

# SUMMER SESSION SYLLABUS

## Hybrid Course

HA 571H: Medical Informatics

C5: 2009



**Saint Joseph's College of Maine**

**DIVISION OF GRADUATE &  
PROFESSIONAL STUDIES**

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<http://www.sjcme.edu/gps/summer/index.htm>

Welcome to:

## HA 571H: Medical Informatics

**Summer Session #1**

Course Start Date: May 18

Online Dates:

May 18 – June 21

On Campus Dates:

June 22 – 26

Course End Date: June 26

### COURSE DESCRIPTION

Oriented to the contemporary role of a senior health services manager, this course is designed to give the student the knowledge and skills necessary to participate in the planning, implementation, management, and evaluation of health care information

systems. Major types of information systems, including financial, patient care & strategic management are examined.

### IMPORTANT RESOURCES

*If you have any questions regarding your course materials, please contact your academic advisor (1-800-343-5498) and/or our book vendor EdMap. You can reach EdMap by phone or email:*

1-(800)-274-9104

<http://www.shop-edmap.biz/sjs/>

*All Saint Joseph's College students must have a library card for the Wellehan Library prior to arriving on campus. To obtain your card, if you do not already have one, please call the library or visit their Website:*

1-(800) 343-5498 ext. 7725

<http://www.sjcme.edu/library/index.htm>

## REQUIRED TEXT

Wager, K. A., Lee, F. W., & Glaser, J. P. (2005). *Managing health care information systems: A practical approach for health care executives*.

San Francisco, CA: Jossey-Bass. ISBN 0787974684, 978-0787974688.

## REQUIRED ARTICLES

Assigned articles are on E-Reserves are located at

<http://sjcme.docutek.com/eres/coursepage.aspx?cid=120> The E-RESERVE password is

**HA571JAN09**

# Your Instructor



**Name:** Stephen L. Priest  
**Email:** [spriest@sjcme.edu](mailto:spriest@sjcme.edu)  
**Phone:** (603) 471-0605

Welcome to HA 571 Medical Information. I am managing principal of Professor Steve & Associates, an organization devoted to the application of health care and office technology. My Curriculum Vitae is on my web site at [www.professorsteve.com](http://www.professorsteve.com).

I develop and teach two courses at Saint Joseph's: HA 571 Medical Informatics and ITM 209 Integrating People and Technology into the Office Suite.

I was elected to Fellow status (FHIMSS) in the Health care Information Management and Systems Society. I have

written numerous articles and books about information systems.

My information technology, business, and management experience has covered twenty plus years in health care, manufacturing and consulting.

My passion is in motivating people to enjoy the outdoors. If you want to learn about my outdoor interests and publications go to [www.outdoorsteve.com](http://www.outdoorsteve.com).

I have a Master's degree in Operations Research from the University of Rhode Island, and a bachelor of science degree in Industrial Engineering from the University of Massachusetts (Amherst).

# Student Resources

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## COURSE POLICIES AND PROCEDURES

Current information regarding College policies affecting your course can be found on the Resources/Policy section of the ANGEL course homepage.

On this page, you will find vital information, including the following:

- Current Student Handbook, outlining course-specific policies
  - *Includes grading rubric*
- Access to support resources, including advising and online tutorial services
- Student Success Guides

## SUBMITTING ASSIGNMENTS

Instructions on how to submit your assignment to your instructor can be found on your ANGEL course site.

# Course Overview

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## COURSE INTRODUCTION

Welcome to HA 571: Medical Informatics. Today computerized information systems are available for all types of health organizations. This includes community hospitals, academic medical centers, physician offices, home care, and nursing homes. Even consumers/patients use Internet technology tools for managing their own personal health care information. We now see integrated health care systems and

continuity of care as the focus of wellness and patient care, and Web-based applications are giving health care providers, insurers, and consumers the opportunity to go beyond patient care and include wellness and disease prevention. We will find that information technology is most generally the enabler of this innovation.

All these advances, while available, are not necessarily implemented or used to their fullest extent. This course will have you look at a topic from various vocational perspectives.

What remains important is the need to understand the opportunity that medical informatics, with its emphasis on technology as an integral tool to help organize, analyze, manage, and use information, can offer toward disease and illness prevention, management of health costs, enhancement of quality of care, and an understanding and use of health data.

This course is aimed at stretching your imagination and expanding your universe beyond your professional experience or aspirations.

My goal is to give you an understanding of medical informatics applications and to build the skills necessary to ensure that your knowledge of information technology is an advantage in whatever career you choose in life.

## COURSE OBJECTIVES

Upon completion of this course, you should be able to do the following:

1. Define medical informatics and its role in the implementation and growth of information technology.
2. Apply the basic components of computerized information systems, including the personal computer, data storage devices, software, networks, databases, the Internet, and Web-based applications.

3. Demonstrate a basic knowledge of many of the different computerized systems used today in health care organizations.
4. Explain the application development life cycle (ADLC) in terms of analysis, design, selection, implementation, support, maintenance, testing, and evaluation.
5. Compare the benefits, costs, and issues of medical informatics in the health field of today and tomorrow.
6. Describe the opportunities available with integrated systems and how wellness and sickness are addressed in today's health care environment.
7. Discuss where to obtain reliable sources for health care IT knowledge.
8. Use the Discussion Forum to communicate, respond, share ideas, and learn from each other.
9. Contrast the myriad perspectives of those responsible for using information systems (e.g., clinicians, administrators, consumers, patients, and information technologists).

## COURSE FORMAT

This is an accelerated five week online course with an additional week in the classroom, providing the opportunity to continue the online dialogue in a group setting. You will acquire the skills outlined in the course objectives through the following:

- Readings from the textbook and required readings.
- Interviews and class presentations
- Active dialogue with your instructor and fellow learners via the Discussion Forum.
- Classroom dialogue and discussion with your instructor and classmates.

## COURSE GUIDELINES

1. The material will be conveyed through a combination of reading assignments, lectures, discussions, interviews, and class presentations.
2. Students prepare for each class by completing the required readings and are expected to contribute to active discussion on these readings.
3. This course has an online component. You will be expected to participate in online discussions, exercises and assignments using ANGEL. The College will be sending you information about how to access the online component on your course before the official course start date.
4. Students should critically examine technology concepts and issues, and be able to apply this to their own experiences. Specific areas include:
  - Through interviews, be able to identify “what keeps the Chief Information Officer awake at night” for the success of medical informatics
  - Assume various perspectives (clinical, administrative, support) of medical informatics
  - Discuss and demonstrate awareness of the benefits, barriers, and solutions to medical informatics
5. Students should be able to review class material and health care literature and draw conclusions and roles for their participation
6. Students should effectively communicate verbally in class, through ANGEL, presentations, and discussion participation.

Your attendance at all five of the on-campus classes is required. Classes will begin promptly. Tardiness exceeding one class will result in 10 points being subtracted for each class tardy thereafter. Circumstances beyond your control should be communicated to the instructor immediately.

**ANGEL:** Each week a topic will be posted on the ANGEL Discussion Forum by an assigned class leader for a current/relevant medical informatics topic of their choice. You are to select a recent article (not more than 12 months year old), and

post a link to the article, along with your review (summary, critique, course relevancy).

**Class Presentations (will be assigned before on campus classes)**

Each student will do three (3) presentations using Power Point. The presentations will be taken from the below list:

- 1) A Current Topic Presentation
  - a) CPOE
  - b) Social Networks
  - c) EMR
  - d) RHIO
  - e) HIPAA Security
  - f) Student may ask to do another topic with instructor permission.
  
- 2) Reporting the results of their CIO, EMR, Radiology and Pharmacy IT Interviews

Class presentation will need to demonstrate web research on your subject (25%), a level of subject knowledge (25%), Power Point features (25%)(bullets, hyperlinks, slide #, custom animation, background, etc), and presentation practice (25%).

**EVALUATION**

Four (4) Interview write-ups	40%
Discussion Forum Participation	20%
Class Presentations	20%
Class Participation	20%
Total	100%

**PLEASE NOTE:** If life gets in the way of your online classroom responsibilities, you must notify your instructor as soon as you aware that events may occur that may inhibit you from participating at the required level.

# Class Schedule

PERIOD	TOPIC	READINGS	ASSIGNMENT
Week of 5/18 Online	Introduction to Medical Informatics	Section Readings in Wager: <ul style="list-style-type: none"> <li>• Forward ix</li> <li>• Introduction xix</li> <li>• Introduction to Health Care Information 3</li> <li>• History and Evolution of Health Care Information Systems 91</li> </ul>	<p>Discussion Forum</p> <p>Write a 1-2 paragraph introduction on your professional and computer background. Include an attachment of a picture of your favorite thing.</p> <p><b>INSTRUCTOR'S NOTE:</b> Why an attachment? Hmm, think outside the box a bit - is there a difference between uploading "a picture of your favorite thing" and uploading a picture of a skin rash?</p>
Week of 5/25 Online	Interview a Senior Information Systems Manager	Wager: <ul style="list-style-type: none"> <li>• Chapter 11 - Organizing Information Technology Services. (Chapter 11 is to be read BEFORE you do your interview.)</li> <li>• Advanced Technologies Lower Health care Costs and Improve Quality (found on E-Reserve)</li> </ul>	<p><b>Senior IT Manager Interview (preferably the CIO)</b></p> <p><i>This interview can sometimes be difficult to schedule so be sure to give yourself plenty of time before the on-campus session.</i></p> <p><i>Questions to guide you for the interview are found at the end of this syllabus.</i></p> <p><i>Discussion Forum</i></p> <p>Your assignment is to use a search engine (Google, MSN, etc.)</p>

			<p>and find an article written within the last 12 months on knowledge-based computerized practitioner order entry (CPOE).</p> <p>Summarize one positive example as a result of CPOE and one negative example. How was the positive outcome achieved? What caused the negative outcome, and what was its result? Why was this example chosen by you?</p> <p>2. Reply to another student's CPOE article review. Briefly comment on your interest in his or her review.</p> <p>Be sure to include the name of the article and the website reference.</p>
Week of 6/1 Online	Director of Health Record Interview (may be called a Medical Record Director Interview	<p>Wager:</p> <ul style="list-style-type: none"> <li>• Systems Acquisition 146</li> <li>• Information System Architecture and Technologies that Support Health Care Information Systems 189</li> </ul>	<p>Interview the Director of Health Records.</p> <p><i>Questions to guide you for the interview are found at the end of this syllabus.</i></p>
Week of 6/8 Online	Pharmacy Information Systems	<p>Wager:</p> <ul style="list-style-type: none"> <li>• Current and Emerging Users of Clinical Information Systems 111</li> <li>• Security of Health Care Information Systems 250</li> </ul>	<p>Pharmacist Interview.</p> <p><i>Questions to guide you for the interview are found at the end of this syllabus.</i></p>

Week of 6/15 Online	Radiology Information Systems	Wager <ul style="list-style-type: none"> <li>Assessing and Achieving Value in Health Care Information Systems 418</li> <li>Best Care Anywhere (Article in E-Reserves)</li> </ul>	Radiologist Interview <i>Questions to guide you for the interview are found at the end of this syllabus.</i> Discussion Forum: Google Dr. Robert Kolodner and his role as National Coordinator for Health Information Technology (IT). Two questions: <ol style="list-style-type: none"> <li>Has Dr. Kolodner made progress in his assigned task?</li> <li>Has Dr. Kolodner's VA role helped him in his NCHIT assignment?</li> </ol>
6/22/09 <b>On campus</b>	The Present and Future of Medical Informatics	Saving Lives, Saving Money: The Imperative for Computerized Physicians Order Entry in Massachusetts Hospitals (e-reserve)	<ul style="list-style-type: none"> <li>Introductions</li> <li>CIO Presentation</li> <li>EMR Presentation</li> </ul>
6/23/09 <b>On campus</b>	The Electronic Medical Record	HIPAA- An Opportunity for Continuum of Care (e-Reserve)	<ul style="list-style-type: none"> <li>CIO Presentation</li> <li>EMR Presentation</li> <li>CPOE</li> </ul>
6/24/09 <b>On campus</b>	Clinical applications	Presentations	<ul style="list-style-type: none"> <li>Radiology Presentation</li> <li>Pharmacy Presentation</li> <li>CPOE</li> </ul>
6/25/09 <b>On campus</b>	Clinical Applications	Presentations	<ul style="list-style-type: none"> <li>Radiology Presentation</li> <li>Pharmacy Presentation</li> <li>Course Review</li> </ul>

6/26/09 <b>On campus</b>	The Application Development Process	<ul style="list-style-type: none"> <li>• Working Together: IT and EBM (see E-Reserve)</li> </ul>	<ul style="list-style-type: none"> <li>• Roles in the Application Development Process</li> <li>• EBM and IT</li> <li>• Final Exam</li> </ul>
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# IT Interview Questions (CIO, EMR Manager, Pharmacist, Radiologist/Technologist)

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## Interview a Senior IT Manager (Preferably the CIO)

1. Interview a senior information systems (IS) manager, preferably the chief information officer (CIO). (*NOTE: Chapter 11 is the background material needed BEFORE you do your interview.*) IS managers should be doing everything in their power to maintain good customer relations with their users. I often had my IS staff interview physicians, nurses, other clinicians, and administrators to accomplish at least two things:

- Find out what keeps them awake at night in terms of job responsibility. Knowing the needs of information system end-users is critical. Interviews are one way that IS learns about the needs of the areas they support. In this exercise, end-users learn the needs and responsibilities of the IS staff.
- Develop a relationship between IS and end-users to enhance professional communication and respect for each other's needs. With current communication between IS and end-users, IS selection, installation, enhancements, maintenance, and use can be prioritized and made effective within the strategic mission of the health care provider.

As the IT staff should know the mission of those they serve, so too should you know the mission of IT.

Some information managers you ask to interview may say that the information requested is beyond their scope of expertise and/or that they are too busy to meet with you for an in-depth interview. This means you miss the intent of my question and are not making your request appropriately. I would expect that with a good one-hour interview, and maybe a brief tour of the information systems area, you will get a feel for the information system infrastructure (hardware, software, network, staffing, strategic responsibilities, mission, etc.).

Make an appointment and then e-mail a list of your questions to your subject prior to the interview. Remember, the intent of this question is to get an IS perspective of what it takes to support health care patient and administrative applications. If the interviewee has proprietary information they do not wish to share, skip that question and go to the next question. Again, deal with the intent of researching the IS perspective on issues in support of health care applications.

An interesting perspective for the interview is to hear what one of my earlier students reported during an interview as the interviewee compared the old Internet with their new Internet system. She said, ***“The benefits are a system and site that are focused on the potential customers that use the site and their needs. My IT manager explained the changes to me like this:***

***“The old Intranet and Internet system was very focused toward us (the organization and employees); all areas of the system were built from the perspective of the organization. The new systems are built from the perspective of looking in from the outside. We are focused on our customers and site users rather than ourselves.”***

If you are still at an impasse for obtaining an interview, call the CEO’s, COO’s, or CFO’s office for an interview.

Using the above for guidance, please answer the following questions:

- A. Briefly describe the mission and scope of applications within this organization.
  - a. Include information such as the purpose of each application, its vendor (the application may have been developed in-house), and its primary user (e.g., physician, nurse, finance, administrator).
  - b. Discuss the role of the Internet. What applications are web-based? What applications are on their intranet vs. those accessible via the Internet?
  - c. Are passwords, biometrics, tokens, or other security devices used? Is there an electronic signature? Do they use Wi-Fi?
  
- B. What would the interviewee suggest for enhancing the current information system environment? What does the interviewee think the end-users would say about their level of satisfaction with the applications? (You probably will do this for only one or two of the applications.) How integrated does the interviewee believe the system to be? Given the opportunity to enhance and implement one application, which would it be? Why?
  
- C. Do they use Application Service Providers (ASPs)? (ASPs are software vendors supporting applications over the Internet.) What Internet applications might they consider for the future?
  
- D. Ask for an IS organizational chart or a description of positions within the IS department, and get a brief understanding of their respective areas of support. What is the scope of responsibility and the types of IS staff needed to provide information systems support to this size organization?
  
- E. Take a risk and comment on what you heard in the interview. What would you change? Promote? What new insights did you get from this interview?

F. What are the position, experience, and educational backgrounds of the person you interviewed?

Your Senior IT Manager interview will be presented using Power Point in an on campus class.

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## Questions to Guide You in the Electronic Medical Record Interview (Director of Health Records)

Find an organization using, or in the process of selecting/implementing, electronic medical records (EMR). Any health care provider is fine such as a physician practice, visiting nurse association, hospital, nursing home, etc. Then answer the following questions:

A. Did they develop the EMR application in-house or purchase it from a vendor? If purchased, from which vendor, and what criteria did they use to select the vendor? How did this vendor compare to others they considered? If in-house, why did they choose to develop the EMR themselves rather than purchase/lease EMR software?

B. Who are the users of this EMR, and how do they use it? Can patients access or amend their EMR?

C. Who or what applications update this EMR? Are there interfaces with other applications? If so, what are these applications? What do they perceive as the advantages and disadvantages of interfaced updates?

D. How does paper material originating outside of this organization (e.g., outside lab results, special outside tests, etc.) get into this EMR? Do they have issues with the outside material being updated in a timely manner? Are there other issues with paper records being entered into automated records such as paper storage?

E. List some of the special features of this EMR.

F. What additional features would they like to see?

G. Which comes first, the EMR or CPOE? Why?

G. Who did you interview? What is their role in using or supporting the EMR?

### **Understanding how this EMR was selected and implemented.**

H. Summarize the procedure this organization used to select and implement the EMR. Were there committees? Outside consultants? Was data conversion necessary? Does this selection and implementation process resemble the application development life cycle (ADLC) discussed in this course?

I. What problems did they encounter in the selection, development, and implementation of this EMR?

J. If they were going to select and implement another EMR, what would they do differently?

K. What are the issues with consumers maintaining their own health care record (personal medical record)? As a consumer, what features would you like to have in a privately maintained computerized record? Do an Internet search and find a vendor that allows you to maintain your own health record. What are its features and functions? Comment on the issues you see in using this application.

**Maintaining physician involvement in the design process for medical record output is critical and often challenging.**

L. Was there physician involvement in the selection and implementation of the EMR? Explain.

M. Was there a strong working relationship between IT, the physicians, the clinical departments, and the system vendor? Output design requires the expertise and contributions of each user to be effective and efficient. Explain how users viewed the automated output.

N. If purchased, how flexible was the EMR to customize the software for this organization's specific requirements? Alternatively, did the organization need to make drastic process changes before they could implement the EMR?

O. In your opinion, when will the fully implemented electronic medical records (EMR) be a reality? What are some of the problems to overcome for this milestone to be reached?

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**Pharmacist Interview**

Several features of pharmacies make the implementation of information systems necessary. First, a pharmacy deals with large numbers of well-defined data and tasks. Second, pharmacists readily accept these systems. Visit with a hospital or retail pharmacy that uses a computer system to answer this question.

A. Discuss how the pharmacist's role has changed with the use of pharmacy information systems. Does the pharmacist consider himself or herself a clinician? Explain your answer.

B. What impact has the use of these information systems had on his or her clients/customers/patients?

C. How do pharmacists view the importance of laboratory systems? Does this pharmacist have access to lab data? Explain your response.

- D. What are some of the trends pharmacists foresee in pharmacy information systems, and how will this change the pharmacist's role in the future? Do they think pharmacists should be able to write prescriptions?
  - E. How do the clinical roles of retail and hospital-based pharmacists differ?
  - F. Ask your pharmacist for examples that would help explain Pharmacogenomics.
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### **Radiologist/Technologist Interview**

Interview a radiologist or a radiology technologist.

- A. How does the radiologist or technologist see the change from film to filmless technology? If need be, do an Internet search on using radiographic films vs. digital imaging. Ask questions such as the impact on storage, type of storage, exam turnaround time, patient safety, etc.
- B. Ask the radiologist/technologist to discuss the economical and technological impact on the development of computerized imaging.
- C. What is the radiologist's/technologist's opinion on teleradiology? Can he or she give you an example of how teleradiology is used? If not, do a Google search to find a case study of an experience with teleradiology.
- D. How important is it for the radiologist/technologist to have access to the laboratory information system?
- E. Is radiology affected by CPOE? If the radiologist's/technologist's organization does not use CPOE, how does he or she see radiology eventually being impacted by CPOE?
- F. Where does the radiologist/technologist see radiology in the next 5 years?

# Final Exam



The Final Exam will be given on the last day of class, June 26<sup>th</sup>.

# The Online Learning Environment

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## Online Discussion: What Is Expected of You

1. Class participation using the course discussion board is an essential learning activity and a required component of this course.
2. If life gets in the way of your course, then you must notify your instructor as soon as possible. Your instructor is here to help you learn as much as you can; he/she needs to know what is happening in order to facilitate your learning.
3. You are required to substantively contribute to the ongoing discussion. Substantive postings are thoughtful and add value to the discussion by offering your critical and creative thoughts and by building upon the thoughts and comments of others.
4. All postings in response to discussion questions should be on point, concise, and succinct.
5. The purpose of engaging in discussion is to extend your learning and to deepen your understanding of concepts presented in the course. The expectation is **not** to have everyone repeat what was read in the week's readings but to share ideas, perspectives, experiences, and understanding; always trying to go beyond what we (currently) know.

# ANGEL Information

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This course has an online ANGEL component. Please review the checklist below. Before your course begins you will receive a letter from the College with instructions on how to access your account, which will include your log on and password.

If you need technical support, please contact the 24-hour Collegis HelpDesk:  
**1-(877) 725-4357 or email: <https://hdo.collegis.com>**

## Checklist for Online Learners

In order to complete this course, you will need the following:

- ANGEL account (will be assigned to you by Saint Joseph's College)
- Basic computer skills
- Computer with speakers or headphones
- Internet access
- Required materials

# Interview Questions

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- E. Take a risk and comment on what you heard in the interview. What would you change? Promote? What new insights did you get from this interview?
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## **Questions to Guide You in the Electronic Medical Record Interview (Director of Health Records)**

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J. If they were going to select and implement another EMR, what would they do differently?

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M. Was there a strong working relationship between IT, the physicians, the clinical departments, and the system vendor? Output design requires the expertise and contributions of each user to be effective and efficient. Explain how the automated output was viewed by users.

N. If purchased, how flexible was the EMR to customize the software for this organization's specific requirements? Or, did the organization need to make drastic process changes before they could implement the EMR?

O. In your opinion, when will the fully implemented electronic medical records (EMR) be a reality? What are some of the problems that must be overcome for this milestone to be reached?

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**Pharmacist Interview**

Several features of pharmacies make the implementation of information systems necessary. First, a pharmacy deals with large numbers of well-defined data and tasks. Second, pharmacists readily accept these systems. Visit with a hospital or retail pharmacy that uses a computer system to answer this question.

A. Discuss how the pharmacist's role has changed with the use of pharmacy information systems. Does the pharmacist consider himself or herself a clinician? Explain your answer.

B. What impact has the use of these information systems had on his or her clients/customers/patients?

C. How do pharmacists view the importance of laboratory systems? Does this pharmacist have access to lab data? Explain your response.

D. What are some of the trends pharmacists foresee in pharmacy information systems, and how will this change the pharmacist's role in the future? Do they think pharmacists should be able to write prescriptions?

E. How do the clinical roles of retail and hospital-based pharmacists differ?

F. Ask your pharmacist for examples that would help explain Pharmacogenomics.

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### **Radiologist/Technologist Interview**

Interview a radiologist or a radiology technologist.

A. How does the radiologist or technologist see the change from film to filmless technology? If need be, do an Internet search on using radiographic films vs. digital imaging. Ask questions such as the impact on storage, type of storage, exam turnaround time, patient safety, etc.

H. Ask the radiologist/technologist to discuss the economical and technological impact on the development of computerized imaging.

I. What is the radiologist's/technologist's opinion on teleradiology? Can he or she give you an example of how teleradiology is used? If not, do a Google search to find a case study of an experience with teleradiology.

J. How important is it for the radiologist/technologist to have access to the laboratory information system?

K. Is radiology affected by CPOE? If the radiologist's/technologist's organization does not use CPOE, how does he or she see radiology eventually being impacted by CPOE?

L. Where does the radiologist/technologist see radiology in the next 5 years?