Health Information Technology (HIT) and Quality Health Care

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"When a thing is new, people say: "It is not true".
Later, when its truth becomes obvious, they say: "It's not important."
Finally, when its importance cannot be denied, they say "Anyway, it's not new."
(William James - 1842 - 1910)

Six elements of Quality Healthcare: Safety, Effectiveness, Efficiency, Timeliness, Patient centeredness and Equitability (Scottish Health Authority)

Public engage in e-Health in four ways:

1. health information on the Internet;
2. custom-made online health information;
3. online support (active engagement in social computing is the most visible)
4. tele-health

Five factors that act as barriers or facilitators for use:

1. characteristics of the users;
2. technological issues;
3. characteristics of eHealth services;
4. social aspects of use;
5. eHealth services in operation.

Capacity Building in HIT involves five stages

1. Knowledge building
2. Professional development
3. Organisational strengthening
4. Directive reforms
5. Facilitative reforms

Knowledge building

For Knowledge building, Informatics Competency is needed. Its components are the following:

Informatics Knowledge: Aware of the importance of healthcare data for improving practice

Informatics Knowledge - Privacy/Security: Aware of the secure ways of handling confidential patient data. Aware of patients' rights in computerized information management

Computer Skills: Documentation/Data capture: Uses an application to document/capture patient care data. Uses an application to plan care for patients.

Computer skills: Decision Support: Uses decision support systems, expert systems, and aids for clinical decision making or differential diagnosis

Informatics: Evidence-based Practice: Use optimal search strategies to locate clinically sound and useful studies from information sources. Identify, evaluate, and apply the most relevant information. Critically analyze data, information, and knowledge for use in site-specific evidence-based practice

Hierarchy of Information-communication technology (ICT) simplified:

i. Office Automation - (data entry, data capture)
ii. Transaction Processing - (data processing)
iii. Management Information – Analyze data to be usable information
iv. Decision Support - Health/Healthcare

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The Paradox of Professionalism and Error in Complex Systems

Professionalism & expertise are needed to prevent/mitigate errors in complex & risky work such as medicine, aviation, and military operations but there are two paradoxes:

1. They increase the risk of errors by breaking procedural rules to suit the circumstances
2. Professionals tend to ignore or hide critical information about unsafe conditions and create 'blind spots' within organizations. (Journal of Biomedical Informatics 44 (2011) 395–401)

The paradox of HIT productivity

HIT is perceived as a means to improve productivity, quality & system efficiency. However, the current study results are contradictory: Some studies do confirm HIT as a means to greater productivity and efficiency, while other studies remain inconclusive. Some studies even show that HIT can be counter-productive / hazardous. (International journal of medical informatics 80 (2011) 102–115)

Is HIT Ineffective Or Is It Sub-optimally Used By Us? This is a Billion $ query at present.

HIT in Chronic Care

With current HIT with distributed IT systems, powerful portable computing and mobile e-communication we can design a system that is patient focused, integrated and holistic in approach, and offers objective evidence-based care based on intended outcomes incorporating proactive quality assurance & error reduction in a dynamic & turbulent home environment of chronic care.

In Chronic Care, HIT can help achieve true patient-orientation and "seamless information flow for seamless care", quality in care delivery, viz., give the right treatment to the right patient, at the right time and in the right place, regularly and reliably.

We have not been able to do it till now using only traditional paper records and communication. If HIT has to achieve it, we need to ensure appropriate form and effective functioning of the technology.

Patient Centered HIT ideally needs a trans-disciplinary approach to healthcare. It creates new challenges.

We need –

i. a common language that really integrates the various health care professions (HCPs)
ii. to use terms and language as commonly understood (tackling the acronyms maze!)
iii. to learn how to effectively link various professions
iv. integrated record as a means of clinical communication to all HCPs

Organisational Barriers:

i. Non-conducive structure of organizations
ii. Tasks that are not feasible in the set up
iii. People policies which retard progress and block innovation
iv. Lack of proper incentives
v. Defunct decision processes and lack of information

We need to do more studies on organizational structure, end-users' HIT competency, incentives, liability issues, & work process issues that facilitate or retard effective implementation of HIT to enhance quality care.

Bad Health Informatics Can Kill

HIT can have positive impact on health care. But there is also negative impact of HIT on efficiency and even outcome quality of patient care. Medical 'informaticians' should feel responsible for the effects of HIT on patients and public. We need to conduct systematic analysis of HIT errors and failures to design better quality systems.

The problems can be overcome by developing & applying human-centered design, implementation, & evaluation adapted to the point-of-healthcare delivery. Such a systematic approach has been achieved in aviation, the military, nuclear power, and the consumer software industry. It can, and must, be achieved in HIT as well.

National HIT: Patient Safety Initiatives

i. Currently, there are significant gaps in the safety initiatives for HIT systems.
ii. The safety of HIT (EHR, CPOE etc) is not being explicitly addressed in most nations
iii. Standardization and monitoring of safety in system design, implementation & use of HIT is critical to ensure patient-safety.

Key Components of Successful Health IT Policy (USA-Cana da)
I. Setting clear goals and intended outcomes of HIT without being overly prescriptive.
II. Adopt an iterative-incremental management approach with strong leadership and governance model.
III. Defining frameworks for guiding policy improvement in a continual and systematic manner.
IV. Addressing meaningful use of the existing legacy health IT systems in use.
V. Capitalizing on the value of data for use in performance and quality measures, public health and research.

Summing up:

Effective HIT and quality healthcare: we do need them – Our Lives May Depend on it!