Chapter Discussion Questions and Case Discussion Questions for *Health Informatics: A Systems Perspective* by Gordon Brown, Timothy Patrick, and Kalyan Pasupathy

Chapter 1

*Chapter Discussion Questions*

1. **How has the concept of management information systems (MIS) been applied traditionally in the health system?**

   *Response:* MIS applied to health care systems have lagged other product and service systems for many reasons. Among the most important reasons is that application of information technology to the clinical or core function of health organizations is technically complex and has met with resistance from the professions and traditional practices of medicine. In addition, the health system has been and continues to be heavily driven by regulations and financial reimbursement and less by innovative technologies.

2. **What conceptual differences are there among electronic medical record (EMR), electronic health record (EHR) and electronic personal health record (ePHR) systems?**

   *Response:* The EMR is designed around the structure of paper medical records and digitalizes them. The EHR introduces clinical guidelines or protocols, frequently from external databases, adding knowledge to the clinical decision process in the form of analytics. The ePHR is structured around the needs of the communication network of the patient. It adds information, including from the EHR, customized to the patient’s health condition, the personal style, and level of technical competency.
3. How do the concepts of bioinformatics, clinical informatics, and public health informatics differ from that of health informatics?

Response: Bioinformatics, clinical informatics, and public health informatics all maintain a clinical and technical focus, while health informatics starts with a systems perspective and draws knowledge from the behavioral, social, and clinical sciences.

4. What are the limitations of RHIOs, given what we know about the value of information? Discuss the logic of why were they developed.

Response: RHIOs recognized that medical information should be shared among health institutions to support clinical practice provided to a single patient in multiple settings. The sharing of medical information across institutions in a region was a big technical, political, and financial challenge. Traditionally health institutions have also been protective of information for legal and market reasons and for assurance of data quality.

RHIOs are built on the traditional concept of patient information gathered and stored in a central repository linked to all institutions within a region. One disadvantage is that all patient care might not be delivered within the region defined by the RHIO, so another layer of coordination among RHIOs must be built. Digital information can be transmitted easily across space, including nationally and internationally, so viewing it as an institutional or regional asset is a limited perspective.

5. Why did medical informatics evolve separately from MIS?

Response: Medical informatics evolved separately as a result of the traditional separation and independence of the clinical function in health organizations. The organization primarily focused on the business enterprise, and the professional staff, particularly the medical staff, retained somewhat independent responsibility for clinical decisions. This concept was
extended into the design and function of information systems supporting the clinical function.

There was also a lag effect in that MIS was developed first and had to be retrofitted as its
application to clinical areas evolved.

6. Develop and present arguments for the concept that information systems are a
disruptive technology in health organizations.

Response: Information technology enables change and potential improvement in health
system performance but changes mange of the traditional assumptions about how
organizations and systems are structured, including the clinical function. Examples include
that the clinical function has been insulated within organizations; health organizations have
developed as relatively independent enterprises (cottage industry; the education, licensure and
certification of health professionals has emphasized differences and independence; health
financing systems have been designed to reinforce existing institutions and not to reform
them.

Case Discussion Questions

1. Apply the concepts of automating as opposed to transforming a process in this case.

Response: Joe was successful at automating a process. He took an existing process, namely an
identification tag on an animal collar, and digitalized it, which enabled it to be miniaturized
and embedded as a microchip in the animal. The chip contained the same information and was
a passive system, as was the ID tag. Jennifer started with a digital concept and viewed it from
the perspective of the owner as well as from the perspective of other potentially interested
parties. She used the technology to transform the process because of her ability to view the
product from the perspective of the user. This capacity is similar to that demonstrated so
effectively by Steve Jobs, who catapulted Apple to the forefront of the industry.
2. **What is the transforming power of information technology (IT), and why is it sometimes difficult to envision?**

*Response:* IT has tremendous power to transform processes and industries due to its speed and ability to overcome time and space and to integrate functions and technologies. The challenge of IT is envisioning a future world based on its power. To do so one has to overcome tradition, culture, bureaucracies, existing processes, power, sunk costs, and so forth, and envision a new future. This vision is particularly difficult to embrace in health systems due to their strong traditions and the fact that healthcare is a very personal service.

3. **How do aspects of electronic information raise legal and ethical issues?**

*Response:* As this case demonstrates, the ability to access and process electronic information and communicate interactively raises both legal and ethical questions. Accessing animal records in the office of a veterinarian does not pose much threat because of the complexity of accomplishing such a task. In electronic mode, such information is easy to access, compile, and analyze, which creates threats to privacy and security. The threat of electronic access to political, military, product, strategic, and other information has created a large and complex "hacking industry." Electronic access to information will continue to foster regulations on how information is accessed and used in all industries and penalties for violating those regulations. These issues, discussed in detail in Chapter 13, are particularly important in healthcare.