Medical Informatics in IRAN

By:
Morteza MohammadJavadi
Soroush Baseri Saadi
M.Sc. In Biomedical Engineering, VUB
Overview

- Background
- Health network outlook
- Structural Health services
- Health insurances
- Health Information Service (HIS)
- E-Health
- ICT and EHR
- Legislation Law
- Security Principle of EHR
- Challenges and Solutions
- References
Background Information

• Geographic setting
  – 1,648,000 km2
  – 32 Provinces
  – 76,424,443 Inhabitants

• The political system
  – Based on the 1979 Constitution
    • Supreme leader
    • President
    • The Iranian Parliament

• Internet entrance (1993)
Health Network outlook

- General Description
  - Integrated MOHME (1985)
  - Three layers of authority

### Healthcare system in Iran (2011)

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Schools</td>
<td>51</td>
</tr>
<tr>
<td>Medical Students</td>
<td>1 million</td>
</tr>
<tr>
<td>Professors of Medicine</td>
<td>20,000</td>
</tr>
<tr>
<td>Hospital Beds</td>
<td>120,000</td>
</tr>
<tr>
<td>Village Clinics</td>
<td>20,000</td>
</tr>
<tr>
<td>Doctors</td>
<td>100,000</td>
</tr>
<tr>
<td>Nurses</td>
<td>170,000</td>
</tr>
</tbody>
</table>
Health Services

• Based on three pillars:
  – the public-governmental system, the private sector, and NGOs

• Primary Health Care (PHC)
  » Devised in 1981 by creating health houses
  » Basic structural unit of public-health
  » Services like immunization, public-health, family planning, occupational health, environmental health and ...

• Secondary and tertiary
  – Private sector, NGOs (MAHAK)

❑ Family Physician project to strengthen PHC
  limitations of resource allocation and policy-making
Main Health Insurances

1. The Social Security Organization (28 million)
2. The Medical Service Insurance Organization (38)
3. The Military Personnel Insurance Organization (2.5)
4. Imam Khomeini Relief Foundation
5. Several smaller schemes: Banking system, I.R. Iran Radio and Television, Municipalities, Oil and Gas Industry, and other.
6. Private insurance (most complementary)

- About 95% of population covered (2007)
- lack of Integrated insurance database and geographical coverage → Provision of a free and comprehensive basic health care packages by MOHME (2013)
Health Information System

Departmental
- Clinical (ICU, ADT)
- Financial

Knowledge-Based
- Diagnostic
- LIS

Based on WHO (HMN)

Input
- Resources

Process
- Indicators
- Data sources
- Data Management

Usage
- Use of Information
- Information on products
E-health Deployment

- **E-health**: practically is use of ICT in support of health-related field

- Health-care → Information-intensive industry

- Benefits → Can be:
  - Clinical
  - Economic
  - Organizational
  - Patient-related
  - Professional and technical issue
• E-health History in IRAN

**Mide-1990s** → first domestic software package for patient registration

**Late-1990s** → the Social Security Organization equipped its own medical centers with informatics and HL7 standard

**2002** → Iranian National ICT Agenda (TAKFA)

• Iran’s Electronic Health Records System
  – **SEPAS**
TAKFA (by its initials in Persian) is the first complete and countrywide plan for ICT
According to the architecture plan for national EHR in Iran:

1. Information system level 1 (peripheral level)
   Connected to medical equipment or portable devices such as smart cards or PDAs, cannot be integrated with national level, simply for the ease of data entry.

2. Information system level 2 (intermediate level)
   which is installed and utilized in health providing centers.

3. Information system level 3 (central level)
   Installed at the ministry of health and medical universities, serve as a infrastructure of the whole network.
Iranian electronic health record

SEPAS (meaning “Thanks”)
The greatest information technology project in the health sector of country

- supported by Iranian ministry of health
- Health information of all citizens from birth to death will be recorded in their individual EHRs
- Open source information systems
- Patient information recorded based on ICD-10 standards
- Data are packaged based on HL7 standard
Health Information Laws in Iran

Laws in the field of health information in Iran, based on the law books:

I. Laws related to keeping patients’ health information
II. Laws to observe confidentiality and to ensure privacy of a patient’s disease
III. Reports of cancer cases, mortalities, and certain communicable and non-communicable diseases
IV. Access to information
• The main problem of the health information law in Iran: the existing laws are mostly extracted from the laws in other fields of health.

the reasons for deficiencies of laws:

1. The cultural conditions of the community
2. The status of the health information system
3. Managers and policy makers in the health field
4. Public beneficiaries of laws, such as healthcare providers and the general public.
Security principles for Electronic Health Records in Iran

Factors to guaranteeing the confidentiality of EHR information:

1. **Data collection**:
   - The collection of health information with patient’s consent
   - The consent documents should be included in the patient’s health records.

2. **Data usage**:
   - The use of health information for current care and treatment without the patient’s consent,

3. **Data disclosure**:
   - The disclosure of electronic health information under law
   - Punishments for unauthorized disclosure of patient’s health records
4. **Access to information:**
   - the patient has right to obtain complete health information

5. **Information maintenance:**
   - Information must also be up-to-date when delivered
   - Patients are not the owners of their records.
   - Information kept until expired time
   - Mechanism for destruction of paper records

6. **Responsibilities of custodians:**
   - transmission of health information abroad under certain conditions
   - Awareness of the patients about policies and procedures of privacy in electronic health information records
Problems and Solutions of e-Health in IRAN

**Problem**
- Information technology barriers
- Legal and privacy violation barrier
- Lack of connection and standard data transmission system
- Cultural resistance
- Failure in implementation of EHS

**Solution**
- Advanced data transmission hardware
- Sophisticated security methods
- Unique HIS
- Training courses, motivation, punishment solutions
- Cooperation of implementation and medical authorities
Developing EHR in Iran:

- **Increase:**
  - Public access to healthcare services in deprived regions
  - Delivery of modern electronic services such as telemedicine
  - Establishment of statistical registry system
  - Management of health centers
  - Accessibility of medical information in cases of crisis and natural disasters

- **Decrease:**
  - Medical errors and complications
  - Drug adverse effects through patient backgrounds
  - Accounting, documentation and archiving expenses
  - Time for retrieving and analyzing medical data
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Thank you