June 20, 2011 (Monday) Pre-Congress Seminars

Quality in Health Care

Healthcare as a Socio-Technology

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Healthcare as a Socio-Technology

Summary

Healthcare as a socio-technology

- Healthcare is regarded as a "socio-technology".
- The socio-technology is defined as a reproducible methodology to achieve objectives which must be possessed by a society as a whole.
- The level of healthcare represents the level of the society.

Inherent technology and Management

- To achieve quality in general, the necessary conditions are inherent technology (or domain specific technology) and management that makes the best use of the technology.

Body of Knowledge (BOK)

- This session discusses the required body of knowledge to be possessed by a whole society and the way of application of the societal knowledge.

Healthcare as a Socio-Technology

Structure

1. **Concept of the Socio-technology for Healthcare** (25')
   Yoshinori Iizuka, The University of Tokyo
   The concept of socio-technology for healthcare and the form of socio-technology for healthcare.

2. **Structured Clinical Knowledge and its Application as a Socio-Technology – PCAPS** (25')
   Satoko Tsuru, The university of Tokyo
   A structured model for clinical knowledge to be used in clinical processes and its application as a knowledge-base for healthcare social system.

3. **Scheme for Healthcare QMS and its Implementation as a Socio-Technology – QMS-H Model** (25')
   Masahiko Munechika, Waseda University
   A scheme for quality management system model for healthcare and its implementation in hospitals.

4. **Panel Discussion** (15')

Concept of the Socio-Technology for Healthcare

Yoshinori Iizuka
The University of Tokyo

Profile – Yoshinori Iizuka

Dr. Yoshinori IIZUKA, Professor,
School of Engineering, The University of Tokyo

His major as a university student was statistical analysis.
Now his research has been focusing on **quality management**, including TQM, ISO 9000, **Structured Knowledge Engineering**, **Healthcare Social System Engineering**, and Software Quality.

President, Japanese Society for Quality Control (JSQC) for 2003-2005.
Vice President (Publication), International Academy for Quality (IAQ)
Chair, Deming Application Prize Committee (TQM)
Chair, the national committee for ISO/TC 176 (ISO 9000s)
Chair, QMS Accreditation Committee, Japan Accreditation Board (JAB).
A Board, Japanese Society for Healthcare Quality and Safety
Chair, Society of Embedded Software Skill Acquisition for Managers and Engineers (SESSAME)
Chair, JUSE/SQiP (Software Quality Profession)

Awarded ***Deming Prize for Individuals*** in 2006.
Awarded ***Nikkei Quality Management Literature*** in 1996, 1998, 1999, 2002, 2003, 2006 and 2009.

Quality Approach to Healthcare

- Needs for healthcare quality and safety
  - Healthcare sector implements various activities to enhance healthcare quality and safety
  - Challenges to apply concept and methodology of quality management
- Quality approach
  - One of the promising approaches
  - Difficult to apply quality management as-is to healthcare

Healthcare as a Socio-Technology

- Socio-technology
  - Collective efforts of all healthcare players are essential
  - Healthcare is a socio-technology
  - Socio-technology: A technology (a reproducible methodology to achieve an objective) to be owned by whole society
- Reflection of the level of the society
  - Safety of aircraft, traffic, factory and nuclear power plant, environment and energy management, information and knowledge infrastructure, and social security such as crime control
- Healthcare as a socio-technology
  - Healthcare quality and safety management technology as a socio-technology
  - Concept, methodology and implementation of the framework of healthcare as socio-technology

For Excellent Work System

- Technology
  - A reproducible methodology necessary to achieve an objective
  - To deliver a desired result, inherent (or product-specific) technology needs to be made available
- Management
  - A methodology to continually and efficiently achieve an objective by utilizing the inherent technologies
  - Even if it is known what to be done technically, it is quite difficult to do what supposed to be done to achieve an objective.
- People
  - Those who work by using the established technology and management method
  - People must be equipped with capability (knowledge and skill) and motivation
- Organizational culture
  - Climate and values of an organization which support technology and management and influence people's way of thinking and doing

Technology and Management

- To achieve quality of product and services
  - Inherent technology, or product/service-specific technology
  - Management systems to utilize the inherent technology as a whole organization
- Management technology
  - “Inherent technology” and “Management technology”
  - Management technology: Technology (or methodology) to make use of inherent technology
- Typical management technology
  - Procedures, manuals, instructions, guidelines, templates, worksheets
    - Specify and recommend the measures necessary to achieve an objective
    - Support effective application of proper inherent technology by well organized representation of technical contents

Which is more important,
“technology” or “management”?

Inherent Technology

- In the other sectors than manufacturing…..
  - Not necessarily easy to apply quality management
  - A brilliant success in the manufacturing is because, for example, they correctly identify potential technical causes of defects when they worked to reduce defects.
  - The level of any management system cannot exceed the level inherent technology which is embedded in the management system
- Visualization, Structuration and Standardization of Technology
  - Management technology like quality management worked effectively in the manufacturing sector because inherent technologies were established fairly well
  - The level of visualization, structuration and systematization of the inherent technology is essential as well as the technical contents of inherent technology
  - Patient Condition Adaptive Path System (PCAPS)

Quality Management System Model

- Quality management
  - The best approach to understand the significance of management technology and apply it into the management of an organization
- Quality Management System
  - Q: quality
    - Customer focus: for customers
    - Objective-oriented: for what, why
  - M: management
    - Management: methodology to make the best use of technology
    - Principles of management: PDCA, standardization, process control, fact, improvement, cause analysis, people
  - S: system
    - Systematization
    - System design to achieve an objective
    - Recognition of roles of each department, function and personnel

Forms of Socio-Technology

- Social common sense
  - Principles: Common recognition about healthcare quality and safety principles
  - Basic model of BOK: Common recognition about basic structural model of body of knowledge (BOK)
- Knowledge infrastructure
  - Establishment of BOK: Development of BOK (technology and management); Consensus building among experts
  - Availability of knowledge: Infrastructure to disseminate and promote knowledge; Consulting; Opportunity for networking
  - Acquisition of new or advanced knowledge: Method to acquire new or advanced technical achievements; Upgrading of knowledge contents
- Implementation
  - Implementation and application of BOK contents in healthcare organizations
  - Improvement of the application level in healthcare organizations

Forms of Socio-Technology

For quality/safety Form of socio-technology		Inherent technology (clinical expertise)	Management (healthcare quality management)
Social common sense	Principles Basic models	Basic model of clinical process	Healthcare quality and safety principles Quality management principles
Knowl-edge infra-structure	BOK structure Knowledge contents	Structural model of clinical knowledge Clinical operation flow	Healthcare QMS model Safety management system model Work process model Introduction/promotion model
	Accessibility Availability	Distribution of contents Software application	Internet, Publication, Training, Study meeting, Consulting
	Knowledge acquisition	Visualization of new technical achievements Analysis	Visualization of new knowledge Analysis Transformation to knowledge
Imple-mentation	Applications	Application in hospitals Application in region Regional alliance Feedback for improvement of clinical contents	Application in hospitals Application at region or nation Feedback for improvement of healthcare management model

Principles for Healthcare Quality

- Principle 1: Patient focus
  - Shift from focus on healthcare providers' values to patient-centered healthcare
- Principle 2: Human factor
  - Understand people's weakness and support them rather than blame them
- Principle 3: System-oriented
  - Shift from dedication and repentance of individual to system-oriented assurance and improvement
- Principle 4: Participation of all people
  - Shift from total reliance on specialists to all people participation
- Principle 5: Analysis of failure
  - Shift from looking for whom to blame to learning lessons for future improvement

Knowledge Model

- Healthcare process
  - Patient condition adaptive intervention process
  - Medical intervention adapted to ever-changing patient condition

A model

- Identify and recognize patient condition
  - Present patient condition, Possible patient condition
- Set up a target
  - Ultimate target, Tentative target
- Medical intervention plan
  - Medical intervention strategy, Medical intervention plan, Adaptive plan to respond to patient condition
- Intervention
  - Intervention, Monitoring, Response to condition

Body of Knowledge

- Knowledge on clinical processes
  - Visualization of clinical expertise, clinical technologies and clinical skills in a way appropriate for healthcare
  - PCAPS: A tool to structure knowledge necessary for medical diagnosis and treatment
  - Standard work flow for clinical processes

- Knowledge on healthcare quality management system
  - Excellent system models, standard work procedures and knowhow about organizational management to assure healthcare quality and safety
  - QMS-H model: visualization of quality functions, a method for systematize those functions to assure healthcare quality and safety

Accessibility to Knowledge

- Infrastructure, mechanism and opportunity to disseminate, promote and exchange the knowledge
  - Build a knowledge base for healthcare quality and safety
  - The knowledge base made available with the latest achievements
- Availability of clinical knowledge contents
  - Distribution of knowledge contents to appropriate healthcare organizations in a timely manner
  - Software application to support an effective use of these clinical knowledge contents.
- Dissemination and promotion of QMS-H model
  - Publication, Internet, seminar, study meeting and consulting
  - Support for application of QMS-H model
- Standardization
  - Dissemination of correct knowledge
  - Regulation – Make them follow the correct things by force ….
  - Guidelines – Promote recommended practices

Knowledge Acquisition

- Method to acquire and improve knowledge about healthcare quality and safety
  - A method to extract essential knowledge about healthcare quality and safety from patient cases, experience and accidents, analyze it, and share it in society
- Consensus building process
  - Establish a process to build consensus among specialists, profession, and experts
- A scheme for BOK
  - Systematically accumulate knowledge and technical achievements in BOK
  - Make it possible for users to use the BOK to get advanced knowledge
  - Improve the BOK based on experience accumulated by its users.

Application

Structured Clinical Knowledge

- Apply standardized clinical knowledge
  - Apply correct healthcare services widely and share healthcare technologies in society
  - Promote sound clinical processes based on well structured clinical knowledge, that addresses appropriate medical intervention adapting to patient condition - PCAPS (Patient Condition Adaptive Path System)
  - Promote sophisticated regional alliance
- Improve clinical knowledge contents
  - Accumulate and share experience gained through application of the structured clinical knowledge in healthcare organizations
  - Upgrade healthcare services in the entire society

Application

Healthcare Quality Management System

- Develop comprehensive healthcare quality management system
  - Develop its own internal knowledge infrastructure
  - Design and develop its healthcare work system
  - Establish a mechanism to train and motivate their people and to encourage them to participate in quality and safety activities.
- Implement safety management system
  - Establish and implement a process to promptly respond to events, incidents and accidents

Improvement of Work System

- Develop a mechanism to improve healthcare work system
  - Appropriately analyze problems when occur
  - Present proposals for adequate system improvement of the work process
  - Appropriately check if proposals for system changes do not trigger any adverse side-effects
  - Revise standard work procedures in a way to reflect the change
- New essential knowledge
  - Accumulate new essential knowledge acquired as a result of analysis as an organizational knowledge for use in the future

Summary

- Healthcare is a "socio-technology"
  - Socio-technology: A technology (a reproducible methodology to achieve an objective) to be owned by whole society
  - Reflection of the level of the society
- Two types of technology
  - "Inherent technology" and "management technology"
- Forms of socio-technology
  - Social common sense
    - Principles, Basic model
  - Knowledge infrastructure
    - Establishment, Availability, Acquisition
  - Implementation
    - Implementation and application in healthcare organizations

Thank you for your attention !