

## Bedside Ultrasonography in Clinical Medicine

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This is to acknowledge that Razaq Badamosi, M.D. has disclosed that he does not have any financial interests or other relationships with commercial concerns related directly or indirectly to this program. Dr. Badamosi will not be discussing off-label uses in his presentation.

## **Purpose and Overview**

Brief History of ultrasonography in medicine

AMA/IOM statement

Components of bedside USS

Data supporting bedside Ultrasound

Training and certification

Controversies

Future and setting up an institutional curriculum

## **Educational Objective**

1. Identify common clinical questions asked by internists, which can be effectively answered with point of care ultrasound.
2. Describe the important components and evidence supporting the use of Bedside ultrasound in clinical medicine
3. Describe current state of ultrasound training in medical schools and internal medicine residency training programs
4. Describe policy /implementation considerations for institutional Bedside Ultrasonography program

Dr. Badamosi, is a clinical assistant professor of Medicine at UT southwestern, and his areas of interest include Critical care Ultrasonography, and cardiopulmonary resuscitation. He is a Registered Diagnostic cardiac sonographer.

## **Definition**

Bedside Ultrasonography is Ultrasound performed at the Bedside or point of care in real time; the performer is usually the consumer of the generated information/data Findings are directly correlated with the patient's presenting signs and symptoms. Bedside ultrasonography is easily repeatable if the patient's condition changes.

## **Synonyms**

- Hand-held ultrasound
- Point-of-care ultrasound
- Ultrasound stethoscope
- Quick look ultrasound

## **Ultrasound Basics**

Frequency above which humans can hear

>20,000Hz (20KHz)

Frequency in diagnostic Ultrasound is MHz

The higher the frequency the better the resolution, but the lower the penetration, the reverse is true

Piezoelectric material generates sound wave when electricity is applied, and generates electricity when mechanically distorted by sound waves

AMA affirms that ultrasound imaging is within the scope of practice of appropriately trained physicians;

AMA policy on ultrasound acknowledges that broad and diverse use and application of ultrasound imaging technologies exist in medical practice.

### **Component of bedside ultrasonography include**

#### *Bedside Echocardiogram*

Useful for determining volume status and volume responsiveness, presence of gross cardiac and pericardial abnormalities and estimation of ejection fraction

#### *Lung ultrasound*

Useful for ruling out pneumothorax, evaluating pleural effusion, diagnosing pneumonia and extravascular lung water

#### *Abdominal ultrasound*

FAST exam, Liver ultrasound for fatty liver and cirrhosis evaluation, liver masses, abdominal aorta evaluation, evaluating for renal stones and hydronephrosis

#### *Procedure guidance*

Central line placement, Thoracentesis, Paracentesis, peripheral IV access, Lumbar puncture

#### *Venous ultrasound*

r/o DVT

### **“Concerns” about Bedside ultrasonography**

- Further unnecessary testing/intervention
- False positive findings
- Increased expense
- User dependent technology
- Increased expense
- Distraction from core principle of physical exam technique

### **Institutional and Departmental Policy considerations and barriers to bedside Ultrasound**

- Credentialing and Faculty training
- Image Storage for QA

- Equipment
- Curriculum
- Collaboration intra- and inter-departmental

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