

# Why use ultrasound in the Emergency Department?

A Conversation with Thomas Cook, MD

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The entire manner in which patient care can be conducted is dramatically changed by the ability to image at the bedside. Traditional Emergency Department (ED) differential diagnosis consists of a variety of tests that provide a yes or no answer, followed by lab tests and a variety of imaging options. For the last 60-70 years, if an ED patient required imaging, the paradigm was to send the patient to another department with imaging staff and high cost medical imaging systems. With the advances in ultrasound and miniaturization, medical imaging has to come to the bedside. The Emergency Medicine Physician (EMP) can do the exam and interpret it without having to send the patient to someone else. What was once cycled through many people, is now a data loop that the EMP can control and close by him or herself. Ultrasound has provided a huge paradigm shift in the ED, changing medical practice and empowering the EMP at the bedside.

## What are the major benefits ultrasound brings to the ED?

Ultrasound has a major impact on patient care and workflow in the ED by changing the patient evaluation strategy. Imaging at the bedside provides information that will help EMPs determine life-threatening events. Ultrasound provides immediate feedback; it goes way beyond patient monitoring. For example, in 10 seconds an EMP can see the function of the heart. When time is of the essence, as with a heart failure patient, therapeutic intervention can create great results. Patient care is greatly improved by performing imaging at the bedside. By performing a cursory ultrasound exam, the EMP can relieve patient anxiety. Ultrasound is a safer and faster patient experience.

## Under what circumstances is ultrasound most beneficial in the ED?

Use of ultrasound is at the EMP's discretion and based on the immediacy of the situation. There are, however, certain patients and pathologies that generally require an ultrasound upon admission to the ED. Two of these categories are older patients experiencing abdominal pain, and first trimester pregnant women. Older patients with abdominal pain could be signs of an aortic disorder or the person could be on the verge of a heart attack needing immediate intervention. In first trimester pregnancies, the embryo is too small to feel. The woman could be experiencing an ectopic or tubal pregnancy, requiring immediate intervention. The prior ED diagnostic process without bedside ultrasound could take 5-6 hours to find out what is wrong in either situation. Today a 90 second ultrasound study can provide the answer almost immediately. It all comes down to improved quality of care. Medical errors account for 100,000 deaths annually in the US; many could be avoided by the use of ultrasound.



## How do you suggest an ED propose that ultrasound become integrated into their department?

The medical field is conservative and slow to change. Today about 24% of EDs use ultrasound, mainly in community hospitals. Ultrasound is not hard to learn, it opens up a new world and its benefits are widely documented. An ED Director who wants to institute ultrasound needs to find 2 people - a champion who will be passionate and direct the program, and another person who will agree to fund the ultrasound machine. For the champion, either recruit an EMP with existing knowledge or identify someone on staff and have them trained in ultrasound. Obtaining funding to get the machine should not be difficult once you convince the organization of the benefits of ultrasound in the ED. Again, the benefits are well documented in current literature. The cost of an ultrasound unit is not high considering the associated benefits.

## Do you have any advice for those EDs that are meeting resistance from the Radiology Department?

The ED should be considered a sovereign department and ultrasound should be purchased and managed by the ED department. The ED requires 24/7 support and generates a huge workload in itself. Workflow benefits for ultrasound in the ED emanate from EMPs performing their own exams. The Radiology department should not control the utilization of ultrasound in the ED.

## What would you tell an EM Director who doesn't feel ultrasound is needed in his/her ED?

Ultrasound is a clearly proven, extremely effective diagnostic tool that instantly provides you the data you need to manage the patient. There exists a wealth of clinical experience regarding the benefits to justify the purchase. By the next decade it will be an expectation that all EDs have ultrasound and that all EMPs have ultrasound skills. Achieving quality ED care is a combination of qualified staff and availability of sufficient technology and resources. As an EM Director, ultrasound can greatly assist in the management of cases and improve time to diagnosis. Ultrasound is an affordable, versatile tool that can help EDs avoid mismanagement of cases.

About Thomas Cook, MD

Dr. Thomas Cook, is currently the Residency Program Director at Palmetto Health Richland in Columbia, South Carolina, the Co-Director, Clinical Ultrasound at the University of South Carolina School of Medicine, and Partner in EHEALTHCONCX Healthcare Connectivity Software and Services, Hillside, New Jersey. He is also the founder and co-director of The Emergency Ultrasound Course.

Tom attended medical school at the University of Virginia and completed his residency in Emergency Medicine at Darnall Army Hospital in Fort Hood, Texas. Tom has been using ultrasound in the practice of Emergency Medicine since 1996.

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