4. Health IT CIO training course.

4.2. Standardized EMR Promotion Committee Report by MHLW...05/'05

Its report included;
1. redefinition of EMR dreams,
2. promotion of standards, i.e. HL7, DICOM, HL7 CDA, and other codes & terminology are recommended,
3. Interoperability Promotion
4. Promotion Strategy.

4.3. MHLW promotes Shizuoka Prefecture EHR for Nationwide Use ...04/'06

Shizuoka Prefecture EMR project produced many EMR components, such as progress notes, nursing observations, referral documents, clinical research database, PACSystem, and formatted document system[3],

These components are free for Shizuoka prefecture hospitals(software package only, hardware and maintenance not included). They are operable by information from order entry system in HL7 standard.
Ministry invested 88Myen to Shizuoka prefecture to improve its components and let new these components freely available nationwide.

On the other hand, Ministry approved for healthcare providers to collect 3000 yen (example) for handing out clinical data CD to patients, provided that it is in the recommended standard (HL7 and DICOM).

5. IT Strategy 2006 by Cabinet's Office, ...06/'06, Primary Accent is on Healthcare System Restructure by IT

Its action plans are;

1. New Grand Design for IT in Health ...by 2006

2. Prevention Medicine and EMR Promotion by Interoperable Healthcare & Health-checkup Information Healthcare Public Key Infrastructure ..by 2006, which comprises;
Safe and inexpensive broad network,
IC card feasibility study, standardization promotion,
Measurement for IT in healthcare providers,
Interoperable EHR for large hospitals(By 2008 for 400+ beds, by 2010 for smaller),
Start implementing standardized exchange from 2006 (Nationwide Shizuoka Software)
Standard codes recommendation by 2007
Interoperability test (Connect-a-thon) for EHR from 2007
Support for IT in smaller healthcare providers(Nationwide Shizuoka Software)
Incubation of CIO in healthcare providers,
Ontology development from 2006

Development of health information gathering and utilization in EHR era
Health checkup data utilization study from 2007
Health checkup mandated from 2008 for all 40+ ages
Reimbursement claim data utilization study from 2007
Handling health data management by patients study by 2008 (Shizuoka Style CD).

3. Online Reimbursement Claim by 2011
e-Document law applied to healthcare
Incentive promotion for e-claim from 2006
Standard codes mandated by 2010
Simplification of reimbursement scheme
Electronic reimbursement tariff from 2008
Online real time verification of insurance from 2011

4. Communications
Telemedicine,
Surface television broadcast,
IC tags in materials and medicines.

6. Final Remarks -- After All,,

Who is paying for EHR?
(Within Healthcare Providers, Network and Registries)
What is going to be the Terminology?
(SNOMED-CT talk with WHO ICD11, Global vs Local Culture).

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USA, September 7.2004.
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Ⅲ. 研究成果の刊行物・別刷
【学 会 発 表】

3. M. Kimura , M. Miyamoto, M. Akiyama, K. Toyoda
What we obtained and what were the real barriers of CPOE and EHR − Lessons learned from CPOE and RHIO in Japan, Workshop 09, AMIA2006: 32, Washington DC, USA, November 11, 2006.

What we obtained and what were the real barriers of CPOE and EHR - Lessons learned from CPOE and RHIO in Japan

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Abstract

In Japan, CPOE installation is very popular (60% for large hospitals) and has long heritage. Consequently, we have learned many lessons.

CPOE does contribute to patient safety, drug name and dose check are the most. On the other hand, however, we must note that some errors are because of CPOE, one example is miss picking with too easy input gimmicks.

By thorough implementation of all activities in International Medical Center of Japan, precious safety management data can be obtained.

We already tried 26 RHIO in 2002, among which only few are now surviving. This is because lack of standards, vocabularies, and business model of sustaining network expenses.

Description of workshop

By this workshop, lessons learned would be unveiled by each presenter and examined, shared by the audience.

Educational goals

How to implement CPOE
What we can expect on CPOE for patient safety
What we should be careful with CPOE
What lacked RHIO project in Japan 2002

Who should attend

Anyone who likes to know about real figure of CPOE, and RHIO

1. Demographics and environments

In Japan, we have 110 million populations, 9000 hospitals (we categorize hospitals as they have 20+ beds). CPOE and paperless EMR installation rate in large hospitals (400+ beds) are 65% and 21% in 2005[1]. They are very high among countries.

Japanese outpatient clinics are very busy. Mean time for a visit is averaged in 3 to 5 minutes. 200 or more patients for a day session of an ophthalmologist or an ENT clinician are not outstanding. As a consequence, Japan's healthcare delivery system is rated No.1 by WHO, acclaiming its world's best life expectancy, lowest infant death rate, and equal opportunity of healthcare delivery. In this environment, on the other hand, we have very thin time for order inputs, facing long queue of the outpatients. Quick response and easy use are the first priorities for CPOE and EMR, EHR.

2. Introducing CPOE

In 1997, we had a symposium at JCMI (Annual MI conference in Japan) titled, "Re-evaluation of Hospital Information Systems", where pros and cons of CPOE were reported [2].

In the reports, pros were;
Shortening of waiting time of patients (3 hours became less than 1.5 hours)
Information sharing among departments
Wiping out unreadable handwritten order documents (avoiding errors),
   while cons were;
Time-consuming keyboard inputs, including Kanji character selections
Delayed response time of database
Big investments.

At that year, CPOE installation rate was only 15% among large hospitals. (Around same as nowadays in US). Now, we see what kind of orders are easy and enjoyed, what are still awkward.

Repeating orders are very easy, so doctors learned that first tackle is worthwhile. Orders, which require detailed episode description, e.g. CT examination, still take time. Now doctors are claiming paperless EMR for automatic import from edited episode. [3]

By CPOE, orders are issuable in any place in the enterprise. Doctors appreciated this.

We tried many methods to force doctors to input orders. Some were successful by preparing useful clinical database, based on the input data. Others honored the busiest input persons in large ceremony. However, after all, largest incentive by CPOE is patient safety.
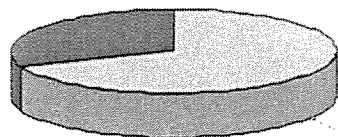
3. Episodes of patient safety by CPOE

In September 2005, a survey was conducted to all hospitals in Shizuoka prefecture, asking about patient safety by CPOE. Among answered hospitals, 39 hospitals had CPOE. Figures show the results.

We have strong evidence that CPOE is contributing patient safety. Episodes reported are;

CPOE contributes patient safety?
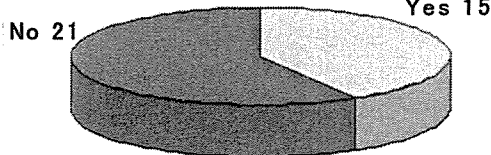
Unknown 8
No 1
Yes 30
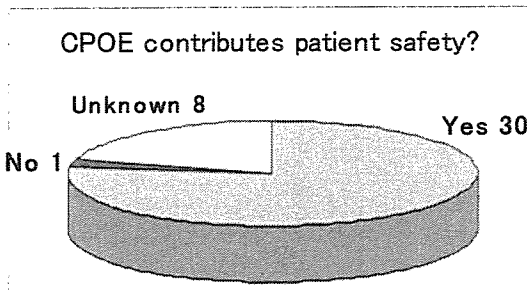
12 cases by drug name check,
5 cases by drug dose check,
3 cases by duplicate order check (image examinations and prescriptions)
2 cases by patient identification feature.

Have any real experience of patient safety by CPOE?

No 11   Yes 25

Have any real experience of patient safety THREATENED by CPOE?

No 21
Yes 15

On the other hand, we have to recognize errors by CPOE. Episodes reported are;
3 cases by miss-selection of drugs with name resemblance (typical case is Succin (Myo-blocker) and Saxizon (Thyroidism)), both displayed by 3 first phonetic letter input,
3 cases by timing problem (order correction was not in time),
2 cases by too-easy repeat orders (left unnecessary orders),
1 case by too much trusting on drug name checking,
1 case by too abbreviated clinical episodes with image examination order, because of awkwardness of typing.

We have to recognize that gimmicks that we prepared for easy use of CPOE may cause errors. Patient safety can only be achieved by Man-Machine system in CPOE environment.

4. Precise patient safety data by CPOE

International Medical Center of Japan at Shinjuku, Tokyo has installed a system called POAS (Point Of Act System), where every activity in healthcare are recorded and checked by bar code. For example in case of drip infusion order, order issue, drug pick, dispatch from pharmacy, receipt by ward, storage in ward, mix, drip start, and drip end, are all checked and recorded. By this tremendous system, 2 million yen per year has been saved by avoiding discarded drugs only [4,5]. Because system can recognize whether mixing has already been done or not, users can stop until the last minute before mixing. Rate of changing orders are rather high, especially at pediatric department, where rates climb up to 40%.

For contribution to patient safety, following figure is one of example.
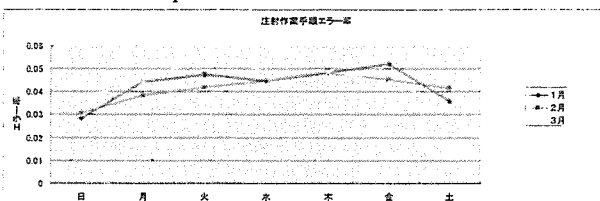
In this, left to right is Sunday to Saturday; vertical axis is error beep rate. Because in the hospital, injection can be allowed only after matched barcodes of patient ID, drug bottle ID, and operating nurse ID. Any miss match causes error beep. By this, we observe lower rate of beeps in "blue Monday". Other figure of "Error beep frequent time slot of the day", "Error beep rate vs. experience years of the job" would be displayed in the workshop.

5. Twenty-six EHR project in Japan in 2002, -survivors and ruins

In 2002, Ministry of Economics, Industry and Trade sponsored 26 projects of regional data exchange between healthcare providers. Total purse was more than 20 billion yen (200 million USD). After the aid money period, now, only few are surviving. Most of them starved for maintenance expenses. The reasons, we summarize are;

Lack of business model of network based implementation, where cost network including digital certificates and other necessities are still high.

Lack of standards. Most center host institutes improved their systems, but the improvement has not transferred to other institutes, because of this.

Too much expectations that EMR would yield wide range of information out of stored data, which is difficult without common controlled vocabulary.

6. Final remarks

By learning these lessons, we in Japan are now promoting standard activities, developing PKI in common use, clarifying the objects of EMR, EHR, and watching how other countries EHR projects are overcoming all the expected problems.

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