

Using Point of Care Ultrasound (POCUS) to assess children with respiratory failure

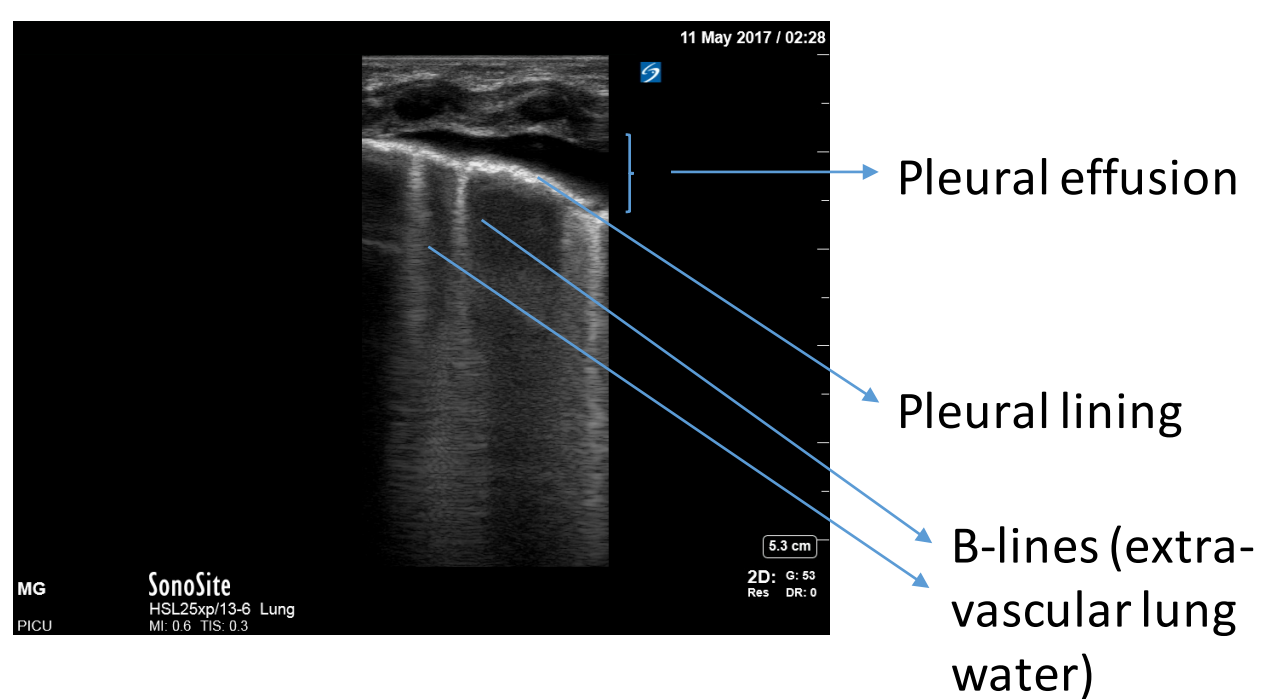
Ord H, Griksaitis MJ

What is POCUS?

POCUS is **bedside ultrasound scanning** to aid **diagnosis + management** without the need for radiation or moving the patient.

Sequential scanning can show you the impact of your intervention instantly.

It originated in adult medicine + is growing in popularity in acute paediatrics



What are the benefits of POCUS?

BENEFITS

- No radiation
- Immediate results
- Minimal movement of patient
- Safe and validated tool
- Quick, instant feedback
- Repeated scans in same patient easily
- Relatively cheap

Accuracy altered by skill of practitioner

Patient habitus alters accuracy

Type of fluid difficult to distinguish EG simple pleural effusion vs chylothorax

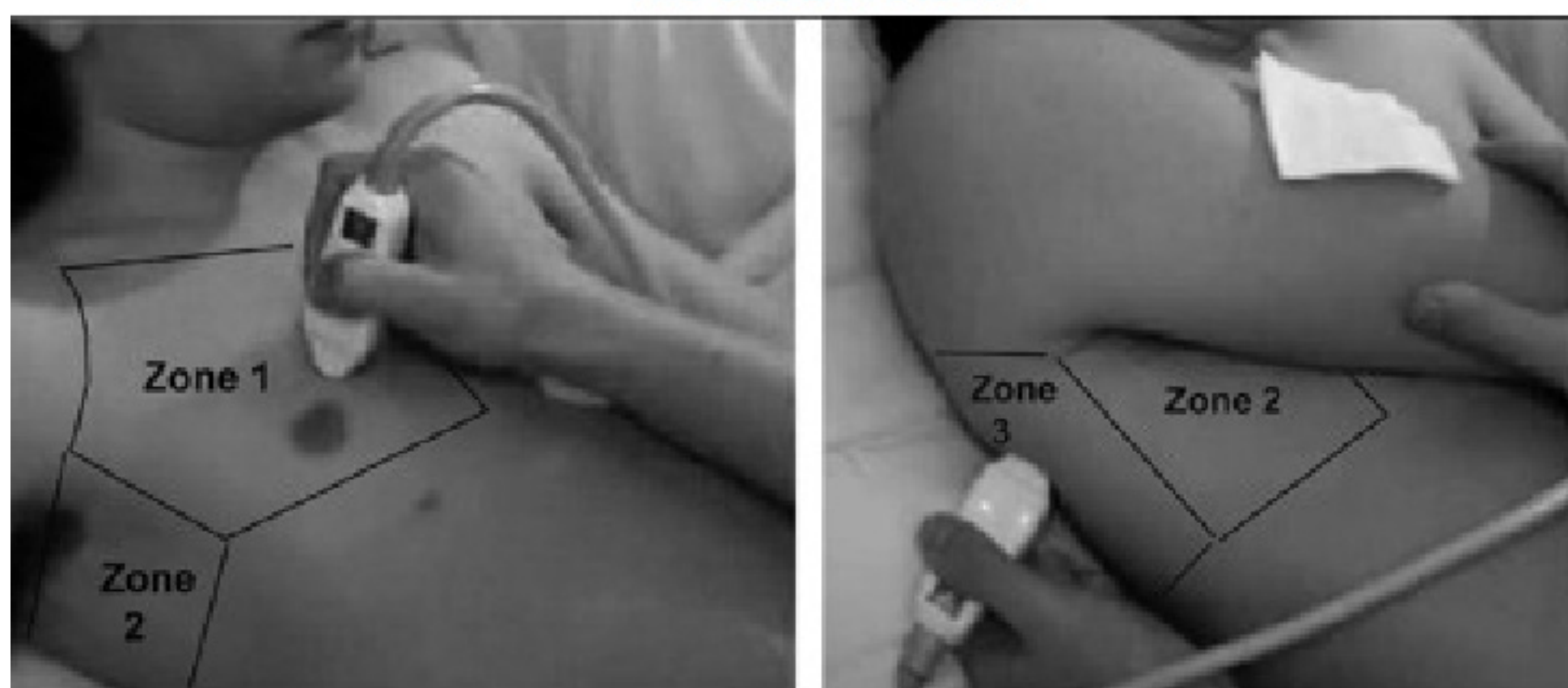
DRAWBACKS

How can POCUS help me with a child in respiratory distress?

- Normal lung
- Consolidation
- Pleural effusion
- Pulmonary oedema
- Pneumothorax

How do I do it?

Lung Ultrasound in the Diagnosis of Acute Respiratory Failure The BLUE Protocol



- Patients were in a semirecumbent position or supine (if intubated)
- Scans were longitudinal
- Zone 1: anterior chest wall
- Zone 2: lateral wall
- Zone 3: posterolateral chest wall
- Each wall is divided into upper and lower halves, resulting in six areas of investigation

Lichtenstein et al. Relevance of lung ultrasound in the diagnosis of acute respiratory failure: the BLUE protocol. CHEST July 2008 vol. 134 no. 1 117-125

What's the evidence?

Pathology Diagnosis	Chest X-Ray		Lung POCUS	
	Sensitivity	Specificity	Sensitivity	Specificity
Pneumothorax ¹⁰	46%	100%	87%	99%
Pleural Effusion ¹¹	51%	99%	94%	98%
Consolidation ¹²⁻¹³	77-86%	91-96%	95-97%	90-96%
Pulmonary Oedema ¹⁴⁻¹⁵	50-68%	76-83%	97%	98%

This indicates that lung POCUS has a greater sensitivity and at least equivocal specificity for many pathologies we would currently use a CXR to diagnose.

How do I get training?

CACTUS is the first paediatric POCUS course in the UK + the group are currently creating a curriculum and mentoring system alongside this. For more info contact Michael.griksaitis@uhs.nhs.uk or Helen.ord@uhs.nhs.uk