

Personal Health Records: Comparing and Contrasting Issues and Challenges with a Global Perspective

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Motivation



We have intermittent power supply here in New Delhi. Yesterday there was no power for 12 hours. I think we are better off with a paper-based medical record which still works when there is no power.

Dr. Rekha Mistry at IEEE Healthcom 2006, New Delhi, India, August 2006.

Research Questions?

- How different is it to adopt EMR/PHR in a developing country versus a developed country such as USA?
- Can we know what is really going on in developing countries? Is there real data?
- Rich resourceful countries have digital divide. Are we widening the gap on digital (country) divide by pushing more computers into healthcare?

History & Tutorial on EMR

- There is no standard global acronym – EHR, EMR, CPR, and PHR are all in use.
- In any country, an EMR should
 - Provide complete and accurate history
 - Timely alerts
 - Clinical decision supports
 - Medical knowledge
 - Communications with other point of care
 - Enhance quality of care giving and save life
- IOM in 2003 has identified functions of EHR in four settings: hospital, ambulatory care, nursing home and care in community.
- PROMS was the first electronic medical record system in 1967 at Univ. of Vermont developed by Dr. Lawrence Weed.
- First there was EMR, now there is PHR.

What Should be in a PHR?

PHR format?

- Access Password protected
- Diagnosis and treatment (medical conditions)
- Medications (dose, frequency)
- Laboratory and Diagnostic tests
- Immunizations
- Insurance information
- Telehealth event data
- Genetic code map



傳統



USA

EMR vs. PHR

Feature	EMR/EHR	PHR
Ownership	Hospital, Clinic, Payers	Individual
Nature	Networked, desktop based or Web-based	Web-based or desktop based/ Could be carried in flash memory stick
Characteristic	Proprietary	Portable
Application	Clinical and Commercial/Business	Clinical & Educational
Reduces	Duplicity	Clinical traffic via telephone lines & duplicity
Privacy	Stakeholders responsible	Individual is responsible and chooses to share at personal risk

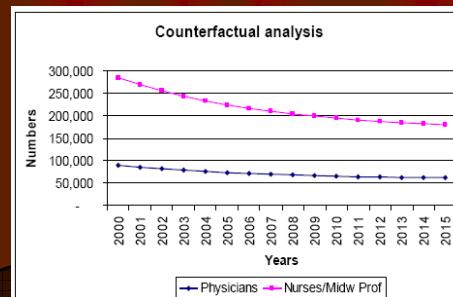
Developed versus Developing

- Various international agencies have attempted to classify countries according to their socio-economic development.
- World Bank classifies on the basis of income: Low-Income group, Middle Income group (Lower and Upper); High Income group (OECD and non-OECD).
- UNDP classifies countries on the basis of an index called Human Development Index (HDI).
- Most NGOs like to use the term developed versus developing – social, economic, and political indicators.

India – developed in terms of manufacturing, service economy with higher GDP but developing in population growth, lack of basic infrastructure, poor health services.

Major Issues in EMR/PHRs

- Lack of resources and rudimentary health-care infrastructure
- Shortage of Qualified Workforce
 - 18,000 Zimbabwean nurses work abroad
 - Mass exodus in African nations



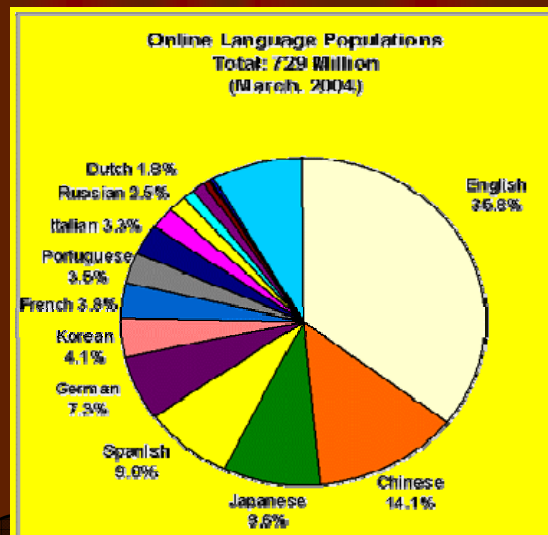
Projection of Workforce in Africa

Developing Country Issues

- Limited training facilities for medical and paramedical workforce
 - In advanced countries, use of 3D simulations, virtual reality and robotics are common in medical education
 - Lack of IT-based training continues to widen the clinical digital divide in developing countries
- Unfavorable dynamics within healthcare systems and organizations
- Barriers to language
 - Cameroon has 14 mil population with 279 languages
 - Nigeria has 515 dialects
 - Ghana has 79 languages
 - Senegal has 36

Internet/Web & Language

If Web is the Interface for PHRs, what language should it be?



Global EMR/PHR Perspective

- Rogers diffusion of innovation model tells us that spread of ideas is highly influenced by social system too.
- According to Kim (2002), there are 10,000 PHRs in the USA.
- But we have no figures in other parts of the developing world.
- Even developed countries have been slow to adopt:
 - Expanding Health Information Technology (HIT) Agenda.
 - Announcing financial incentives to stimulate EMR/EHR market place.
 - Specifying HIT standard setting; enabling policies.
 - Supporting educational, marketing and supportive activities.
- Some developing countries report adoption of EMRs. No published evidence of PHR yet.

EMR Global Data

PHR will follow EMR

- Mosorot Medical Record System (MMRS) in Kenya maintains 60,000 records in a primary care rural health center.
- Computerized System for the Control of Drug Logistics (SILCOM) in Brazil has over 100,000 patient records.
- Lilogwe EMR in Malawi is a patient management system with 160,000 records.
- Highly Active Antiretroviral Therapy (HAART) in Botswana used optical character recognition technology to manage 3000 patients with remarkable success.
- Others: Partners EMR in Peru; HIV-EMR in Haiti; Careware in Uganda; PEPFAR project in Tanzania; National EMR in Zambia

Interview with Dr. Karanvir Singh

Q. Is language a Problem in choosing these EMR systems?

Dr. Singh: We all speak English well, including all the clerks and nurses. Although our software is claimed to be multi-lingual, we have never tried any setting other than English. I do not think multi-lingual means you can have more than one language in the very same implementation – there would be language translation problems within the same hospital.

Q. Is Cost a decisive factor for purchasing such PHR systems?

Dr. Singh: Returns on a good HIS system will not always be in financial terms. In fact, it is difficult to justify it on financial grounds at all. Returns will be in the form of:

- Better communication within and outside the system
- Better audit data and ensuing improvement in processes.
- Better MIS reports allowing for more informed decisions
- Catching of fraud (a financial return...)

Q. Does the intermittent power supply situation in India cause any major problems?

Dr. Singh: All our servers and computers are covered by uninterruptible power supply units, since power supply in Delhi is erratic. We have had to cover the switches and hubs also.

Q. Does your staff lack proper training and do they have the necessary skills?

Dr. Singh: Doctors here are quite knowledgeable in computers and have not had much of a problem transitioning to the HIS, apart from the natural reluctance to adopt any new technology, as doctors always have. Nurses however, being financially less well-off, do not own computers at home and many start operating a computer for the first time when the HIS starts. The problem here is not so much as teaching them how to use it (they learn it within a week or two) but how to type fast. Slow typing speeds lead to bottlenecks in the daily workflow and earn the HIS a bad name.

Q. Is security and privacy any concern for a developing country?

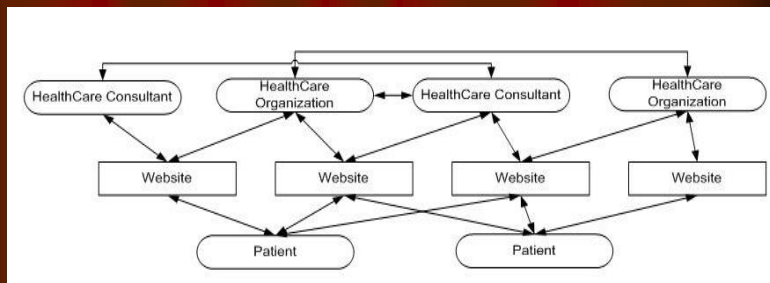
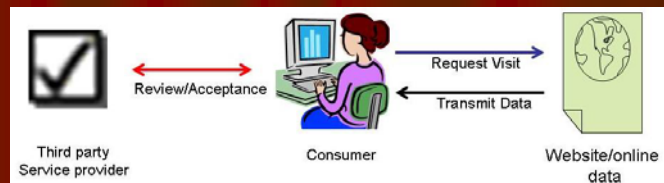
Dr. Singh: Security in the system is dependant on the configurability of the software. However, it is a very vexing problem, since increasing security levels to what everyone is happy with negates the very advantages of the HIS, i.e. better transparency and availability of patient care data. One example is: should you let a surgeon see the full operation notes of a patient who has undergone a difficult hysterectomy one year ago. The operation notes availability could, possibly, lead to better patient care for the current problem, but could be objected to by the operating gynaecologist. I have still to resolve this issue locally.

Sir Ganga Ram Hospital in Punjab, India

Should Developing Countries do EMRs/PHRs?

- EMR systems have been successfully implemented in the developing countries but the issue of lack of resources does pose as a massive challenge
- Developing countries are showing the most growth in IT and telecommunications.
 - Cell phone purchase growth highest in Asia and Africa.
- Potential benefits of PHR/EMR systems in other developing countries
 - Greater Accuracy
 - High proportion of correct information
 - Time saving in locating information
 - Economical use of financial resources
 - Greater ease and speed of recovery of patient data

Interaction Scenarios



Conclusions

- Major pitfalls include
 - Lack of user training
 - Poor initial design limiting capabilities and expansion potential
 - Systems difficult to use or too complex
 - Dependence on one individual 'champion'
 - Lack of involvement of local staff in design and testing
 - Lack of perceived benefit for users who collect data
- Major technical challenges
 - Lack of back-up systems in the event of computer loss.
 - Poor system security leading to viruses and spyware.
 - Unstable power supplies and lack of battery back-up.
 - Poor and inadequate data back-ups.
 - Lack of technical support.

*Much more research needs to be done.
But the country and clinical divide is widening.*

Thank you for your time.

Q&A

For more on this research:
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