

Information technology in radiology



**ASSIGN
BUSTER**

Information Technology in Radiology

When describing information technology in the field of radiology; it simply means “ the branch of medicine that uses imaging techniques to diagnose and radio waves to treat disease” (Burke, L & Weill, B. 2009). Due to an ever evolving world of technology, computers have invaded the health care industry. They are typically found in the admitting office, the business office, and even the operating room. They are in the laboratory, pharmacy, x-ray, and medical records departments. They are fast and accurate and have an almost endless capacity to store data. For this particular research paper, the main interest will be that of information technology within the radiology department.

By definition alone; information technology includes computers, communications networks, and computer literacy. Without all three elements present, IT would simply fail to function within the field of Radiology. To better understand radiology, one must first understand that “ a traditional x-ray uses high energy electromagnetic waves to produce a two-dimensional picture on film” (Burke, L & Weill, B. 2009). Until recent technological advancements within radiology, imaging has always been a film based system that required films to be processed with chemicals and specialized dryer equipment.

Since the integration of IT within radiology, new imaging techniques rely on computers to generate images of the internal structures of the human body. This is what is commonly referred to as digital images. Although both IT and Radiology both may seem like one entity at first, they are actually two complete sectors within healthcare that have united in an effort to better

<https://assignbuster.com/information-technology-in-radiology/>

meet the demands of the healthcare future. As such, IT within radiology affects many subdivisions within radiology that includes; x-rays, Ultrasound, Computerized Tomography, Magnetic Resonance Imaging, Positron Emission Tomography, SPECT scans, Bone Density, and even Interventional Radiology to name a few

Another area that requires the joint effort of both IT and Radiology is that of Picture Archiving and Communications Systems (PACS). The use and introduction of PACS within radiology uses networked hardware and software to store, retrieve, display and distribute digital images, such as CT images and ultrasound. PACS which was initially introduced in the US market in the early 1980's, was designed in an attempt to reduce the costs associated with traditional film production. Other advantages that come with the use of PACS are that it allows images to be viewed instantly over a network allowing medical professionals instant access to images which in turn improves all around efficiency

When taking into consideration the many benefits that computers, IT and radiology combined have to offer, we must also remember that they are not perfect. As such, problems associated with computerization include the loss of confidentiality and unauthorized disclosure of information due to unauthorized access by medical personnel. This is one particular reason why in 1996, the Health insurance Portability and Accountability Act was passed. Title II of the HIPAA law includes requirements for ensuring the security and privacy of individuals' medical information. The regulations under HIPAA protect medical records and other individually identifiable health information no matter whether they are communicated electronically, orally, or on paper.

<https://assignbuster.com/information-technology-in-radiology/>

Even though HIPAA provides a set of minimum standards that all facilities must maintain, both IT and Radiology must also implement additional safety mechanisms in place in an attempt to protect all information transmitted within the Radiology department. When dealing with PACS, it is traditionally an X-ray tech with advanced training that handles and maintains the server on a daily basis. This alone however can sometimes create problems with the IT department. When dealing with the IT department and the radiology department, both areas tend to compete as to who is better prepared to handle the monitoring and tracking of information through the PACS server. Keeping in mind that “ the standard communication protocols of imaging devices are called DICOM (digital imaging and communications in medicine)” (Burke, L & Weill, B. 2009).

DICOM in a sense is ultimately what allows PACS to be able to communicate with other servers within and outside the network. With that in mind, this is a very crucial area where IT personnel must be very cautious as to how information is protected and what information is allowed to communicate through secure channels. Going back to PACS personnel and that of IT personnel, they both play crucial roles in the everyday functions and tasks associated with how the radiology department functions on a daily basis. The best way to look at how both IT and radiology work together; is to first explain what exactly their individual roles are.

IT professionals traditionally perform a broad range of duties ranging from the installation of complex applications to the designing of computer networks and information databases. On the other hand however, radiology personnel typically are in charge of data management within the PACS

server, and networking with other servers through the use of DICOM.

However, any networking that radiology personnel perform beyond the boundaries of radiology will typically require the expertise of actual IT personnel. The bottom line is simple; although both IT and radiology work together, at the end of the day they are still two different complex systems (www. healthimaging. com)

It is this very reason why both IT and Radiology have become such an integral part of the healthcare system. In order for one system to work efficiently, it requires the assistance of the other and vice versus. As long as radiology continues to expand the boundaries of digital imaging, Information Technology will always be incorporated within the designing and implementation of such new trends. One particular trend that is currently in the works for the future is that of integrating PACS into surgery.

At the present time, the use of fluoroscopy which provides a dynamic image of a patient's anatomical structure during surgery; is the only way that radiology is able to view images in the surgical room. The only other way would be to print a digital image and physically carry it into the room. This can sometimes be problematic especially when neurosurgery is involved. This is also why the implementation of PACS is of such importance in the way surgeries are performed in the near future.

If a neurosurgeon is in the middle of a brain surgery, and he or she suddenly requires the images of the patient's brain, time is of the essence. In situations such as these, the integration of PACS in surgery would greatly reduce delays in surgery therefore increasing success outcomes. As

technology emerges every day, the role of both IT and Radiology will also shift beyond their normal boundaries of practice. The more technologically advanced that radiology becomes, the bigger the role IT will play in such an implementation (Burke, L & Weill, B. 2009).

In conclusion, IT and Radiology are two major components of healthcare that undeniably require the use of one another. As radiology progresses into the future, both IT and radiology personnel will both find themselves shifting roles in their everyday tasks and duties. As information technology expands the limitations of radiology to new boundaries, the educational requirements will also increase for both IT and radiology personnel to keep up to date with such changes. With more complex systems emerging in the near future, it is only a matter of time before both the IT department and radiology department become one entity.

References

Burke, L., & Weill, B. (2009). Information Technology for the Health Professions.

3rd ed. New Jersey: Pearson Prentice Hall.

Narcisi, G. (2010, March 03). HIMSS: Radiology and IT depts need to marry their

skills. Retrieved March 19, 2010, at

Search Health IT. (2010, January 26). FAQ: How does PACS technology affect

health care IT? Retrieved March 19, 2010 at

<https://assignbuster.com/information-technology-in-radiology/>

U. S. Department of Health & Human Services. Health Information Privacy.

Retrieved March 18, 2010, at <http://www.hhs.gov/ocr/privacy/>