HealthManagement.org
The Journal
LEADERSHIP • CROSS-COLLABORATION • WINNING PRACTICES
VOLUME 18 • ISSUE 1 • 2018 • € 22
ISSN = 1377-7629

2084

- EDITORIAL, *C. LOVIS*
- HOSPITAL OF THE FUTURE, *M. KEEN*
- FUTURE MEDICINE, TODAY'S HEALTHCARE, *S.HEINEMANN*
- LET'S CHANGE BEFORE WE HAVE TO, *M. CABRER*
- SMART CONTRACTS IN HEALTHCARE, *S. JANIN*
- PATIENT HEALTHCARE PORTALS, *M. PETERSEN*
- LABS OF THE FUTURE
- FUTURE OF AUGMENTED REALITY IN HEALHTCARE, D. *MADISON*
- CHALLENGES, OPPORTUNITIES OF TOMORROW'S RADIOLOGIST, *D. HILMI*
- UTILITY OF ARTIFICIAL INTELLIGENCE IN CARDIOLOGY, *R. VIDAL-PEREZ*

TOP HEALTHCARE TRENDS 2018

THE FUTURE OF MEDICINE BOOK, *P. BRONSON ET AL*

VISIONARY LEADERSHIP, *D. CORTESE ET AL*

WOMEN IN RADIOLOGY, *S. BAKER*

ROBOTICS: A CHANGE

MANAGEMENT CASE STUDY, *L. ROBSON*

AWARD-WINNING 'DOCTORS' ASSISTANTS', *S. MCNALLY ET AL*

3D PRINTING AT THE JACOBS INSTITUTE: AN UPDATE, *P. MARCUCCI*

DEEP INTEROPERABILITY IN HEALTHCARE *C. BUCKLEY,*

VIRTUAL REALITY CLINIC: A CASE STUDY, *B. WIEDERHOLD*

MACHINE LEARNING FOR BRAIN TUMOUR DETECTION, *D. CORONADO*

ARE RANKINGS THE BEST WAY TO DETERMINE HEALTHCARE SYSTEMS? *A. LAYLAND ET AL*

©For personal and private use only. Reproduction must be permitted by the copyright holder. Email to copyright@mindbyte.eu.

The challenges and opportunities of tomorrow's radiologist

Radiology facing its future head on

An overview of how smart tools such as artificial intelligence should perhaps not be feared, but rather accepted and embraced.

Dalia Hilmi
Staff Editor, Cyprus HealthManagement.org
dh@healthmanagement.org
@ehealthmgmt
healthmanagement.org

The future of radiology is indeed a hot topic in healthcare today. The role that smart technologies such as deep learning (DL) and artificial intelligence (AI) play within radiology continues to spark both fear and interest, yet the reality is that they are both potentially very useful technologies that will add value to the field in many ways.

All across the field, people are questioning what this means for the traditional role of the radiologist. In fact, it's an issue that is not just limited to radiology; physicians and providers of all kinds are dealing with this issue.

This particularly trending topic was no doubt the most talked about subject at the recent Radiological Society of North America (RSNA) congress in Chicago in November last year. From Dr. Roderic, to Dr. Paul Chang, experts drew their conclusions on "tomorrow's radiology" and while there is growing concern and fear, there also appears to be an idea that such technological innovations need to be optimised in order to be used to their maximum advantage.

Various riveting sessions took place that covered the subject, however there were a few particular ones which seemed to take the lead.

During a session titled "Harnessing Artificial Intelligence," Dr. Keith Dreyer, vice chair of radiology and

©For personal and private use only. Reproduction must be permitted by the copyright holder. Email to copyright@mindbyte.eu.

director of the Center for Clinical Data Science at Massachusetts General Hospital, Boston, and chair of the American College of Radiology's Commission on Informatics, explained to the audience the complexities involved in teaching computers to read images.

"Machines are getting smarter faster than people are," said Dr. Dreyer. He explained that radiology needs globally accepted ways to develop and incorporate AI, in order to make it easy for developers to create new applications and integrate them into imaging devices and clinical information systems. Dr. Dreyer referred to the issue of developing AI as “a "healthcare AI ecosystem."

In an another powerful session Dr. Roderic I. Pettigrew told delegates in his presentation “Tomorrow’s Radiology” that the overall goal of today’s healthcare enterprise is to achieve healthy longevity.

Dr. Pettigrew explained that tomorrow’s radiologists must work to establish themselves as imaging, information science and image-guided therapeutics experts who will play a vital role on healthcare teams.

"That bold vision requires technological innovation for earlier precision diagnostics and therapeutics," Dr. Pettigrew told the audience, "and tomorrow's radiology will play a critical role in achieving this goal.

"We emphasise innovation because we realise that like imagination, there is no end to innovation.”

Dr. Paul Chang, MD, of the University of the Chicago School of Medicine, explained to delegates in his session that due to the increasing demands on clinical imaging, radiology will indeed need these new technologies now more than ever before.

“Deep learning will help us because we are going to need something…some mechanism…to meet these new imaging challenges,” Dr. Chang said. The help that he was referring to was some kind of cybernetic help which would help radiologists’ get through a day’s work and therefore help to maintain and improve quality.

He explained that there is an increasing demand to correlate images with other clinical information in order to implement practices such as radiogenomics.

While many fear that the implementation of deep learning algorithms in image processing would drastically reduce the need for radiologists, Dr. Chang attempted to reassure the audience that “Deep Learning is not going to replace us, but instead redefine us”.

One such challenge during these early days is the fact that perhaps radiology doesn’t actually have the infrastructure to either feed, train or consume these systems.

"Other industries have really revved up for cloud computing and big data and are ready to consume deep learning, because deep learning loves that kind of environment," Dr. Chang said.

However, it seems that radiology is still struggling with electronic medical records (EMRs) and PACS and, “we generally don't have a true IT infrastructure that can feed and consume these systems,” he explained.

"The bottom line is that deep learning won't replace people — it will enhance them," Dr. Chang said, “We should be looking for the minimally heuristic use case sweet spot like workflow optimisation.” In addition, hospitals also need to be convinced that the AI algorithms work.

> “THE BOTTOM LINE IS THAT DEEP LEARNING WON'T REPLACE PEOPLE — IT WILL ENHANCE THEM”

Indeed, one can argue that reality will not allow the luxury of bringing groups of radiologists together to develop an opinion on every case. However, it’s clear that for such extreme complex cases, radiologists may be able to grab AI and other technologies by the swarm, which essentially could improve the accuracy of patient diagnoses, while also empowering team members and streamline the patient care process.

What is clear is that radiologists want a bigger role in healthcare, one that allows them a say in patient management, ideally one that goes from diagnosis to therapy follow-up. Plus, research trends and experts underline how AI will revolutionise radiology in the long term. Healthcare and in particular radiology was nothing like what it is today, so perhaps what needs to be kept at the forefront is the most common ground: taking care of patients. While these concerns across the board are no doubt valid, healthcare is seeing clinicians using AI to inform their diagnoses and care plans, rather than solely leaning on the technology.

However, it needs to be demonstrated through proof that the involvement of these devices in fact adds clinical value. Should this be demonstrated, then the opinions of experts like Dr. Paul Chang and Prof. Keith Dreyer can be understood and confirmed. ■

©For personal and private use only. Reproduction must be permitted by the copyright holder. Email to copyright@mindbyte.eu.