Are you worried about artificial intelligence (AI) eliminating your job? Don't be. Even with the rapid development of AI, the great majority of radiologists will likely continue to have jobs in the decades to come, according to an article in the Harvard Business Review by Dr. Keith Dreyer, PhD, of Harvard Medical School and Thomas Davenport, PhD, from Babson College.

The first point that the authors make is that radiologists do more than interpret images. They also consult with other physicians on diagnosis and treatment, treat diseases, perform image-guided medical interventions, relate findings from images to other medical records and test results, and discuss procedures and results with patients, along with many other activities. In the unlikely event that AI took over image reading and interpretation, most radiologists could redirect their focus to these other essential activities.

The second reason is that clinical processes for AI-based image work are a long way from being ready. Different imaging vendors and deep-learning algorithms are focused on different aspects of the use cases they address, making it very difficult to embed these algorithms into current clinical practice. This process will take many years, though, and further expand the role of radiologists in the AI world, according to the authors.

A third reason, according to the authors, is that deep-learning algorithms for image recognition must be trained on labeled data—images from patients who have received a definitive diagnosis. Deep-learning algorithms have achieved high levels of success in other types of image recognition tasks when they have been trained on millions of labeled images, such as cat photos on the Internet. However, there isn't an aggregated repository of radiology images; these studies are owned by vendors, hospitals and physicians, and imaging facilities and patients.

The final reason is that changes in medical regulation and health insurance are required for automated image analysis to take off. A number of key issues need to be worked out with AI, such as who is responsible if a machine misdiagnoses a case or how healthcare payors will reimburse for an AI diagnosis. "There are substantial medical and productivity benefits to be gained from integrating AI with radiological practice," they wrote. "The productivity improvements may even mean that radiologists can spend more time doing what many of them find most fulfilling: consulting with other physicians about diagnoses and treatment strategies. If the predicted improvements in deep-learning image analysis are realized, then providers, patients, and payors will gravitate toward the radiologists who have figured out how to work effectively alongside AI."

Medical necessity and proper documentation are the keys to having any claim paid. This is never more true than when it comes to billing both transabdominal and transvaginal ultrasound studies done at the same session. First, let's look at the issue of medical necessity. It is not always medically necessary to do both a transabdominal and transvaginal study for every patient. The medical necessity for both studies needs to be clearly documented. For example, a transabdominal study identifies an ovarian cyst. The medical necessity for the transvaginal study could be to further characterize the vascularity of the cyst.

Particularly in the case of TA/TV ultrasound where the anatomic area is the same, it is sometimes unclear exactly what was done by which method. For this reason, it is preferable to list each study in a separate paragraph and document each so that they can stand on their own merit. A complete transabdominal study must include a description and measurements of the uterus and adnexa, measurements of the endometrium, bladder measurements (when applicable) and a description of any pelvic pathology. Documentation of less than these elements requires the report to be coded as a limited study. The same holds true for a transvaginal study. All of the same elements should be documented for a transvaginal study as are required for a transabdominal study.
How Virtual Reality & Augmented Reality Could Change Medical Imaging

9:40 AM on March 28, 2018 by Lea Halim and Ty Aderhold. The Advisory Board Company (ABC) is the owner and publisher of this article.

While artificial intelligence has dominated much of the discussion on the technological future of imaging, it’s important for imaging leaders not to lose sight of other technological advances that may impact radiology in the coming years. In particular, virtual reality (VR) and augmented reality (AR) have the chance to change diagnostic and interventional radiology.

How imaging leaders can benefit from early AI adoption

An introduction to VR and AR

VR and AR are both image display techniques that present holograms—three-dimensional, computer-generated images—to the user via a wearable device such as a headset or glasses.

- VR uses a fully enclosed headset to replace the outside environment with a complete virtual world. This allows the user to interact with and manipulate the projected holograms and the virtual world in an immersive experience.

- AR relies on glasses-like devices to overlay computer-generated holograms on top of the user’s current environment. This allows the user to interact with the computer-generated projections while simultaneously continuing to experience the world around them.

While these technologies have been in development for some time, they’ve recently grown in popularity in the gaming and entertainment world. This has led to lowered prices and improved computing power, resulting in the exploration of potential use cases in medicine.

3 potential uses in radiology

1. Education: Radiologist education is perhaps the most obvious application for VR in radiology. It’s also likely to be the first broad-based use. VR-based education could allow radiologists or residents to view a 3-D image in real time, manipulate the image to get different perspectives and views, and even interact with the image. For example, residents could use a VR headset to view the 3-D anatomy of an image and walk around the image to view different angles. In many ways, the use of VR in education is similar to the growing use of 3-D printing for educational purposes.

2. Diagnostic image reading: VR has the opportunity to change both how radiologists view images and where they can view these images. As VR images continue to improve, 3-D rendered images could become the new “normal,” allowing radiologists to manipulate the hologram during the reading process to access additional information. Further, VR headsets will provide additional flexibility to radiologists by replacing the need for a workstation; radiologists will be able view images from home or remote locations.

3. Image-guided interventional procedures: While the fully-immersive environment of VR may not be conducive to interventional procedures and surgeries, AR has the potential to dramatically change how these procedures are conducted. For example, an AR application could project a 3-D hologram generated from an MRI projected onto a patient’s body. This reduces, or potentially eliminates, the need for the physician to look up from the procedure table at prior imaging. In preliminary studies of such techniques, AR has been shown to maintain the accuracy of the guidance, while reducing both procedure time and exposure to radiation.

Current challenges

While there is great potential for the use of AR and VR in imaging, it is important to recognize that there are still hurdles that must be cleared before such applications hit the market and are widely used in medicine.

Read more: https://www.advisory.com/research/imaging-performance-partnership/the-reading-room/2018/03/virtual-reality