Importance of Certified and Qualified Personnel for Managing PACS

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Since its inception, the picture archiving and communications system (PACS) has evolved from an engineering exercise in digital image management into a mature information system and manager of clinical workflow. Whereas PACS was once an isolated system, it now processes clinical information from numerous systems. Virtually every clinical discipline has integrated digital radiology into their practices and PACS has truly emerged as a mission critical system not only for the radiology department, but for the healthcare system as a whole. As PACS has evolved in both capability and function, so has the role of the PACS administrator. PACS administrators must not only configure user interfaces and manage workstations, but they have taken on the additional roles of system architects, workflow engineers, and business analysts.[1]

PACS administrators find themselves balanced between the highly disparate cultures of the clinical healthcare environment and the corporate information technology (IT) workplace. For this reason, a fundamental skill of the most successful PACS administrators has been their ability to act as liaison between these two cultures. With a foot in both worlds, PACS administrators need to be Jacks and Janes of all trades. They need to communicate clearly with highly technical network personnel and at the same time understand the diagnostic process of the radiologist to assist them with their hanging protocols. It can be more difficult to have competency in both areas as opposed to having a sub-specialized mastery in one or the other. Administrators striving to fulfill these roles often struggle to acquire skill sets.[2] The stakes for a mismanaged system are also higher. Prolonged down times, lack of trust by radiologists, or information loss among other mistakes may result in a hospital IT PACS takeover.[3-4]

A well trained informatics professional can leverage PACS to maximize efficiency, increase radiologist satisfaction and productivity, streamline workflow, respond to department strategic goals, reduce medical errors, and increase the quality of patient care.

PACS is an agile and powerful strategic tool for any radiology department when configured and managed appropriately.[5] A well trained informatics professional can leverage PACS to maximize efficiency, increase radiologist satisfaction and productivity, streamline workflow, respond to department strategic goals, reduce medical errors, and increase the quality of patient care. The imaging informatics professional (IIP) certification is designed to assure the unique blend of technical, clinical, and business skills necessary for a modern PACS administrative team to carry out mission critical roles successfully. Your institution probably requires certification for radiologists, technologists, nurses, and administrators. Do you require your PACS adminstration and support staff to be certified?

Imaging Informatics Professional (IIP) Certification

The American Board of Imaging Informatics (ABII) was founded in 2007 as a result of a joint effort between the Society for Imaging Informatics in Medicine (SIIM) and the American Registry of Radiology Technologists (ARRT) to the recognition and development of qualified IIP in the successful implementation and management of a PACS system. ABII began administering the IIP exam in 2007 and offers it twice yearly at secured testing centers. The exam consists of 150 questions in ten major knowledge domains (Box 1) and is designed to be compatible with the National Commission for Certifying Agencies (NCCA). Certification is time limited and lasts for five years after the exam. Continued education is required during the five year cycle to recertify and a recertification exam is required at the end of each ten year cycle.

Certain eligibility requirements must be met to take the exam, including a mix of healthcare informatics experience, education, and credentialing. Over the initial

BOX 1. Knowledge Domains

Procurement
- Determine readiness for electronic environment
- Establish and implement a process for vendor selection
- Negotiate contracts with vendors

Project Management
- Identify goals, scope, risks, and key members of the project team
- Evaluate the feasibility of a project
- Utilize common project management tools

Operations
- Design and implement quality improvement (QI) procedures
- Develop and implement policies and procedures
- Ensure compliance with federal regulations

Communications
- Recognize roles and relationships in healthcare settings.
- Communicate with healthcare professionals using appropriate medical terminology.
- Alert clinical staff about issues regarding system availability or changes.
- Provide decision-makers (business units, CIO, etc) with information about system changes.
- Develop user feedback mechanisms.

Training and Education
- Perform needs assessment to determine training needs.
- Evaluate and select training programs according to user needs.
- Implement training or educational programs.
- Evaluate effectiveness of training.

Image Management
- Manage the design of the environment for viewing and interpreting images.
- Evaluate the human-computer interface.
- Determine optimal image flow and implement process that ensures data integrity.
- Import and export outside studies into a PACS.

Information Technology
- Assess storage and archiving needs and determine appropriate architecture.
- Design and specify network architecture.
- Implement and maintain appropriate hardware and software.
- Retrieve information from databases for operations, quality assurance, and planning purposes.
- Identify and implement IT standards.
- Develop appropriate replacement schedule.

Systems Management
- Determine requirements for optimal, cost effective system capacity, and throughput.
- Plan disaster recovery and business continuity strategies.
- Use problem management and system availability tools and strategies
- Plan and evaluate data migration procedures.
- Maintain data security and individual privacy.

Clinical Engineering
- Assess imaging modality capabilities.
- Supervise modality integration.
- Establish a program for image display quality control.
- Recognize hazards specific to the healthcare environment.

Medical Informatics
- Identify and implement medical imaging standards.
- Apply appropriate IHE guidelines.
- Integrate image architecture into organization's long-range plan.

TABLE 1. Eligibility Criteria for IIP Certification Exam.

Candidates must have at least 7 points in total AND meet all minimum criteria		
Experience	**Education**	**Credentials and Continuing Education**
Minimum 2 points, Maximum 5 points	Minimum 0 points, Maximum 5 points	Minimum 0 points, Maximum 2 points
1 point per 12 months of work experience in a healthcare imaging or imaging informatics related field.	Education points are not cumulative and are awarded based on highest level of education.	1 point each for credentials listed in the IT Credentials or Clinical Credentials section of the website.
	No degree (but at least 30 credit hours) = 1 point AA/AS or equivalent certificate program = 2 points BA/BS = 4 points Graduate degree = 5 points	For each 18 hours of continuing education credits in imaging informatics and related disciplines taken within 18 months of the date of application = 1 point.

six exam offerings since 2007, 620 people have taken the exam and 541 have passed. Passing rates have ranged from 70.9% to 96%.[6] The exam structure and prerequisites are similar in many ways to the CRA examination.

Qualifications Necessary to Take the Examination

Among the diverse backgrounds and talents of PACS administrators, key attributes of successful professionals include experience in a related field, education, and certifications or continuing education. The eligibility qualifications for the IIP certification are designed to ensure a threshold combination of these three key elements of prerequisite experience, while providing flexibility for applicants of unique talents and backgrounds to be eligible for the exam.

Eligibility criteria are calculated using the point system outlined in Table 1. These eligibility points are awarded for number of years of experience in a related field, education level, and IT/clinical credentials or other continuing education. A combined total of seven points are required to sit for the exam, which may come from any combination of the three categories. Background in at least two categories is required to attain the seven points. Two points must come in the form of two years of experience as an IIP.

The experience requirement is based on evidence that successful IIPs have imaging related job experience. While education can prepare an individual to do a job, experience is often the strongest teacher.[7] To quantify the experience, a point is awarded for each 12 months worked in healthcare imaging, or an imaging informatics related field. A minimum of two points is required thus ensuring every certified individual has had a minimum of two years of experience.

Education is an important element in a qualified IIP. With this in mind, a college degree or a minimum of completed college hours is considered when reviewing a candidate's eligibility to take the examination. While it is possible to qualify for the exam without a degree it requires a maximum of both years of experience and a strong dedication to continuing education activities.

The final qualifying criterion is continuing education. Technical advances in the medical imaging industry are made daily and the landscape of medicine is ever changing. It is more important than ever that IIPs stay abreast of changes in the industry. The IIP exam recognizes IT credentialing, clinical credentialing, and continuing education credits for both exam qualification and IIP certification maintenance.

The Value of an IIP Certified PACS Administrator

IIP certification helps to ensure the unique balance of clinical, technical, and business skill sets necessary to effectively manage a modern medical imaging environment. A strong clinical background—especially in diagnostic radiology—allows the administrator to anticipate and meet the challenges of the radiologists and clinical staff in today's demanding environment. The clinical acumen will also allow the PACS administrator to meet the needs of other "power users" outside of the radiology department and build positive interdisciplinary collaborative frameworks. A certified PACS administrator will also be able to mitigate PACS related conflicts in the department or the greater health institution with expertise and clout.

Certified PACS administrators will draw on technical skill sets as they interface with hospital IT representatives to tightly integrate the PACS with clinical information systems and maximize the value of digital health information for more informed reads. Optimization of PACS and related clinical information systems will ensure information integrity, reduce technical delays, maximize efficiency, and may expand business opportunities by adding integration of off-site studies into clinical workflow.

An adequately trained informatics professional becomes an asset to department management by offering clinical information system-based solutions to business goals and dilemmas which can be trusted and confidently implemented by virtue of ABII certified knowledge and training. Through active management and long term strategic planning, the PACS administrator can help optimize efficiency and productivity, reduce medical errors, and increase the quality of patient care.

Conclusion

Digital medical imaging has changed the way we practice medicine. It is critical not only for the radiology department, but for the health system as a whole. In today's demanding clinical radiology environment, it is no longer sufficient to simply maintain PACS and its related clinical information systems. The IIP certification exam was designed to help radiology administrators assure the unique blend of technical, business, and clinical skills when recruiting and staffing IIPs. In the hands of an adequately trained and certified PACS administrative team, a department can confidently leverage PACS and informatics tools to execute department strategy and directly enhance clinical outcomes for patients.

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