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Thursday, August 11, 2016

(Room 9)

14:00 - 16:00 WS #12: Pre Hospital Care Forum

16:30 - 18:30 WS #17: Pre Hospital Care Forum (Repeated)

Death of the Stethoscope

Because looking is better than listening

Nearly 90 year old

Presents with dyspnoea

Marked respiratory distress

HS dual and chest sounds clear



200 years ago



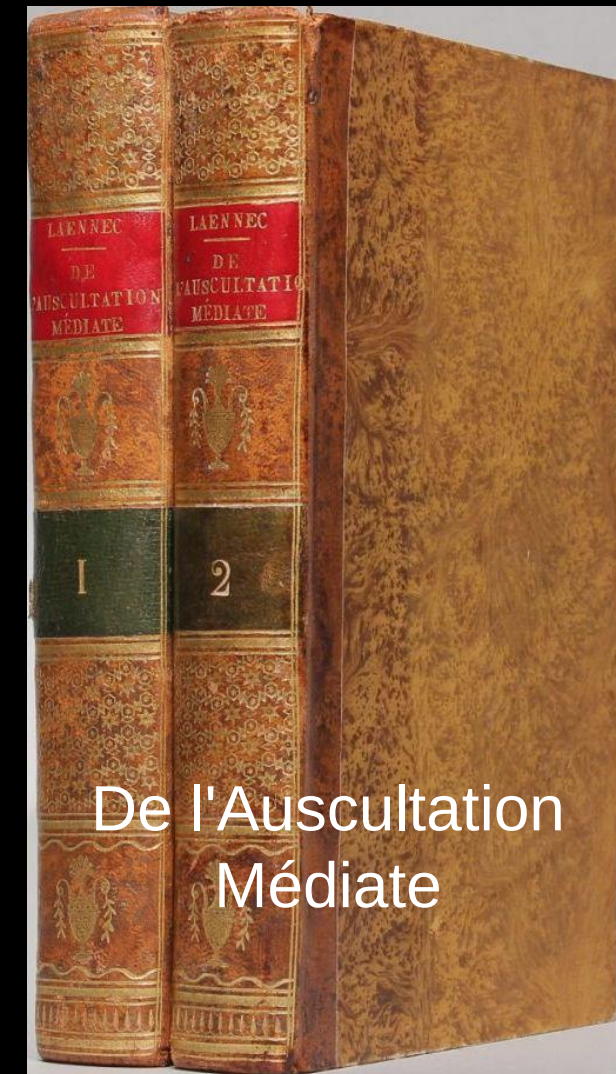
René Laennec



1818

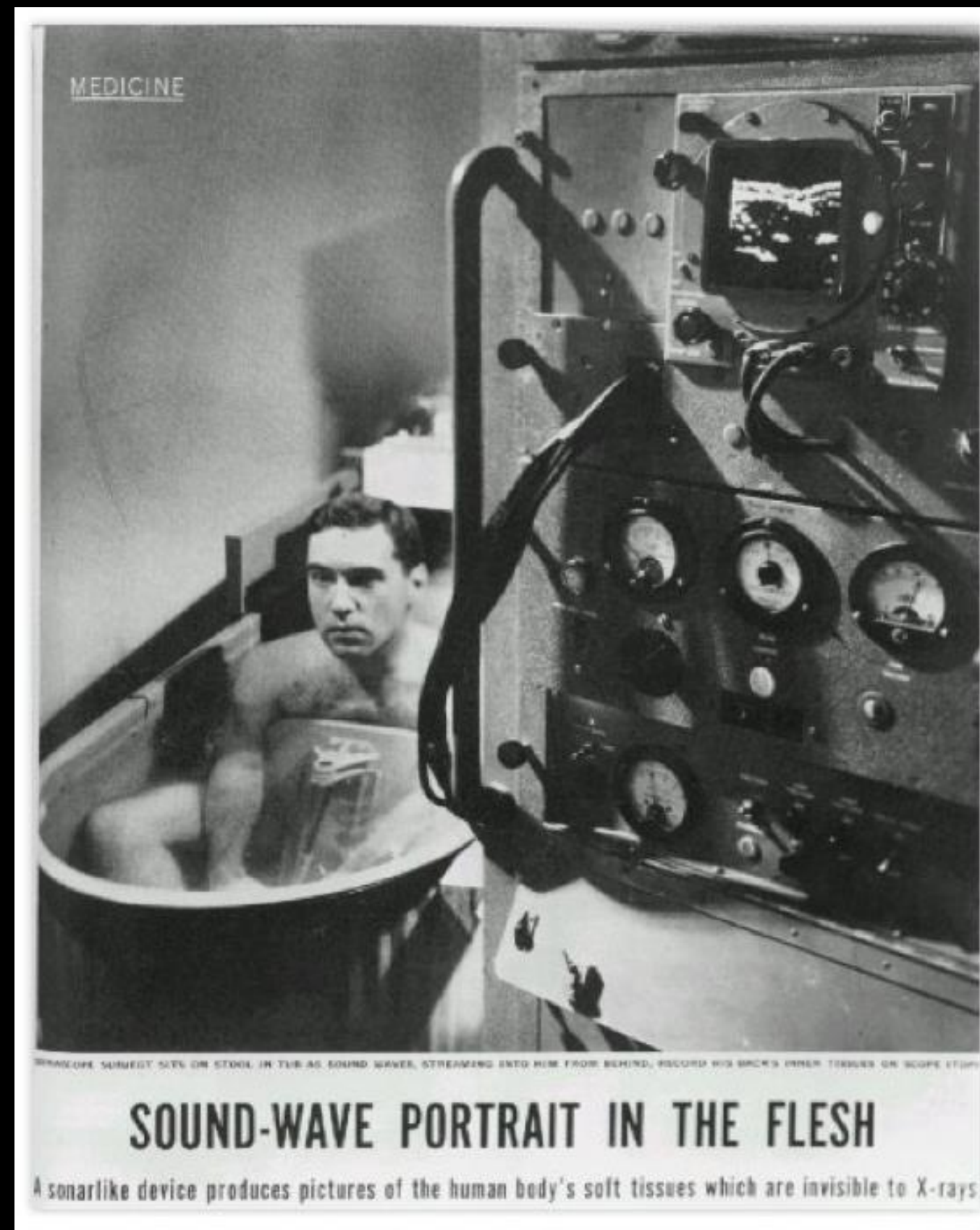
René Laennec

1819



De l'Auscultation
Médiate

“He that hath ears to hear,
let him use his ears
and not a stethoscope.”¹⁸⁸⁵



George Ludwig 1954

“Notwithstanding its value,
I am extremely doubtful
because its beneficial application
requires much time,
and gives a good deal of trouble
both to the patient
and the practitioner.”¹⁸²⁹

“the concept of an ‘ultrasound stethoscope’ is rapidly moving from the theoretical to reality.” AIUM 2004



1986

POCUS

Point Of Care UltraSound

CONCEPTS, COMPONENTS AND CONFIGURATIONS
echocardiography, emergency physician

Echocardiography Performed by Emergency Physicians: Impact on Diagnosis and Therapy

Echocardiography is the "gold standard" for diagnosing many cardiac and pericardial abnormalities. It is noninvasive and accurate, but in most emergency departments is only as available as the technician or the cardiologist. We describe our experience in training emergency physicians to perform cardiac ultrasound, and clinical situations in which we have found echocardiography to be useful. [Mayron R, Gaudio FE, Plummer D, Asinger R, Elsparger J: Echocardiography performed by emergency physicians: Impact on diagnosis and therapy. Ann Emerg Med February 1988;17:150-154.]

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INTRODUCTION

Echocardiography is the diagnostic procedure of choice for detecting pericardial effusions.¹ Effusions and hemopericardium usually present to the emergency physician as a series of nonspecific physical signs in a rapidly deteriorating, hemodynamically compromised patient. The differential diagnosis is limited, but even more limiting is the time in which to make the diagnosis and begin definitive therapy.

During the past three years, echocardiography has been performed by emergency physicians in our emergency department. Through a series of lectures and practical demonstrations, our staff and senior residents have acquired sufficient expertise to perform echocardiography on a limited basis. Our experience has shown it to be a rapid, noninvasive test that has improved our approach to diagnosis and therapy in several emergency clinical situations. Indications for echocardiography are trauma, to rule out pericardial effusion; nonperfusing cardiac dysrhythmias; and nontraumatic, unexplained hypotension, particularly in the setting of a high central venous pressure.

CASE PRESENTATIONS

Patient 1, a 16-year-old man, was stabbed once at the left subcostal margin, in the midclavicular line. He was found by paramedics to be conscious, but diaphoretic and cool without palpable pulses. Military antishock trousers (MAST) were applied and the patient was brought to the ED. An IV infusion of lactated Ringer's solution was begun en route and blood pressure obtained was 60 mm Hg systolic. On arrival his condition was unchanged. Bilateral breath sounds were auscultated and multiple IV lines were initiated, including a left supraclavicular central line. The patient's central venous pressure was 33 cm H₂O.

As a supine chest radiograph was being obtained, his systolic blood pressure dropped to 50 mm Hg and his level of consciousness decreased. Echocardiography revealed pericardial fluid and tamponade (Figure 1). Pericardiocentesis returned 50 mL of blood and his systolic blood pressure rose to 180 mm Hg. The patient was taken to the operating room, where a 1-cm laceration of the right ventricle was repaired. He had an uneventful postoperative course.

Patient 2, a 68-year-old woman, presented to paramedics complaining of shortness of breath. She had a systolic blood pressure palpable at 68 mm Hg, a pulse of 82, and a respiratory rate of 30. Shortly thereafter, she suffered respiratory arrest, her rhythm slowed to a bradycardia, and she became pulseless. When she arrived in the ED she was in a nonperfusing sinus bradycardia. The diagnosis of electromechanical dissociation was made.

1988



Grace Rozycki
FAST 1996



Everest
Base Camp

POCUS



International Space
Station

Table 1. Selected Applications of Point-of-Care Ultrasonography, According to Medical Specialty.*

Specialty	Ultrasound Applications
Anesthesia	Guidance for vascular access, regional anesthesia, intraoperative monitoring of fluid status and cardiac function
Cardiology	Echocardiography, intracardiac assessment
Critical care medicine	Procedural guidance, pulmonary assessment, focused echocardiography
Dermatology	Assessment of skin lesions and tumors
Emergency medicine	FAST, focused emergency assessment, procedural guidance
Endocrinology and endocrine surgery	Assessment of thyroid and parathyroid, procedural guidance
General surgery	Ultrasonography of the breast, procedural guidance, intraoperative assessment
Gynecology	Assessment of cervix, uterus, and adnexa; procedural guidance
Obstetrics and maternal–fetal medicine	Assessment of pregnancy, detection of fetal abnormalities, procedural guidance
Neonatology	Cranial and pulmonary assessments
Nephrology	Vascular access for dialysis
Neurology	Transcranial Doppler, peripheral-nerve evaluation
Ophthalmology	Corneal and retinal assessment
Orthopedic surgery	Musculoskeletal applications
Otolaryngology	Assessment of thyroid, parathyroid, and neck masses; procedural guidance
Pediatrics	Assessment of bladder, procedural guidance
Pulmonary medicine	Transthoracic pulmonary assessment, endobronchial assessment, procedural guidance
Radiology and interventional radiology	Ultrasonography taken to the patient with interpretation at the bedside, procedural guidance
Rheumatology	Monitoring of synovitis, procedural guidance
Trauma surgery	FAST, procedural guidance
Urology	Renal, bladder, and prostate assessment; procedural guidance
Vascular surgery	Carotid, arterial, and venous assessment; procedural assessment

* FAST denotes focused assessment with sonography for trauma.



ACEP Recommendations

Core applications:

(FAST), Renal, Cardiac, Biliary, Aorta, Early pregnancy

Trauma

Additional applications:

DVT, Soft tissue (abscess), Ocular, Testicular, Long bone fractures, Lung (thoracic), Joint effusions, Bladder volume, IVC diameter, Vascular access, Thoracentesis, Paracentesis, Arthrocentesis, Nerve blockade, Foreign body removal, Lumbar puncture



GE V-scan US\$7000
February 2010



Sonon 300C \$US 6,000



Clarius Wireless Ultrasound
Transducer



SonoSite iViz NZ\$ 28,000



Philips Lumify,
subscription
US\$199/month

Nearly 90 year old

Presents with dyspnoea

Marked respiratory distress

HS dual and chest sounds clear

1.07

TIB:

0.39

THI

MHz

1.88

97%

86%

22:25

01/02/1970

Depth **13.9cm**

MI:

0.64

TIB:

0.12

Res

MHz

6.40

97%

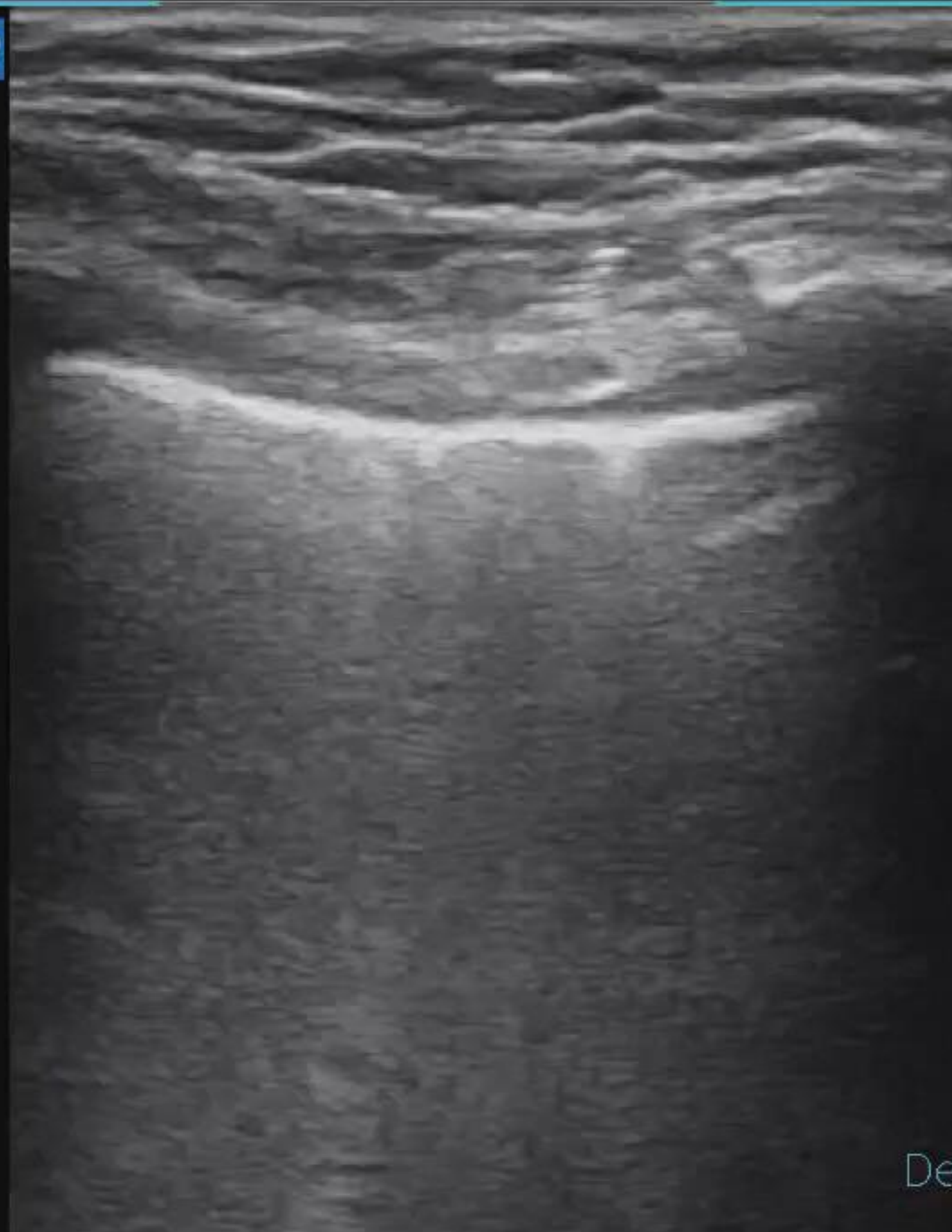


73%



22:33

01/02/1970



Depth4.9cm

MI:

0.64

TIB:

0.12

Res

MHz

6.40

97%

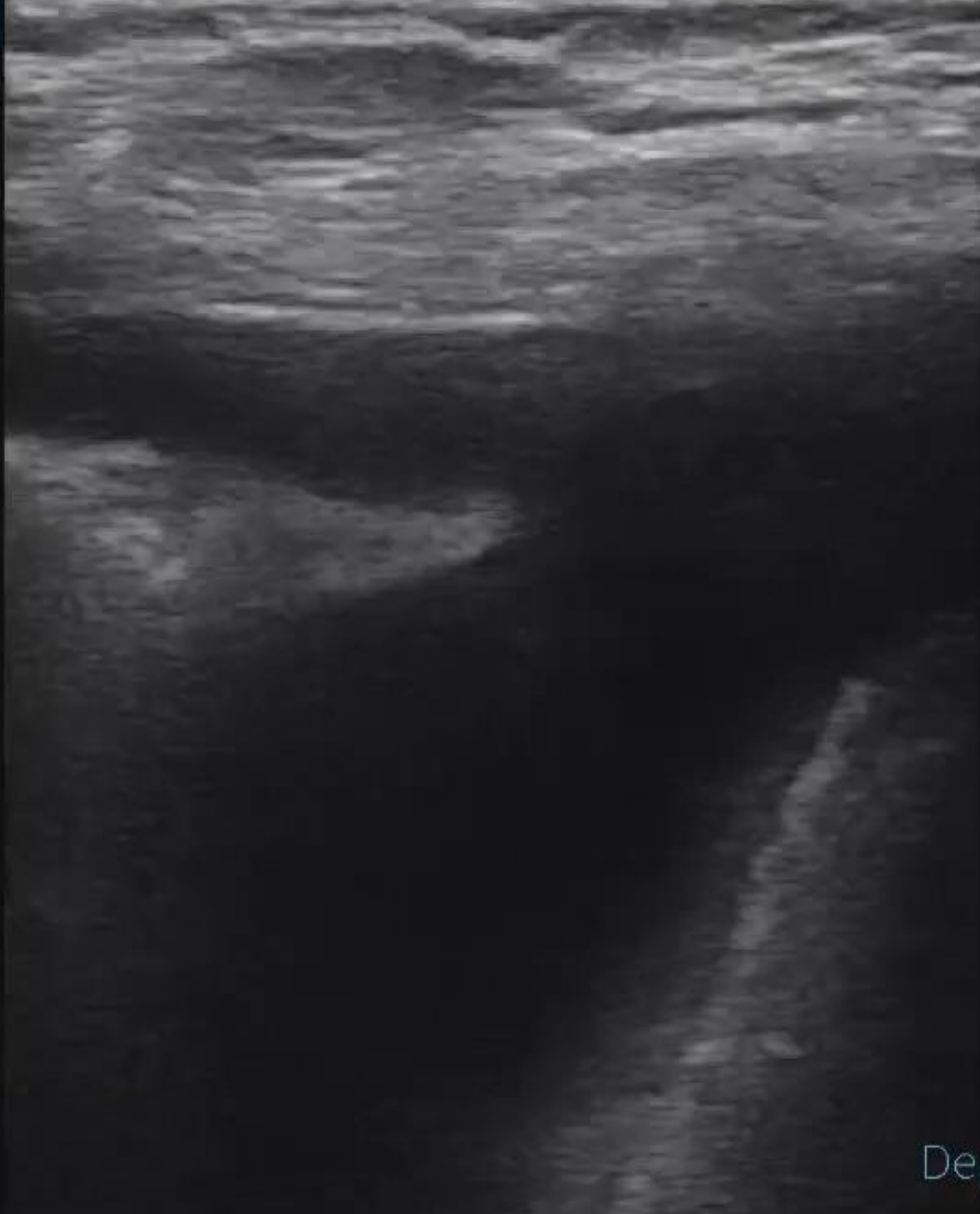


66%

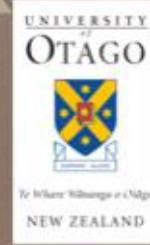


22:37

01/02/1970



Depth4.9cm



Department
of General
Practice and
Rural Health

Postgraduate Certificate in Clinician-Performed Ultrasound

Accredited by Australasian Society for Ultrasound in Medicine (ASUM)

GENX 717 Generalist Echocardiography and GENX 718 Generalist Medical Ultrasound (30 points each) Principles of generalist performed echocardiography and ultrasound, its application to medical diagnosis and management, especially in an emergency or rural setting to more accurately diagnose and appropriately manage medical problems: AAA, FAST scan – trauma, gallstones, bladder, early pregnancy, foreign body, hydronephrotic kidney, above knee DVT, pericardial effusion, impaired LV systolic function, volume assessment in the shocked patient, significant mitral incompetence and aortic stenosis. Introduction to chest and lung, eye and musculoskeletal ultrasound.

Procedures under US guidance - draining pleural effusions and ascites, insertion of suprapubic catheter; bladder aspiration, difficult vascular access and removal of foreign body.

These papers are taught together via distance learning using 3x3 day residential workshops, two audio-conferences and Blackboard discussion through the university website. There is also a compulsory physics component which is an additional cost as it is run independently from University of Otago.

Please note:

- You must have full access to an ultrasound machine with a cardiac probe.
- These papers are taught together and must be studied concurrently over a full year.
- Participant numbers limited to 10 per stream.
- Two streams will be taught in 2015. Choose stream one OR stream two (not both).
- Limited to: PGCertCPU, PGDipRPHP
- Location: Dunedin and Clyde.