Chapter 10: Information Services

Teaching Goals

The most important lesson in this chapter is that one of the organization’s mission-critical jobs, ranking equal in importance to maintaining an associate force, is providing information. That information comes in two kinds: (1) information related to clinical and other transactions and (2) the source of truth—a knowledge base of historic performance data, demographic and epidemiologic data, benchmarks, procedures, and clinical protocols. The role of information services is to support effective use of both kinds. This support includes capture, storage, retrieval, manipulation, reporting, and general communication of data.

Maintaining the information resource has migrated from being a technical job that requires extensive software and hardware knowledge to being a managerial job that emphasizes understanding of measurement, data security, HIPAA rules, statistics, user training, and performance improvement. Improved accessibility and reliability of technology has permitted this migration, and continuous improvement and service excellence have made it necessary. As a result, this chapter is resolutely nontechnical.

When students understand the central purpose of information services, the major functions (Figure 10.2, p. 383 in the book) become apparent:

1. Ensure the reliability and validity of data
2. Maintain the communication network and support general and special purpose software
3. Archive and retrieve data
4. Train and support users
5. Ensure the appropriate use and security of data
6. Continuously improve measurement and information services

Teaching this chapter is not really about “how does information services perform these functions?” but about “why is information services important?” and “how can the chief information officer and senior management ensure that the functions are being done effectively?”

We have given prominence to the need to carefully define, capture, adjust, and report performance measures, addressed in chapters 4, 5, 11, 14, and 15, as well as “Ensure the Reliability and Validity of Data, starting on page 383. At some point in reviewing those chapters, a discussion of the implications of error in the source of truth is in order. Elimination of those errors could be assigned to an internal audit, a planning unit, or information services, but regardless of what unit does this the process is the same:

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1. Standard definitions must be established.
2. The definitions must be consistently applied as data are captured.
3. Statistical specification and adjustment must be included when necessary.
4. Random variation and confidence limits must be estimated.

Data retrieval and training are interrelated; leading organizations don’t just have data, they use data. Data security is a two-sided problem, requiring protection of the data themselves and securing the data against inappropriate use. The continuous improvement function is required of all support services, and it can lead quickly to an outsourcing discussion. The information services function is a good starting point for addressing outsourcing. Make-or-buy decisions recur throughout all the support services (see chapters 9 through 15).

**In a Few Words**

IS has become a core utility of the healthcare organization, supporting the transactions essential for care, the performance measures that drive improvement, and the communication that promotes learning. IS assures the accuracy of information, supports communication, maintains an accessible archive, protects data and the information systems themselves, and trains users. The important benefits of IS come only through its customers, the clinical and other service units of the organization. IS must view its activities as customer services. IS has an extensive planning activity that must be carefully integrated with improvements in its customers’ performance through changes in patient care and other work processes. IS can be provided by employees or outside contractors; most hospitals use a mixture of both. The need for consistent information forces multi-hospital systems to centralize much IS, but the customers’ needs and plans must be addressed locally. The role of senior managers and IS leaders emphasizes use of services and recovery of benefit.

**Chapter Outline**

*Putting client needs first*

- How IS views the clinical and other managerial units as internal customers
- Why IS competes with outside suppliers
- How IS managers “listen” to understand and respond to their customers as an independent business would

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Maintaining the reliability of reported data
• How the organization makes sure its numbers are consistent and reliable
• How IS increases the value of numbers by adjusting for factors outside operator control and assessment of variability

Promoting effective use of information
• Why it is important to make numbers easy to enter and easy to use
• How IS supports an evidence-based culture
• How the source-of-truth archive of historic and external information helps clients use performance measures, benchmarks, and best practices that guide continuous improvement

Protecting individual privacy, the archive, and the information systems
• How IS protects individual patient and associate privacy rights
• How IS guards against failure, misuse, theft, or destruction

Planning expansion and growth of IS
• Why benefits of IS come only through changes in the clients’ work processes
• How IS improvements are translated to stakeholder benefit
• Why IS plans are tied closely to the overall strategy and the plans of clients served

Powerpoint Slides
See Learning Tools.

Questions to Debate
Slides of the individual questions are downloadable. We have prepared some summary thoughts on the content of class discussion. Obtain this information by writing (conventional mail) on academic letterhead to:

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1. A clinical service wants to add a new measure that deals with service delay, the number of minutes after arrival that a given event occurs. (There are a number of these in existence, such as “door to needle time”, the time from arrival to catheterization of an AMI patient.) What questions should be asked about their proposed measure? Should they take it to the definitions and standards committee? Why, or why not?

2. Your organization is opening a new clinic using the same EMR and information systems as your existing clinics. Clerks, nurses, and physicians will all input information to the EMR and several management systems. What should the IS training program for new associates include? How would you accomplish that training economically?

3. When you visit the ICU, the head nurse asks you to explain to the clerical associates (most of whom have a high school equivalency degree) what the risk adjusted mortality report means. A check on the intranet reveals that the measure is adjusted for the patient’s age, sex, provisional diagnosis, and an APACHE score at the time of admission, using a system-wide data base. The monthly mortality rate is reported as adjusted, with a three standard error confidence limit. What do you say to the clerks?

4. One clinical service line wants to invest in wireless laptops to make record-keeping easier, faster, and more accurate. They say they know they must submit to IS planning review. They’d like advice on how to prepare a successful proposal.

5. The finance committee of a large hospital has set a limit of $50 million per year on new capital investment. Conversion to the EMR will be expensive—at least $20 million per year for three years. The CIO has asked you to help develop a case for the investment. What are the next steps?

**Additional Discussion Questions**

The following questions may also be used to stimulate debate:

1. **IS plan**
   1.1. Explain succinctly, in terms appropriate for a new trustee or a medical staff member, how the organization uses the IS planning process, as indicated in Figure 10.6 (p. 398), to make sure it has adequate information support for all its activities.
1.2. Prepare a brief statement for the CEO to include in an appointment letter for the information services advisory committee, explaining their charge to develop an IS plan. (Hint: You might consider the purpose, content, timing, and resources available to assist the committee, and then summarize them in one or two paragraphs.)

2. IS systems improvement and budgeting

2.1. How do you measure the effectiveness of IS?

2.2. The organization shown in Figure 10.7 (p. 399) will require a substantial budget. How should an organization decide whether the budget requested is appropriate? What information would be needed, how would it be reviewed, and how would the organization make the final decision? (Hint: does the planning committee have a role?)

2.3. Many organizations dedicate a portion of their available capital to IS improvements. Why might this be a good idea? Why might it not be a good idea? How do you ensure that a dedicated budget is well spent?

3. Data warehouse

3.1. The concept of a data archive is one of easy access and controlled reliability, facilitating transfer of data between sources and users. Study Figure 10.8 (p. 402), and identify five or six kinds data that might arise in one area and be used in another (e.g., inventory data are used by accounting to calculate supplies cost). What are the steps that real organizations take to make sure these data are accurate, accessible, and timely?

4. Training

4.1. How do you train people to interpret graphics such as in Figure 10.5 (p. 393)? Why are graphic reports preferable to lists of numbers? How would you answer an associate who asked whether the mortality rate shown in Figure 10.5A reliably reflects patient care?

4.2. What sort of training and help-desk support should an operating manager expect?

5. Current information systems

IS vendors have extensive website descriptions of their systems (e.g., cerner.com, idx.com, Siemens.com). One or more of these can be assigned for written or classroom evaluation.

5.1. How do the products available compare to Figure 10.8 (p. 402)?

5.2. Does the system offered address all the six IS functions (see Figure 10.2, p. 383)? Which, if any, are omitted?

5.3. What questions should be asked to decide whether a given health system should partner with this company to develop and implement its IS plan?
5.4. How would you design a partnership agreement with this company? Which functions would you consider delegating, and which would you reserve? What performance criteria would you establish?

Questions for Examination

These questions are less ambiguous than the discussion questions. Obtain these questions and the authors’ answers by writing (conventional mail) on academic letterhead to:

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