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HEALTH INFORMATION MANAGEMENT & TECHNOLOGY: A NEW ERA OF TRANSFORMING HEALTHCARE

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ABSTRACTS

The purposes of this paper are to conceptualize the role of health information management in the context of a technologically driven and managed health care environment. This paper will gives an idea about the health information management & technology transformation in new era of healthcare industry. This is understood that No one would deny the need to transform health care. Information technology is capable of transforming health care organizations and delivering measurable value. However, these organizations will have to deploy effective, proactive strategies for managing information and adapting to the opportunities the technology offers. If, for example, an organization wants to become paperless, its information strategy must include appropriate tools to store and access unstructured data components of the medical record as well as structured data. An Electronic Health Management System is a critical element of this strategy. Also, a plan for managing change must be developed to mitigate technology risks. This can be realized through the development of a clear vision of the future and strong leadership, among other key items. Developments in information technology will drive the change in records management; however, it should be the health information managers who drive the information management change. The role of health information management will be challenged to use information technology to broker a range of requests for information from a variety of users, including health consumers.

Keywords: Health Information Management; Health Informatics, Medical Informatics, Bio- Informatics

1. INTRODUCTION

The provision of a service that supports the informational aspects of patient care is fundamental to the business of health information management. These informational aspects involve the availability of relevant and contemporaneous information for use in ongoing individual patient care, to assist the work of clinical staff through knowledge-based systems that can support diagnosis and treatment, and through provision of tailored and practical data for administrative and management purposes and decision-making. This view contrasts with the common perception of the practice of health information management (HIM), which is to maintain the physical aspects of patient records and to store the paper trail generated as a result of patient care. As technological solutions for managing patient information saturate the health care environment and change the physical aspects of record management, some individuals may sense a threat to their professional identity or integrity. It is argued that, regardless of the solutions proposed by vendors of information technology for the management of patient records, the

informational aspects of HIM practice are vital to the work of health facilities and will, in fact, strengthen the identity of health information managers (HIMs) as knowledge brokers.

2. HEALTH INFORMATION MANAGEMENT

Health information management (HIM) is the practice of acquiring, analyzing, and protecting digital and traditional medical information vital to providing quality patient care. Health information management professionals work in a variety of different settings and job titles. They often serve in bridge roles, connecting clinical, operational, and administrative functions. These professionals affect the quality of patient information and patient care at every touch point in the healthcare delivery cycle. Having skilled HIM professionals on staff ensures an organization has the right information on hand when and where it is needed while maintaining the highest standards of data integrity, confidentiality, and security. HIM professionals are highly trained in the latest information management technology applications and understand the workflow in any healthcare provider organization from large hospital systems to the private physician practice. They are vital to the daily operations management of health information and electronic health records.

3. HEALTH INFORMATION TECHNOLOGY

Health information technology refers to the framework used to manage health information, and the exchange of health information in a digital format. Professionals who work in health IT are focused on the technical side of managing health information, working with software and hardware used to manage and store patient data. HIT professionals are usually from Information Technology backgrounds, and provide support for electronic health records and other systems HIM professionals use to secure health information.

4. HEALTH INFORMATICS

Health Informatics (HI) is a science that defines how health information is technically captured, transmitted and utilized. Health informatics focuses on information systems, informatics principles, and information technology as it is applied to the continuum of healthcare delivery. It is an integrated discipline with specialty domains that include management science, management engineering principles, healthcare delivery and public health, patient safety, information science and computer technology. Health Informatics programs demonstrate uniqueness by offering varied options for practice or research focus.

1. There are four major focus research areas in informatics education reflecting various disciplines:
2. Medical/Bio Informatics – physician and research based, attracts medical students
3. Nursing Informatics – clinical and research based, attracts nursing students
4. Public Health Informatics – public health and bio surveillance based, attracts public health students
5. Applied Informatics – addresses the flow of medical information in an electronic environment and covers process, policy and technological solutions, attracts HIM students

5. HEALTH INFORMATION MANAGEMENT INFORMATION TECHNOLOGY ENVIRONMENT

5.1. HEALTH INFORMATION TECHNOLOGY TRANSFORM

Health Information technology and the ways it will transform the management of health care information dominate the literature as a key health industry trend. For example: point-of-care systems (Perreault &Metzger, 1999), internet and intranet platforms for access to health-related information (Chadwick,Crook, Young, McDowell, Dornan & New, 2000; Halamka & Safran, 1999; Schoenberg & Safran, 2000;Shortcliffe, 1998), knowledge

management (Barry, 1996; Butcher & Rowley, 1998; Kerka, 1997; Malhotra, 2000; Malone, 2001), the impact of Australia's HealthOnline strategy (National Health Information Management Advisory Council, 2001; Mount, Kelman, Smith & Douglas, 2000), sharing of data across health care sectors, development of natural language processing and health terminologies (Cohn & Chute, 1997; Fenton, 2000; Johns, 2000; Peden, 2000; Scott, 2002; Schnitzer, 2000) and consumer-led and -controlled interactions with the healthcare system (Kloss, 1999)

5.2. DEVELOPMENT IN HEALTH INFORMATION TECHNOLOGY

Developments in health technology have generated an expectation among health industry decision-makers and also health care consumers for access to health information, which is no longer a homogeneous commodity collected solely for the purposes of patient care. In addition to supporting diagnostic and treatment decisions, information is used for self-care, health promotion, case mix-based and other funding decisions, resource allocation, risk management, planning and evaluation, health insurance and for research and health statistics. Therefore, the role of health information managers will be challenged to provide health information services and solutions which respond to myriad requests for health information. The boundaries for managing information are increasingly blurred as the need for information crosses institutional, community and primary health services. Information technology will drive the trend for seamless and integrated information systems, but it will be health information managers who will manage the quality of the data resource and perform the expanded analysis and reporting on health data. The nature of this expanded analysis will be, for example, to profile health services and explore links with morbidity data, general practice services, data related to pharmaceutical use and health insurance data, and to report on health issues.

With better integrated information systems, health information collected in hospital settings should be used to facilitate the transition to care in community and other health settings. In this role, health information managers should become agents of collaboration for information services.

5.3. NEED OF HEALTHCARE INFORMATION MANAGER'S

In particular, health information managers need to understand the language of health and to participate in the development of mechanisms for natural language data collection and processing. Increasingly, the health industry is exploring the need for standardized clinical terminologies (Cohn & Chute, 1997) and the health information manager requires an understanding of the relationships between clinical terms used to describe unique medical concepts and the more aggregated form of data collected with standardized classifications. Facilitating the collection of consistent, comparable clinical information is necessary for functions such as outcomes research, continuous quality improvement, epidemiology and evaluation.

6. THE HEALTH INFORMATION MANAGEMENT: CONCEPTUAL FRAMEWORK

In the roles held by health information management professionals there is generally a clear understanding by them of the work to be performed, the associated responsibilities and the tradition that has programmed these roles into the health care system. However, the question might be asked, is there a conceptual understanding of the business of health information management and how it should be programmed into a more technologically driven health care environment? It is argued that, if we truly appreciate the contribution that health information managers' skills and expertise can make to health care delivery, technology should be viewed as a new tool for health information managers rather than as a substitute for health information managers. In the following conceptual framework, a model is proposed for the business of health information management that can be applied, irrespective of the nature of the information systems (electronic, manual or a combination of the two).

Conceptually, the role of a health information manager may be portrayed as that of a manager of health information who is able to profile health information and provide health information services and solutions. These activities are set within the health care delivery context, and so an understanding of the health care system and trends within the management of health care is an important platform upon which to base future developments in health information management services.

Fig.1. *The concept diagram for health information management*

The concept diagram for health information management practice illustrates an expanding core, with layers of information processing and management adding to the knowledge base for health. At its core, health information management involves data capture and this requires health information managers to have: an understanding of what data needs to be collected an understanding of what information is available in the context of health services systems for collection, classification and aggregation of health-related data a thorough knowledge of medical terminology, anatomy, physiology and fundamentals of medicine in order to transpose other skills into the health arena and to develop effective communication between clinicians and other health workers, the community and individuals data collection processes which also take account of capture, processing, storage, and retention using both paper-based and electronically based media processes for determining data quality, validity and integrity the ability to manage human resources as well as information.

6.1. FUNCTIONS OF INTERPRETED MANAGING HEALTH INFORMATION

These functions are interpreted as managing health information. Once health information is managed appropriately it can be used to profile health services, health outputs and health outcomes. Essentially, information profiling consists of: an understanding of how information may be used for decision-support an understanding of who requires information and why; in other words, the nature of that information need routine and strategic reporting and dissemination of information an analysis of process flows, outputs and outcomes to contribute information to evidence-based practice negotiation and communication skills quality management techniques business, office and department management.

6.2. HEALTH INDUSTRY CONTEXT FRAMEWORK IN MANAGING HEALTH INFORMATION

The health industry context provides a framework for understanding the requirements for information management, profiling, and provision of services and solutions. Health information professionals who possess a comprehensive and detailed understanding of the health care delivery system and how it is defined can make important contributions to the business of health. For this reason, health information managers must have a good understanding of the following: the structure and organization of health services epidemiological and public health directions health policy parameters health service planning and evaluation activities principles and models for resource allocation people management and communication skills. Building on the Health Care Information Technology foundation, the Comparative Effectiveness focus may be implemented as a means to shift incentives from doing more things to doing right things that are evidence-based and cost-effective. An important feature of this domain is continued investment

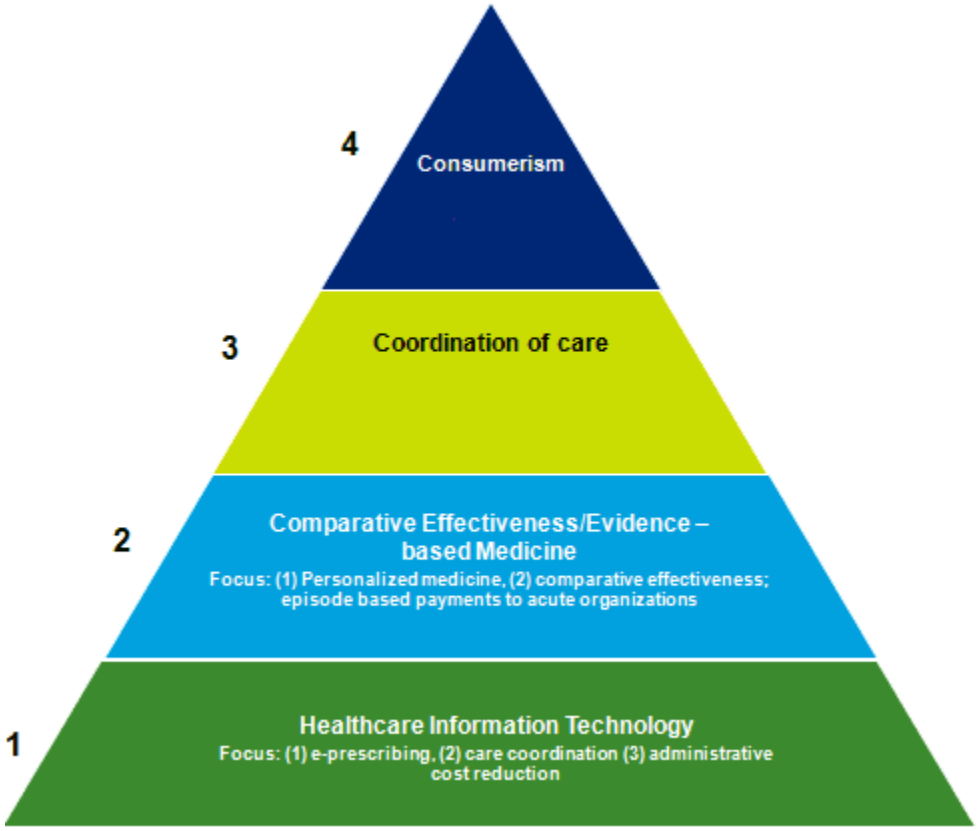


Fig.2. *Healthcare Reform Pyramid (Source: Deloitte's)*

6.3. HEALTH CARE DELIVERY SYSTEM ELECTRONICALY

As Congressman Patrick Kennedy stated this quotes “In a digital healthcare system, providers can have the information they need right at the point of care. Computer algorithms can catch mistakes and prompt to ensure consideration of latest scientific developments. Public health officials can be alerted nearly immediately of unusual patterns that might indicate a natural or bio terror infectious outbreak, or to catch the next Vioxx® before tens of thousands are put at risk. Researchers would have vast new databases to learn more about what works.”

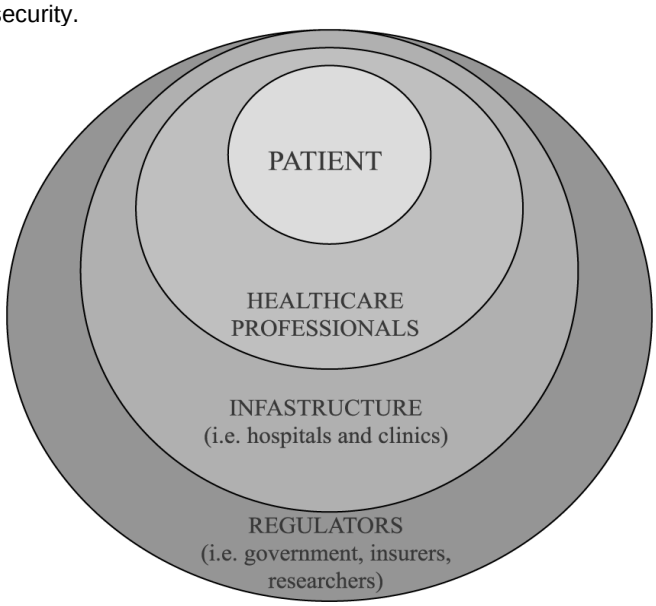
6.3.1. BENEFITS OF HEALTHCARE DELIVERY SYSTEMS

The bottom line for healthcare providers is to improve the quality of care for patients. An interoperable system helps achieve that: it reduces time spent on administrative tasks, phone calls, and office business, and provides immediate access to more complete information about patients. That means:

1. More complete information available for treatment decisions;
2. New and more efficient options for patient interaction;
3. Enhanced ability to demonstrate performance consistent with regulations and recognized professional standards;
4. Potential for reduced operational costs and more effective use of resources;
5. Reduced or streamlined management responsibilities;
6. Less paperwork;
7. Automation of repetitive tasks; and
8. Better efficiency in dealing with other providers and outside parties.

In fact, benefits to healthcare providers fall into four categories:

1. Quality of care;
2. Administrative efficiencies;
3. Patient communication; and
4. Public health and security.



Source: Ferlie and Shortell (2001)

Fig.3. *Healthcare Delivery System*

7. QUALITY OF CARE THROUGH PROPER ELECTRONIC HEALTH INFORMATION MANAGEMENT

The health care providers are expected to evaluate all of the relevant finding-test data plus information from other sources- before setting on a diagnosis and developing a treatment plan. Careful evaluation and consideration of test finding increases the reliability of a diagnosis and reduces the chance of medical errors. As the diagram shows (Fig.4), data from medical tests are part of the information set that needs to be considered when a health care provider makes a diagnosis. A retest or other test to confirm the findings may be appropriate.

7.1. ENHANCED DOCTOR-TO-DOCTOR COMMUNICATION

With an interoperable system of healthcare, physicians can instantly share test results with other doctors, healthcare providers, labs, pharmacies, and clinics. The system will also allow doctors to highlight particular parts of the record and "point" or "link" that information to other parts of the patient record—in practice, any physician authorized by the patient will be able to look at a patient's chart with another physician who is far away. This will naturally streamline the Process of consultation and improve healthcare delivery.

7.2. AVAILABLE IN ANY GEOGRAPHIC LOCATION

Physicians and other healthcare providers will be able to review the complete medical history of a patient, regardless of the location of either the patient or the provider. An individual on vacation on the West Coast who lives on the East Coast could go to any doctor and have their information available instantly. At each visit, healthcare providers add to the record, so no matter where and when the record is examined, it will be up-to-date.

7.3. AVAILABLE IN ANY TREATMENT SETTING

Access to medical histories will be available in any treatment environment: in an emergency room, in an exam room, in locations around a hospital, in a doctor's home or office, in public and private clinics—anywhere an Internet connection is available.

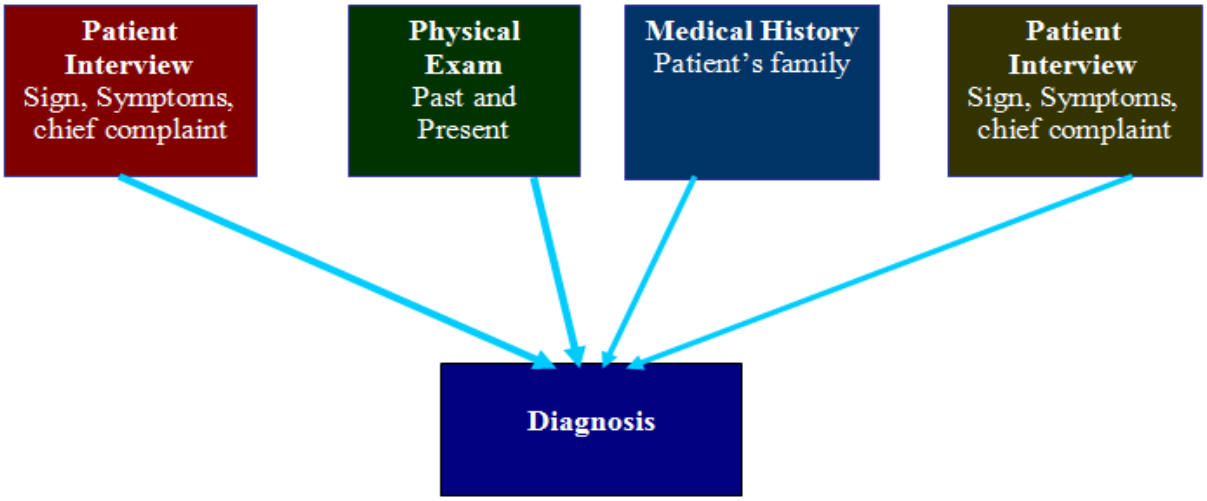


Fig.4. *Information Sources critical to the Diagnostic Process*

7.4. IMPROVED EMERGENCY ROOM SUPPORT

Doctors in emergency rooms (ERs) often have to work without any patient history at all. Treating an ER patient with no records can be like trying to navigate a country road in the dark with no headlights. However, interoperable tools can be physicians' "high beams" that help them make the best decisions. Since many patients use the ER as their primary care facility, and ongoing and consistent treatment for such patients can be difficult, an interoperable system could reduce suffering and save lives. In addition, the consistency the system provides can help caregivers personalize the experience for the patient. That will help doctors and nurses to encourage patients to form relationships with healthcare practices and clinics, instead of waiting until a problem becomes so severe that it requires emergency treatment.

7.5. IMMEDIATE ACCESS TO LAB RESULTS

A connected, interactive system of healthcare will allow physicians to review test results as soon as they become available—no more waiting for a phone call or fax. Even the most basic system will provide doctors with the ability to "query the database" to look for patterns that appear only under intense scrutiny and to finds patterns and clusters of data that indicate other problems or treatments. By itself, the interconnectivity of lab information with drug information can provide more comprehensive data at the time of care. Today, such information is not available at the time of initial treatment, meaning that more reined treatment has to be postponed until the necessary data have been collected in one place—and that is just what an interoperable system is designed to do.

7.6. MORE EVIDENCE-BASED MEDICINE

Interoperability will promote evidence based medicine by giving doctors access at any time to databases that offer updated clinical decision support. Interoperable systems will be equipped to provide protocols for various medical situations. Physicians will choose protocols as they see fit, and as outcomes are measured, the data can be used to revise best-practice standards. Interoperable health systems will improve this process in ways never before possible.

8. IMPROVED PRESCRIPTION WRITING AND PHARMACY INTERACTION THROUGH E-PRESCRIBING

When prescriptions are transmitted to a pharmacy through an interoperable system, there is no question about legibility or the loss of a paper prescription.

1. Doctors can find out whether or not a patient filled or refilled a prescription
2. There will be less opportunity for those who try to obtain multiple prescriptions from many doctors or commit other fraud.
3. Healthcare providers can rely on the same kind of safeguard as pharmacists to prevent drug interaction.

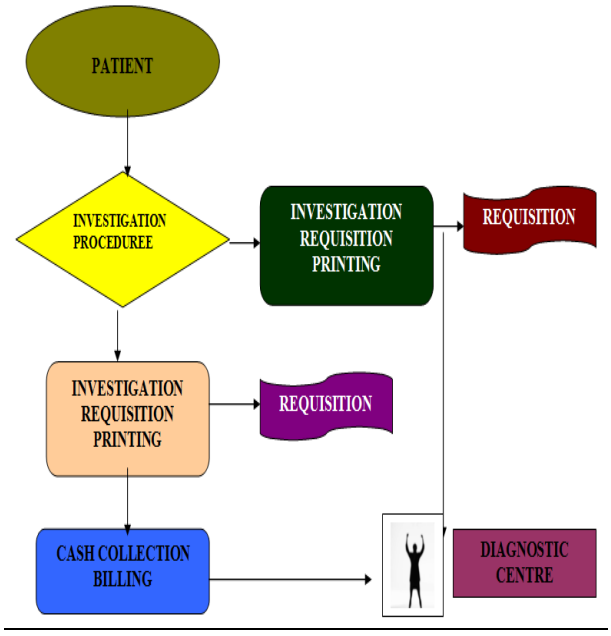


Fig.5. *OPD/ IPD Investigation case*

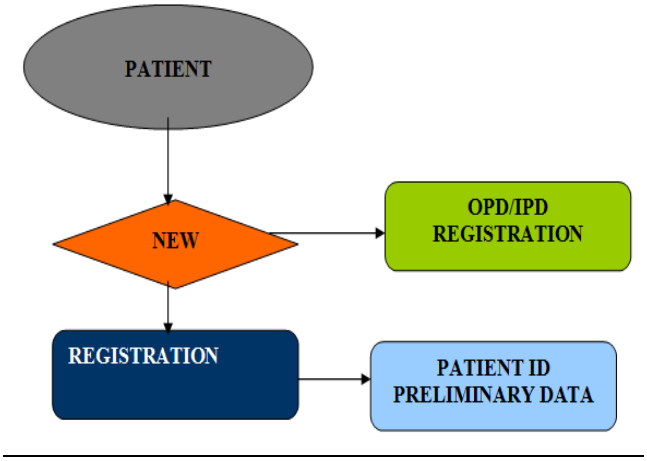


Fig.6. *Patient registrations process*

9. BENEFITS OF HOSPITAL INFORMATION SYSTEM

The Hospital Management Information System provides an effective solution to hospitals that plan to reduce the costs of administrative and clinical transactions, and at the same time, provide better service to their consumers. It aids hospital administrators by significantly improving operational control and streamlining operations. It also enables improved response to demands of patient care because it automates the process of collecting, collating and retrieving patient information. Clinical pathways mapped to the system improve diagnoses and treatments offered. It provides doctors and hospital staff with the decision support system that they require for delivering patient care, which is comparable to global standards.

Fig.7. *Sample Architecture of Health Information Exchange*

10. HEALTH INFORMATION EXCHANGE

The purpose of a Health Information Exchange (HIE) is to enable the creation of an interoperable Electronic Health Record (EHR) for each individual by connecting the information contained in various organizations across the entire continuum of care as shown in Figure 1. Through the interoperability provided by the HIE, the same organizations that contributed health information can now access a longitudinal or community view of a patient's health record resulting in improved quality and patient safety, reduced costs, and evidence-based care.

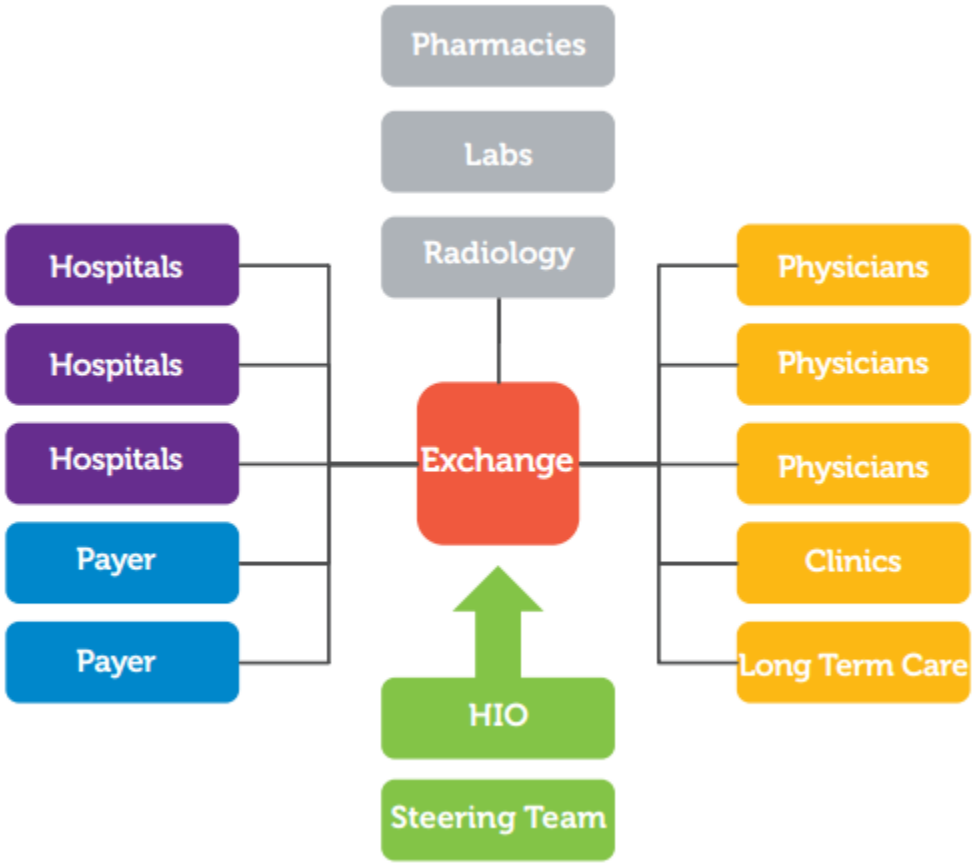


Fig.8. *Exclusive Health Information Exchange (Source: Dell Services, Regional Exchange Model)*

10. CONCLUSION

The findings show that over the last 15 to 18 years, the health care industry has experienced dramatic changes in health care delivery, consumer needs, and demands. The medical record, a recapitulation of the care patients receive, continues to be one of the most vital components of the health care delivery system. These roles of electronic health are increasing day by day. As It serves as a crucial administrative, clinical, financial, and research tool. Health information managers, striving to meet ever-changing requirements, have turned to electronic record processing to meet these changes. The findings also shows that the purpose of health-related information moving electronically among organizations has surfaced as paramount because of major concerns voiced by consumers, healthcare providers, and lawmakers. By creating comprehensive views of a patient's entire health record across a community, Health Information Exchanges can enable improvements in quality and efficiency. A proper health information management system can actually help reduce these numbers and improve chronic conditions through the creation of a community or longitudinal health record. The information contained in a community or longitudinal record would be an aggregation of the patient's complete medical record from all of his/her healthcare providers. It would be combined into a single view so that the clinician could view all underlying factors related to the tuff condition and then determine the best course of treatment. Heath information management and technology also considers as a brain of healthcare delivery systems nowadays, getting very great attention in all the healthcare service providers.

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