aspect

Artificial Intelligence
Time saving

- Time benefit begins after all data work is done
- Accessing an existing record
- Time in locating the record
- Time for dictating Referral letters, case summaries
- Time in writing prescriptions
[Electronic versus paper-based patient records: a cost-benefit analysis]

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BACKGROUND: The aim of this study is to compare the costs and benefits of electronic, paperless patient records with the conventional paper-based charts. METHODS: Costs and benefits of planned electronic patient records are calculated for a University eye hospital with 140 beds. Benefit is determined by direct costs saved by electronic records. RESULTS: In the example shown, the additional benefits of electronic patient records, as far as they can be quantified total 192,000 DM per year. The costs of the necessary investments are 234,000 DM per year when using a linear depreciation over 4 years. In total, there are additional annual costs for electronic patient records of 42,000 DM. Different scenarios were analyzed. By increasing the time of depreciation to 6 years, the cost deficit reduces to only approximately 9,000 DM. Increased wages reduce the deficit further while the deficit increases with a loss of functions of the electronic patient record. However, several benefits of electronic records regarding research, teaching, quality control and better data access cannot be easily quantified and would greatly increase the benefit to cost ratio. CONCLUSION: Only part of the advantages of electronic patient records can easily be quantified in terms of directly saved costs. The small cost deficit calculated in this example is overcompensated by several benefits, which can only be enumerated qualitatively due to problems in quantification.
Conclusion

Only part of the advantages of electronic patient records can easily be quantified in terms of directly saved cost. The small cost deficit calculated in this study is overcompensated by several benefits, which can be enumerated qualitatively due to problems in quantification.
When to purchase an EMR?

1. Starting a new clinic
2. Remodelling a old clinic
3. Adding a remote clinic
4. Availability of funds
5. Current billing or scheduling software needs updating
6. Concerns about the practice’s ability to meet the Health care financing administration’s billing guidelines and to provide appropriate legible documentation
When to purchase an EMR?

- Hardware
  - High processing speeds to run difficult networks
  - High storage capacity
  - Although equipment will continue to become more compact, faster & cheaper
    - What is purchased today will work effectively in office for next 5yrs.
When to purchase an EMR?

- Software not able to offer similar guarantees as Hardware companies
- Need a successful software company who can offer a long-term technical support and frequent updates.
Data

- Replicating medical record?
  - Basic documentation
    - Text
    - Drawings
    - Pictures
    - Charts
    - Reports
  - Summary Sheet
    - Diagnosis (ICD Record)
    - Accounting
Data Format

☐ Free Text
☐ Structured data
  ■ Visual acuity
  ■ Refraction
  ■ IOP
☐ Images
Reporting and outcome analysis

- Measuring the quality of care
- Medical and surgical outcomes
- Find patients eligible for certain studies (Clinical trials, Cohort studies, Case control studies etc)
- Generate Case series
Reporting and outcome analysis

- Have pre-built, canned reports for common queries
- Allow the user to write simple queries for patient specific ICD-9, CPT, and medication data
- Display report data in graph, table or chart format
How to choose an EMR?

Evaluate EMR programs

1. Decide on the needs of the office
   - Scheduling
   - Billing
   - Transcription

2. Gather data – 100’s of companies

3. See the software in use
   - Working demonstration disc
   - Internet based information & example screens
   - Onsite demonstration

4. Site visits to clinics actually using it
Evaluating – EMR

- Graphics – greatest strength or greatest weakness
- Ophthalmology examination best recorded by drawing
  - Anterior segment abnormalities
  - Gonioscopic findings
  - Oculoplastic findings
  - Confrontational fields
  - Fundus drawings
- Drawing with peripheral equipment
  - Drawing pad
  - Light pen mouse
  - Tablet PC’s
- How are drawings linked to examination?
- Provision for taking hard copy
Evaluating – EMR

- Allow to incorporate findings from ‘ancillary’ equipment, such as ‘Visual fields’, ERG, Ultrasound, Topography etc., directly into office chart.

- Minimize or eliminate duplication of documentation from medical equipment

- Allow full video to be part of the medical documentation on patients
Evaluating – EMR

- Medical transcription facilities
- Examination information – needs formatting and placed with prewritten text templates to form a ready to send letter
- Use Voice recognition software
Data Collection – paper form

Analysis of paper records

- Translation into electronic form
  - Very inefficient and time consuming
  - Prone to problems of missing notes, illegible data and typing inaccuracies
- Compromises the credibility of reports
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Conclusion

- Perfect software package
- Difficult to find that suits your need

Through several available EPR systems, failed to discover a commercial product that could satisfy the needs and satisfy the vision of the Hospital.
A
Sankara Nethralaya
Presentation

Thank you
Message From The Organizers

Dr L Vijaya
Organizing Chairperson
Sankara Nethralaya

Dr G Chandra Sekhar
President
Glaucoma Society of India

SEAGIG 2006 is honoured upon India and the "jewel of the south" Chennai has the privilege of hosting this important meeting. December 1-3, 2006 will be the time for us to gather and continue our efforts to better our knowledge on the science of Glaucoma.

We all are aware that the approach to management of this major public health problem has undergone a "sea change". The profile of this disease has an additional spectrum that is peculiar to this region of the world and there continues to be a need for us to persist and upgrade our information. Meetings and exchange of ideas are necessary aspects of this process and SEAGIG 2006 is one such