

How to drive an Ultrasound machine.

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Basics

- Speak to Ultrasound ,work with colleagues
- Ask if you can observe/scan /try and understand basics of probe handling /essential controls
- Go through some e learning – try and understand essential principles in order to understand how to drive a machine
- Suggestions :

Fundamentals

- www.slideshare.net/u.surgery/ultrasound-physics-knobology
- Hong Kong College of Emergency medicine – excellent powerpoint on basics and essentials
- [Clinical Ultrasound-Physics and Knobology. - YouTube](#)
- [▶ 20:04](#)
- www.youtube.com/watch?v=YtBdD-KcYSU
- *Video – fundamentals of Ultrasound*

Fundamentals

- [Ultrasound 5 - Knobology 1 - Gain - YouTube](#)
- [▶ 4:24](#)
- www.youtube.com/watch?v=z6n7C_4rHbk Similar
- First of series of short videos going through basic controls/physics applications

- Ultrasound Knobology : Google /youtube – your Ultrasound machine manufacturer

Physics.

- Sound likes water.
- Sound doesn't like gas.
- Sound doesn't like fat.

- Propagation of sound – gel.

Transducer.

- Parts.
- Orientation.
- Image/Patient/Hand/Transducer/Brain.
- Handling skills.

Transducer.

- Handling skills.
- Rotation.
- Pressure.
- Hand position.

Transducer – Physics.

- Footprint.
- Focusing.
- Increased Frequency – increased resolution/
decreased penetration(less depth)
- Decreased Frequency – decreased resolution/
increased penetration(greater depth)
- 5 - 7.5 – 10 – 12 - 15 Mhz

Knobology.

- On/off button?
- Patient data
- Probe selection
- Preset selection
- Image freeze
- Store image

Knobology.

- Orientation.
- Transducers.
- Presets.
- Gain – Overall / TGC
- Depth
- Focus
- Calipers - measurement

Knobology.

- Colour flow - Directional
- ROI – size and position
- Red – towards probe
- Blue – away from probe
- Power Doppler – motion
- Increased sensitivity.
- Presets.

Language.

- Hyperechoic/Echogenic – Bright
- Echogenic – Fat/Bone/Gas
- Hypoechoic/Echo poor – Dark
- Anechoic – Black (Cystic)
- Acoustic shadowing – black shadow – stones
- Acoustic enhancement – bright shadow - cysts

- Welsh.

