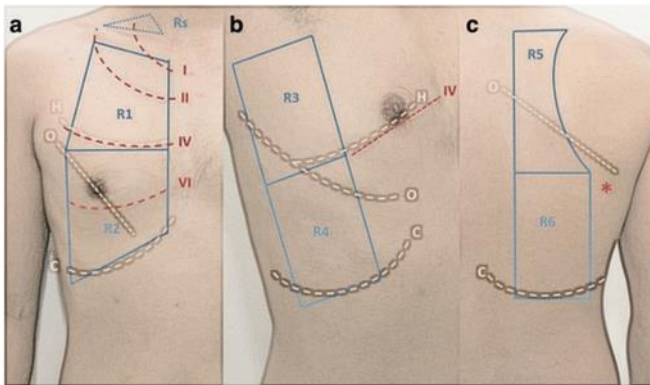


Clinical characteristics of COVID-19

- The most common symptom: fever, dry cough, myalgia, dyspnea.
- **Pneumonia** has been the most common clinical presentation.
- As lung abnormalities may develop before clinical manifestations and nucleic acid detection, experts have recommended early imaging exam of screening suspected patients.
- Complications: ARDS, acute kidney damage, heart damage, liver failure, pneumothorax.

Technique of lung scan

- Probe: convex (for **assess pleura**), Linear or phased (for **lung window**).
(Turn off the imaging filter such as compounding or harmonic filter, as it is important to check the imaging artifact).
- Position: supine or reclined position (anterior lung), prone or sitting position (posterior lung).
(patient arms abducted as needed, lateral decubitus for full examination)
- Transducer in **longitudinal** orientation and **intercostal** space (marker: cephalic position).
- Must be taken to keep the probe **perpendicular** to the chest wall during scanning.
- Scanning sectors: total **12 sectors** (Right and Left).



SONONs are now used for monitoring and screening suspected/confirmed COVID-19 cases at hospitals in Daegu, Korea and Wuhan, China.

Advantages of handheld ultrasound on COVID-19

Minimization of infection

Smaller area of contact with patients and easy to sterilize.

Reproducible and fast diagnosis

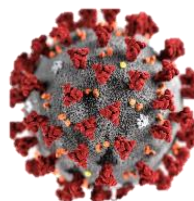
Allow a first screening and discriminate low-risk patients from higher risk patients.

Bed-side evaluation

Allow save time and easy to carry around.



Highly contagious COVID-19



Good accuracy

Similar to chest CT and superior to CXR for evaluation of pneumonia and ARDS.

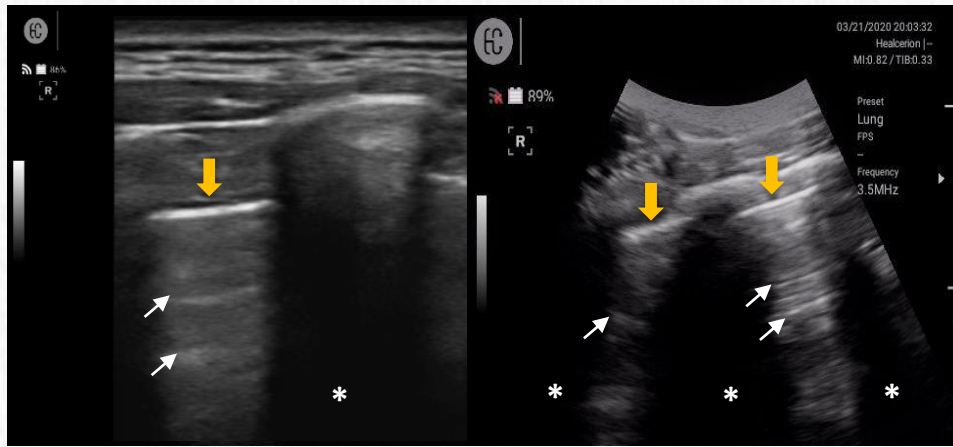
Easy to learn




Allow doctors with no experience to accurately diagnosis pneumonia.

Widely available

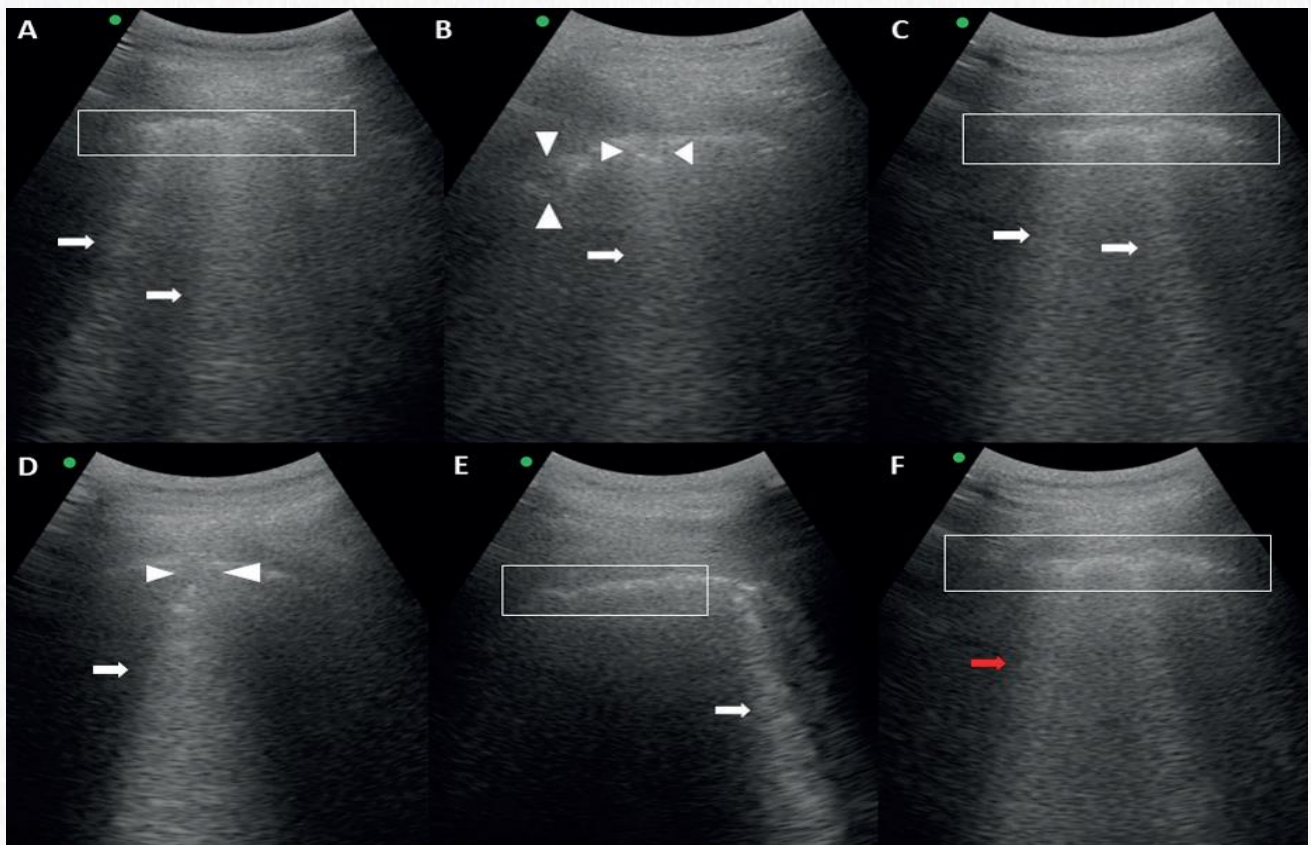
Suitable for diagnosis and management of complications.





US image of normal lung



- ※ **US feature:**
- Normal pleural line
 - **A-lines** (horizontal reverberation artifact)
 - Only one B-line, noted in a single area or not
-  Normal pleural line
 A-lines
 Rib shadowing

US image of COVID-19 pneumonia



-  Irregular Pleural Line
 Irregular B-lines
 Area of white lung
 Subpleural consolidations

- ※ **US feature:**
- **Thickening** of the pleural line with **irregularity**
 - focal, multifocal and confluent **B-lines** (interstitial syndrome pattern)
 - Subpleural **considerations**
- * mostly located in the posterior fields of both lungs*

Reference

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- 2) D. BUONSENSO^{1,2}, A. PIANO³, F. RAFFAELLI^{2,4}, N. BONADIA³, point-of-Care Lung Ultrasound findings in novel coronavirus disease-19 pneumoniae: a case report and potential applications during COVID-19 outbreak, *European Review for Medical and Pharmacological Sciences*, 2020;24:2776-2780