How GE Healthcare Solutions Help Address Radiologist Burnout

Today's radiologists face ever growing pressures of steadily growing volumes and increasingly complex image exams.

Not surprisingly then, burnout among radiologists is an ongoing problem. A survey of 15,000 respondents in the *Medscape National Physician Burnout, Depression & Suicide Report 2019* found that an incredible 45% of U.S. radiologists have reported burnout symptoms during the last year. In fact, radiology came in 12th place out of 29 among all specialties.[1]

"Many imaging leads I speak with know burnout is an issue," said Peter Eggleston, Global Product Marketing Director at GE Healthcare. "But they don't have any programs in place to specifically do anything about it."

Paradoxically, computerization itself seems to have exacerbated this workload stress problem.

In the past 20 years, computerization of the radiology practice has led to increased workloads as it has vastly increased the number of scans to evaluate — for example, 3D tomography dramatically escalates the volume of scans clinicians must evaluate — and learning new software can be frustrating and time-consuming.

"Implemented incorrectly, the very technology that promises to assist radiologists can itself cause an increase in cognitive workload, thus further contributing to burnout," Eggleston said. (According to MarketVision Research, AI applications embedded in and accessible through PACs are strongly preferred over standalone AI solutions.[2])

Assistance, not replacement

The answer lies in automation that *assists* the radiologist. Indeed, such a solution has been shown to be more effective than automation alone. For instance, a deep learning model that performs on par with expert radiologists in identifying breast cancer using screening mammograms, is shown to be a better diagnostic tool when used in conjunction with a radiologist, not as a substitute for one.[3] Case in point, iCAD reports that their ProFound AI for Digital Breast Tomosynthesis can provide over 50% reduction in reading time.[4]

This is why GE Healthcare has begun bringing forth solutions that effectively orchestrate the application of assistive technologies in the radiology reading workflows in a seamless and uniform fashion. Specifically, these solutions — a combination of devices, software, applications, and services — leverage Edison, GE Healthcare's intelligence platform, to empower clinicians by making devices, workflows, and services smarter.

To date, Edison powers 50+ applications and is deployment agnostic, meaning it can be used via the cloud, edge, or on devices.

Examples of Edison-powered applications include the following:

Critical Care Suite on Optima™ XR240amx. The mobile X-ray system is designed to immediately identify and prioritize critical conditions, such as pneumothorax, or collapsed lung, at the point of care.

Centricity™ Universal Viewer Smart Reading Protocols. Here, AI is leveraged to learn radiologists' hanging preferences, saving time in setting up future reads.

AIR x™. A deep learning algorithm automatically prescribed the scan location for neurological exams to capture the same slice position every time — regardless of whether it is a routine exam or challenging anatomical setup. The application simplifies MR scans for technologists and has the potential to increase efficiency for radiologists through more consistently structured images. It also supports providers' ability to track and analyze brain tissue and abnormalities over time, which could lead to more accurate diagnoses.

SonoCNS on Voluson™. This product automates fetal brain exams by properly aligning, displaying, and measuring the views of the fetal brain to decrease exam complexity and increase consistency. It also reduces keystrokes by 80%, which allows the clinician to spend more time focused on the patient and less on the machine.

Lack of efficient workflow contributes to radiologist burnout. In fact, disjointed technological solutions can worsen the problem. For this reason, all Edison-based innovations are designed to fit into existing clinical workflows, using industry standard protocols and APIs. Edison applications are designed to enable a seamless transition of data from a device, to a PACS, to a radiology workflow, to an EHR.

The Edison platform enables applications that help radiologists spend less time on routine manual work to focus on what's important for the practice of medicine and, of course, their patients.

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[1] Leslie Kane, *Medscape National Physician Burnout, Depression & Suicide Report 2019*, January 16, 2019.
[2] Quantitative Market Research, MarketVision Research, PACS AI, VNA AI, and AI Workflow, 2019; AI Clinical Apps Research Quantitative Market Research, MarketVision Research, MVR Project: 18-0473, 2018.
[3] Jason Phang, "Deep Neural Networks Improve Radiologists' Performance in Breast Cancer Screening," IEEE Transactions on Medical Imaging, 2019. https://ieeexplore.ieee.org/document/8861376
[4] iCad reported https://www.icadmed.com/assets/dmm252_profound_ai_for_breast_tomosynthesis_revb.pdf