ULTRASOUND OVERREADING: How WIFI Changed Point-of-Care Medicine

Introduction by: Dr. Robert L. Bard, MD, PC, DABR, FASLMS

In a recent case study with a Covid-Positive patient locked down at home, I partnered with an ultrasound manufacturer to donate use of their latest scanning model and remote access to their best virtual technical trainer to manage an at-home self-scanning scenario. The patient had personal hand-held access to a high end ultrasound to monitor and screen for any possible symptoms with the complete remote guidance of the imaging tech and (me) the Radiologist/Overreader. Thanks to today's teleconferencing tools and remote access to the device, the patient learned how to scan himself accurately and getting his proper cardiovascular readings was fast, easy and efficient.

This program was yet another proof that DIGITAL ULTRASOUND is the future of emergency diagnostics. What makes ultrasound a perfect device for this remote diagnostic paradigm is its ability to come in many PORTABLE models. Also, ultrasound is fast responding, safe (radiation free), non-invasive and easy to learn with a trainer. This is the perfect formula for satisfying the many critical care situations where the reality of distance can be addressed with technology.

* Image courtesy of: TERASON ULTRASOUND

THE DIAGNOSTIC OVERREADER: YOUR VIRTUAL RADIOLOGIST

The concept of REMOTE imaging has been around for decades. My practice has been involved with some of the most complex clinical trials and treatment partnerships with hospitals in Italy, Australia, Germany and other foreign lands, reviewing, investigating or confirming scans like MRI's, CT and Ultrasound. To operate high-powered imaging technology is a craft in and of itself, but to READ what

Remote Ultrasound Self-Screening with Virtual Tech Team & Medical Overreader

you see, then to dig deeper to 'play detective' and to drive the investigative process with accuracy and intuition is a solid contribution to any medical team. I have built a reputation of being the surgeon's "go-to second opinion". To have an oversight partner, reviewing your scans and conclusions is accountability at its finest, and peace-of-mind of a second pair of expert eyes.

Thanks to the advancements of our web-based communication tools, overseas collaboration via electronic FILE-SHARING has been streamlined to empower and facilitate the world of patient care. As with TELEMEDICINE (where a patient and physician's time and safety are better supported) the concept of installing a Radiological Overreader in any patient care facility is part of our next generation of unified medicine.

BENEFITS OF AN IMAGING OVERREADER PARTNERSHIP:

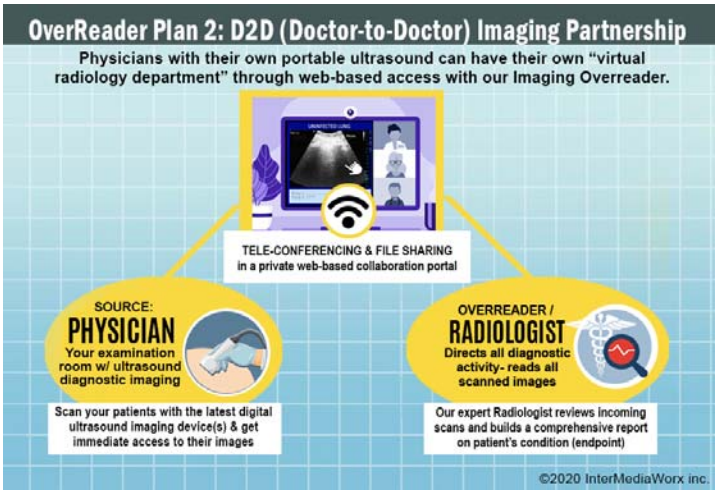
1) Installing an affordable value added service to any practice

2) A second opinion is PEACE OF MIND of all your scans from a certified Radiologist- adding new diagnostic support to your patients

3) Expands your ability to collaborate with other physicians as well as treating your patients remotely

4) Having advanced imaging analysis reduces the level of RISK by raising a level of validity and added confidence to all your medical reports relating to complex scans

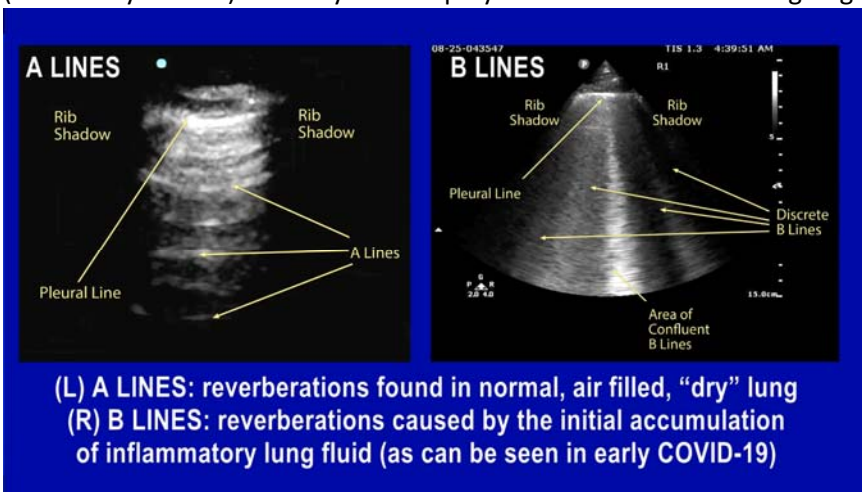
5) As a virtual partnership, having an overreader is an affordable upgrade to your staff without the overhead



D2D: Doctor-to-Doctor is a common term in TeleMed Conferencing uniting physicians in active sites (Point of Care activity with patient) + a remotely accessed medical radiologist placed on the scene via WIFI.

"BEFORE & AFTER" STUDIES

The most sensible and logical way to identify the results of any treatment is by tracking the body's response to it. Controlled testing must show the patient's condition PRE and POST effects, where true data-finding is collecting the necessary EVIDENCE of its claims. The investigator can pull a significant amount of data from this form of validation testing: including stage-by-stage bodily response to future projections of possible side effects. Recording of any and all physiological response means the researchers are counting on the patient's body to tell us what it is undergoing during the testing phase. To prevent mis-reading and erroneous reports, trials tend to work with a large number of test patients (commonly 50-100) and may also employ redundancies like undergoing multiple testing protocols for a second or even third opinion. To capture the benefits of a BEFORE AND AFTER review, Imaging is often used as a standard screening solution for the response of most of the major organs.



(L) A LINES: reverberations found in normal, air filled, "dry" lung
(R) B LINES: reverberations caused by the initial accumulation of inflammatory lung fluid (as can be seen in early COVID-19)

WHAT ARE B LINES? Expert ultrasound readers are trained to identify anomalies in organ performance. In the case of screening for possible Covid-related pathogen response, B-lines are often sought after as a prime indicator of fluid in the lungs. They can be visualized as hyperechoic vertical lines extending from the pleura to the edge of the ultrasound screen. These lines are sharply defined and laser-like and they typically do not fade as they progress down the screen. A few B-lines that move along with the sliding pleura can be seen in normal lung due to acoustic impedance differences between water and air. However, excessive B-lines are abnormal and are typically indicative of underlying lung pathology.

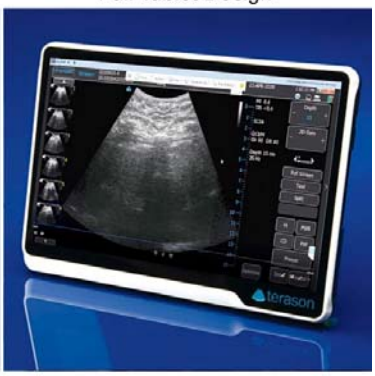
.....

TYPES OF POINT OF CARE ULTRASOUND SYSTEMS (POCUS) AVAILABLE

All-in-one Laptop Model

Probe Inegration with Smart Phone

Full Tablet Design



The Butterfly™ iQ

The Terason™ 3200T

GOING PORTABLE: Fast Response for Field Demands

Once upon a time, ultrasound imaging device design were large and cumbersome, often the size of a refrigerator. They were one-piece units with wheels to support in-hospital traveling. But over time, as the medical community took to the ultrasound as the reliable choice for quick, accurate scanning, so did the demand to scan patients out on the field. From ambulances, cruise ships, commercial airlines and even the space program, the design of the ultrasound steered toward more PORTABLE, and HAND-HELD models.

The battery-powered, pocket-sized ultrasound machine became commercially available in the late 1990s where smaller and lighter devices with higher image quality such as those manufactured by GE Healthcare, Siemens and Philips dominated this portable market. These pocket-sized ultrasound machines allowed clinicians to have immediate visual correlation with physical examination findings. They also allow for quick and instant assessments, which are extremely important for emergency physicians. At a healthcare resource allocation level, they significantly reduce a patient's waiting time and improve clinician's workflow. Furthermore, the cost of pocket-sized ultrasound machines is much lower than that of standard ones.

A recent study from emergent care physicians and EMT's have called on the need for "pre-hospital imaging"- where the need for efficiency in applying "precious seconds" of focused care means everything. Portable scanners and handheld ultrasound devices are clearly expanding toward at-home versions all the way to "battlefield" models called "the modern stethoscope"- today's solution to fast, initial examinations and real-time response, timely suited for our current health crisis and beyond.

This article is originally published by the Journal of Modern Healing, the official newsletter of the NY Cancer Resource Alliance *© 2020- All Rights Reserved. All content images are sourced from their credited sources who have expressed approval for its respective use in this article for public information.*