# 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](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
- ☐ Difficult to capture and store with older technology
- ☐ Advances in
    - ■ Computer speed
    - ■ Storage media
    - ■ Digital cameras & scanners

# 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 Foudation
18 college Road,
Nugmabkkam,Chennai.

MRD No. 1234567
Name: Mr Venkatasurbamaninan
Age : 25 yrs
Gender: Male
Dat of Birth: 2.4.1981
Address: A6 Aparna 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:

File   Edit   View   Favorites   Tools   Help

Back   |   Search   Favorites

Address   http://localhost/EMR/EMR/OPExamination/SlitLamp1/SlitLamp1.aspx   Go   Link

**Sankara Nethralaya**   **Hospital Management System**   **Tata Consultancy Services**

Welcome  SURENDER , you are operating in  SN MAIN - LID/ LASH AND CONJUNCTIVA     EMR Help  |  Change Password  |  Home  |  Log Off

| MRD No | 568899 | Age | 40 | Gender | MALE | Date & Time | 23/06/2005 00:04:36 | Sign In |
|--------|--------|-----|----|--------|------|-------------|---------------------|---------|
| Patient Name | NUN N MEHA | | | Allergy | No Allergy | UserName | SURENDER | Hold |

Add    Modify    Save    Prev    Next    Cancel

**Lid/Lash and Conjunctiva**

**Lid** | **Conjunctiva**

| | OD | | OS | |
|---|---|---|---|---|
| **Upper Palpebral** | ○ Normal  ● Abnormal | ☑ Bitot Spots ☑ Chemosis ☐ Cicatrisation | ● Normal  ○ Abnormal | ☐ Bitot Spots ☐ Chemosis ☐ Cicatrisation |
| **Bulbar Nasal** | ● Normal  ○ Abnormal | ☐ Bitot Spots ☐ Chemosis ☐ Cicatrisation | ○ Normal  ● Abnormal | ☑ Bitot Spots ☑ Chemosis ☐ Cicatrisation |
| **Bulbar Temporal** | ● Normal  ○ Abnormal | ☐ Bitot Spots ☐ Chemosis ☐ Cicatrisation | ● Normal  ○ Abnormal | ☐ Bitot Spots ☐ Chemosis ☐ Cicatrisation |
| **Lower Palpebral** | ○ Normal  ● Abnormal | ☐ Bitot Spots ☑ Chemosis | ● Normal  ○ Abnormal | ☐ Bitot Spots ☐ Chemosis |

Visit Date: 23-06-2005 By SURENDER     User : Suren     Screen ID: EMRSLIT1     Mode : Cancel

Local intranet

# 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

**Fundus Drawing**

OD: Horse shoe tear at 12′ O clock
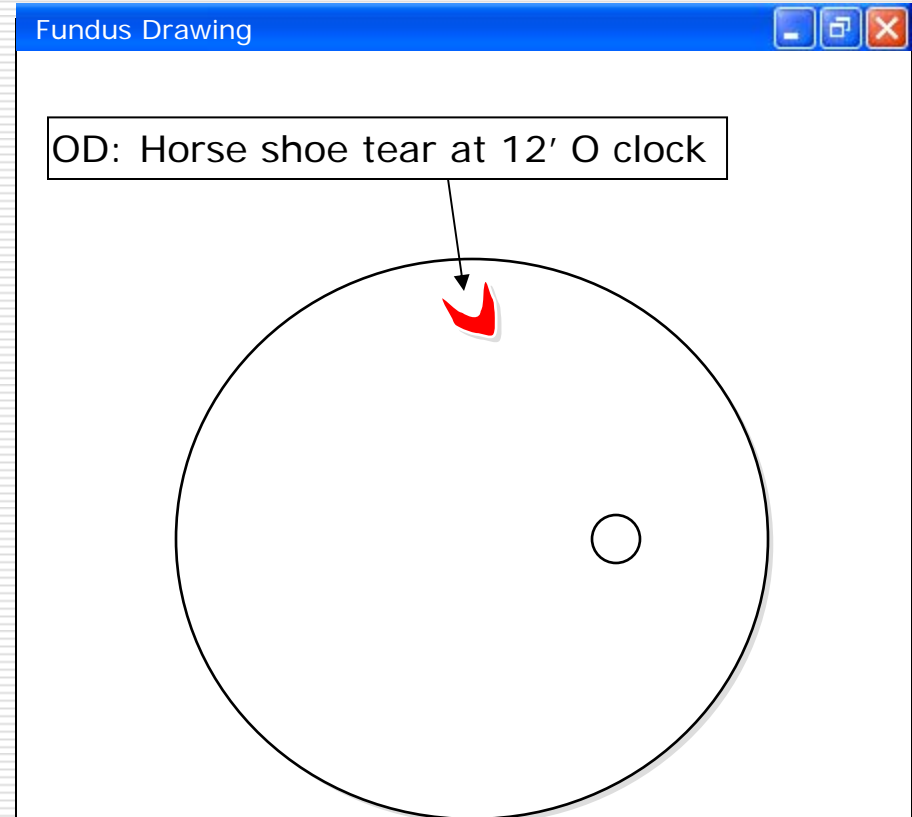
# Clinical Aspect

☐ Intuitive
  ■ Reference
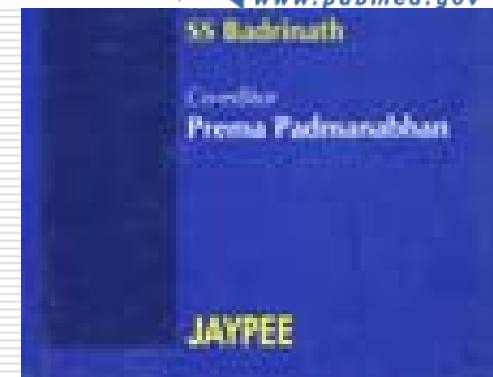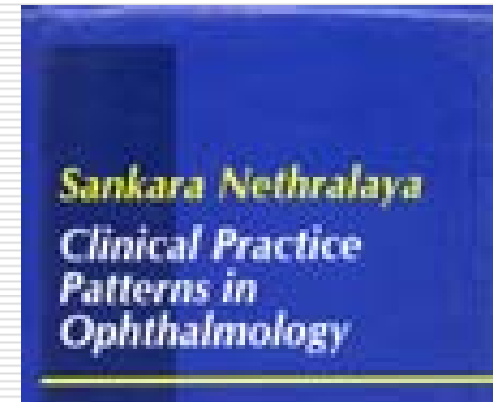    ☐ Expert Opinions
      ■ Preferred Practice Pattern
      ■ WebMD
    ☐ Similar Cases

  ■ Differential Diagnosis

# Clinical Aspect

Artificial Intellegence

# 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]

[Article in German]

**Neubauer AS**, **Priglinger S**, **Ehrt O**.

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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.

[Electronic versus paper-based patient records: a cost-benefit analysis]

□ Conclusion

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

# 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

# EMR consultant.com

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| Accelerator™ 3.0 | Catalis, Inc. |
| AccuRecords | Accumedic Computer Systems Inc. |
| AcerMed | AcerMed Inc. |
| AdvancedEMR | AdvancedMD |
| Advantage EMR | ProLink Internationsl Co Inc |
| AeroMD | TetriDyn Solutions |
| AIMed EMR | Acrendo Software |
| Allmeds EMR System | AllMeds Inc. |
| AltaPoint EMR | AltaPoint Data Systems LLC |
| Alteer Office ™ | Alteer Corporation |
| Amazing Charts | Amazing Charts |
| AmkaiCharts | Amkai |
| Anasazi Assessment | Anasazi Software |
| Aquifer.EMR ™ | Solventus ™ |
| AS-OBGYN | AS Software inc. |
| AutoMedicWorks | AutoMedicWorks |
| Axolotl EMR | Axolotl Corporation |
| BMD Paperless Office | BMD Software |
| Bond Clinician EHR | Bond Technologies |
| Cabinet NG | Cabinet NG |
| CareData EMR | CareData |
| CareRevolution | Electronic Healthcare Systems |
| CDR-Web® | Reliance Software Systems - Re |

**Account Login.**

username

password

**log in**

have you misplaced your password?

**Client Testimonials**

- Thank you Dr. Fishman
- Great service
- Help for Psychiatrists

▸ read more

**EMR Comparison Matrix**

▸ **NEW!**

▸ View an interactive flash preview of how your results are displayed.

▸ requires the latest Flash Player

# Conclusion

- ☐ Perfect software package
- ☐ Difficult to find that suits your need
- ☐ [Develop your own system] ... commercial product that could satisfy the needs and satisfy the vision of the Hospital.

# SEAGIG
## South East Asia Glaucoma Interest Group

SEAGIG Chennai - 2006 INTERNATIONAL GLAUCOMA CONVENTION Dec 1 - 3, 2006

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## 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

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