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

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

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

How's the evidence?

<table>
<thead>
<tr>
<th>Pathology Diagnosis</th>
<th>Chest X-Ray</th>
<th>Lung POCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sensitivity</td>
<td>Specificity</td>
</tr>
<tr>
<td>Pneumothorax</td>
<td>46%</td>
<td>100%</td>
</tr>
<tr>
<td>Pleural Effusion</td>
<td>51%</td>
<td>99%</td>
</tr>
<tr>
<td>Consolidation</td>
<td>77-86%</td>
<td>91-96%</td>
</tr>
<tr>
<td>Pulmonary Oedema</td>
<td>50-68%</td>
<td>76-83%</td>
</tr>
</tbody>
</table>

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

REFERENCES:
4. Intensive Care Society. Accreditation courses FICE and CUSIC
5. Intensive Care Society. Accreditation courses FEIC and COUCIC