HEALTHCARE TECHNOLOGY: THE NEED FOR INDIAN STANDARDS

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Guest Lecture

Healthcare Technology: The Need for Indian Standards

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Bioengineering

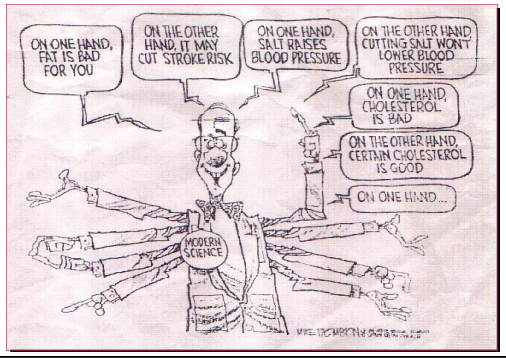
- There are two wings:
  - Biotechnology (related to cellular and molecular manipulation, including genes)
  - Biomedical Engineering (related to signal and image processing, instrumentation, materials, electromagnetic phenomena, mechanics and informatics): Again two approaches –
    - Using modern Technology to understand biological phenomena better, and
    - Using Biological principles to manufacture more efficient equipment
- Bioinformatics bridges the gap between the two wings and also allows the scope for much more.

Why is multidisciplinary interaction at all necessary?

For a novel diagnostic technique (EGG or electrogastrography), the two leading groups (McCallum and Chen; Mintchev and Bowes), have as core faculty one (electrical) engineer (JDZ Chen / MP Mintchev) and either a physiologist (RW McCallum) or surgeon (KL Bowes).

Healthcare Technology Assessment (HCTA)

The systematic evaluation of properties, effects, and/or impacts of health care technology. It may address the direct, intended consequences of technologies as well as their indirect, unintended consequences. Its main purpose is to inform technology-related policymaking in health care. HCTA is conducted by interdisciplinary groups using explicit analytical frameworks drawing from a variety of methods. (NICHSR, NLM, USA)



STANDARDS

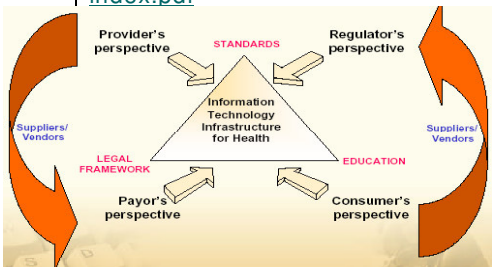
- **HL7**
- **ICD-10**
- **DICOM**
- **OTHERS**

Telehealth = **Telemedicine** (remote medical practice) + **eHealth** (Healthcare delivery information interchange using Internet)

Seven levels of HL7:

- The physical layer deals with data at a bit level
- The data link layer breaks input data into data frames and the receiver returns acknowledgment frames
- The network layer controls the transmission of packets of data, including routing and control of traffic congestion
- The transport layer manages data from the session layer, if necessary splitting it into smaller sections
- The session layer allows machines to communicate, this includes synchronization of activity
- The presentation layer manages the syntax and semantics of information, this may also include data compression and encryption
- The application layer defines file structure and transfer, and manages compatibility between different systems

http://www.mit.gov.in/telemedicine/index.pdf



Identifier	Description	Issuing Authority
Healthcare Professionals	10 digit alphanumeric code (Ex - KAP.019184)	State medical councils
Healthcare Provider Organizations	4 digit alphanumeric code (Ex - AP89)	The proposed "National Health Informatics Center"
Support Service Providers	5 digit alphanumeric code (Ex - MJ675)	The proposed "National Health Informatics Center"
Individuals	15 digit alphanumeric code (Ex - AP89.7865980255)	Healthcare Providers & Payors
Employers	10 digit alphanumeric code (Ex - AADCA4278N)	Same format is continued
Payers	4 digit alphanumeric code (Ex - P9J4)	The proposed "National Health Informatics Center"

Messaging Standards

The telemedicine committee worked on messaging standards for Telemedicine as an application, and recommended that an Indian version of the Health Level 7 Standard should be developed to enable exchange of health data.

EHR / PMRI

- Level 1: Patient Administration System (PAS)
- Level 2: Common PMI - integration with departmental systems
- Level 3: Results Reporting
- Level 4: Intranet implementation
- Level 5: (N)ICU monitoring equipment linked with Clinical Information System *e.g.*, CDSS
- Level 6: Network capable of supporting full Telehealth (e-Health + Telemedicine).

Dire Facts

A study conducted by the Centre for Research in Rural and Industrial Development (CRRID), Chandigarh, in September 2000, conceded that women village health guides (VHGs) did play a role, *inter alia*, in educating rural people on immunization, family planning, health-related matters, drinking water. Why then abolish the scheme as some negative minds suggest? Better spread it countrywide. Construction, not destruction, holds a promise for the village India which Gandhiji called "Real India".

We shout "primary health", but provide "secondary care". The Association of Rural Surgeons of India (ARSI) reveal that 45 per cent of the surgeons work without an anesthetist, 68 per cent without a radiologist, 68 per cent without a qualified pathologist, 63 per cent without blood bank facilities and 32 per cent do not have any of these things. ARSI is arranging to manufacture low cost surgical equipment locally.

Rural Surgery

The Association of Surgeons of India (ASI) has accepted Rural Surgery as a specialty. While there are five-star hospitals in large cities, we have rural hospitals in the country side serving the majority population. It is this majority population that yield 80% of the country's GDP. And It is a pity that 80% of this GDP is consumed by 20% of the creamy layer. This population is guided by the dictates of the western healthcare industry which is bent on maximizing profit. And norms set by them is more bent towards this direction rather than benefit the common man of our country.

Caveats for making Guidelines

- Our per capita GNP is 400 US$ while that of European countries vary from 25,000 to 40,000 US$!
- Nearly 400 million people have NO ACCESS TO BASIC HEALTHCARE FACILITIES. Also our country has an average of 0.8 beds per thousand population while the WHO recommendation is 4 beds per thousand.
- The famous scientist Karl Popper had said "the most important quality of a scientist is intellectual humility". Those who make the guidelines for standards should have the humility to learn from **multi centric studies of both rural and urban hospitals allover India** as to the minimum and maximum requirements for healthcare services.
- The healthcare economics should be based on our societal needs and sustainable by the consumers, be it private, voluntary or government.

Where the twain shall meet?

- Bioengineering and Medical Informatics are mutually reinforcing.
- Will the doctor learn technology or the technocrat will learn medicine?
- How much of technology is to be learnt?
- How dynamic is the medical knowledge base?
- Should there be a rigid syllabus or flexibility must be accommodated?
- Do we want ONE bridge or TWO tunnels?

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