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An Assessment of the Integrated Patient Healthcare Information Systems in Malaysia Healthcare Sector

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Integrated Patient Healthcare Information Systems (IPHIS) or Hospital Information Systems (HIS)

- Are computer based systems designed to manage medical and administrative information that enable healthcare professionals perform their jobs effectively and efficiently.
- The systems have become an important part and solution of healthcare information management and administration encompassing clinical, administrative and financial applications.

Telehealth

Is expected to make the Malaysian healthcare system

- More integrated and accessible.
- It could assist in realizing the healthcare vision of the nation to focus on lifelong wellness,
- Individuals, families and communities are empowered to play a role in managing their health.

The Research Objectives

The objectives of this research are to:

- Identify key components of the integrated patient healthcare information systems,
- Examine their relations with decision-making that affect the value of such systems in terms of improvements in healthcare process.

The Research Importance

The integrated systems could assist community healthcare providers to work as a single operating entity focused and aligned on improving patient care, operational efficiency and cost effectiveness.

Principles of Successfully Integrated Healthcare Systems

- **Ten universal principles of successfully integrated healthcare systems have been identified:**
 - (1) comprehensive services across the continuum of care;
 - (2) patient focus;
 - (3) geographic coverage and rostering;
 - (4) standardized care delivery through interprofessional teams;
 - (5) performance management;
 - (6) information systems;
 - (7) organizational culture and leadership;
 - (8) physician integration;
 - (9) governance structure;
 - (10) financial management.

(Suter et al., 2009)

Principles of Successfully Integrated Healthcare Systems

i. Comprehensive services across the continuum care:

The integrated health systems assume the responsibility to plan for, provide or purchase and coordinate all core services along the continuum of health for the population served. This includes services from primary through tertiary care as well as cooperation between health and social care organizations.

ii. Patient focus:

The integrated health systems need be easy for patients to navigate, and the patient engagement and participation is required. Further, the patients or consumers are provided with opportunities for input on various level of systems. This ensures the patient receives the “right care at the right place at the right time

Principles of Successfully Integrated Healthcare Systems

iii. Geographic coverage and rostering:

The integrated health systems provide geographic coverage and rostering to maximize patient access to the services they provide and to minimize duplication, and to identify population in a geographic area, with consumers (i.e. patients) having the right to exit if they wish to seek services from other providers.

iv. Standardized care delivery through interprofessional teams:

This principle promotes continuity of the care process. In this regards, all professionals are considered equal members; professional autonomy is maintained, and incentives are provided to meet performance and efficiency standards.

Principles of Successfully Integrated Healthcare Systems

v. Performance management:

The good performance monitoring systems including indicators to measure outcomes at different levels of systems are essential for the success of the integrated health systems. The performance management involves protocols and procedures that reflect the importance of measuring care processes and outcomes and using the information for service improvement.

(Hunter, 1999; Wilson *et al.*, 2003).

vi. Information systems:

The information systems enhance communication capacity and information flow across integrated pathways , For example, electronic health records can link patients or consumers, and stakeholder groups, thereby information can be accessed from anywhere in the health system to facilitate communication between care providers.

(Coddington *et al.*, 2001c; Hunter, 1999; Leatt *et al.*, 2000; Wilson *et al.*, 2003)

Principles of Successfully Integrated Healthcare Systems

vii. Organizational culture and leadership:

The leadership with vision and organizational culture that is parallel with the vision are required for the implementation of an integrated health system. In this regard, the leaders need to promote the vision and mission of integration among staff to assist them take ownership of the process.

(Drazen et al., 1998; Friedman et al., 2001; Miller, 2000; Shortell et al., 2000).

viii. Physician integration:

The physicians need to be integrated at all levels of the system and play roles in the design, implementation and operation of an integrated health system, The system network enables informal connection among practitioners and patients, and has been reported to facilitate physician integration.

(Appleby et al., 1999; Burns, 1999; Coddington et al., 2001c; Hawkins, 1998).

Principles of Successfully Integrated Healthcare Systems

ix. Governance structure:

The governance structure that promote coordination need to be developed in order to combine or bring together organizations and services into an integrated health system through contractual networks.

(Hawkins, 1998)

x. Financial management:

The integrated health systems would result in economic benefits because of economies of scale and cost reductions in both administrative and clinical areas

(Coburn, 2001).

Telehealth in Malaysia

Telehealth Defined as:

The integration of information, telecommunication, human-machine interface technologies and health technologies to deliver health care, to promote the health status of the people and to create health.

Telehealth in Malaysia

The objectives of the Telehealth are to:

- strengthen the healthcare delivery via the use of telecommunications, information and multimedia technologies.
- used as a tool to reshape the healthcare delivery system by becoming more virtual, more distributed and more integrated resulting in better healthcare delivery and efficient

(Ministry of Health Malaysia, 1997).

Components of the Integrated Patient Healthcare Information Systems

The main components of IPHIS are:

- Clinical Information System (CIS)
- Financial Information Systems (FIS)
- Laboratory information systems (LIS)
- Nursing information systems (NIS)
- Pharmacy information systems (PIS)
- Picture Archiving Communication Systems (PACS)
- Radiology information systems (RIS)

The Differences between IPHIS Components

No.	Name of Components	Differences	
		Type of patients/consumers/users	Departments
1.	Clinical Information System (CIS)	Doctors, Nurses	Clinical
2.	Financial Information Systems (FIS)	Accountant	Financial
3.	Laboratory information systems (LIS)	Lab Officer	Laboratory
4.	Nursing information systems (NIS)	Doctors, Nurses	Ward
5.	Pharmacy information systems (PIS)	Pharmacists	Pharmacy
6.	Picture Archiving Communication Systems (PACS)	Imaging Officer	Imaging
7.	Radiology information systems (RIS)	Imaging Officer	Imaging

(Ismail & Abdullah, 2012)

Elements of Decision Making in Healthcare

- The IPHIS could provide the required information to each level of the management at the right time, in the right form, and in the right place. Therefore, the decisions to be made will be effective and efficient

(Ismail et al., 2010).

- The IPHIS play an important role in planning, initiating, organizing and controlling the operations of the sub-systems of the hospital, and resulting in a synergistic organization in the process.
- The IPHIS improves patient care by evaluating data and making recommendations for appropriateness care.

Conclusions

- The use of ICT is an essential effort taken by the Ministry of Health Malaysia towards establishing of the future health care system.
- The ICT initiative can help fulfill the government vision for health that is providing an integrated delivery system across each business unit of a hospital which will help the care providers to deliver effective and efficient care.
- In this context, information systems have made a significant positive impact on the health care sector.
- The aim of implementing the IPHIS is to facilitate and improve the quality of patient care.
- The ICT including computerization and networking have brought Malaysia a long way in monitoring, analyzing, and disseminating information on health data.

In future,

- The IPHIS should be implemented in all hospitals with effective integration and networking. Besides, the understanding and awareness of the IPHIS is needed among hospital management and staff, patients, users, consumers and other stakeholders for the successful implementation of IPHIS and future benefits.