

Telemedicine Technology and Requirements for Implementation



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Patient Cart

Patient Station

- Camera
- Monitor
- Cart – Medical Grade, smallest footprint possible, stable platform
- Measurement - 29"W x 24"D x ~72"H (adjustable height)



Camera
CODEC

Display w/ built in speakers

Horus Scope camera
CODEC microphone

Secure storage drawer

USB to HDMI converter Box

Receptacles & power switch

Locking wheels



The Camera

- High Zoom (12x or better)
- Remote Control Pan, Tilt, Zoom
- High Definition (1920x1080)



CODEC

- Polycom, Cisco or PC
 - ITU Standards base
 - High Definition (1920x1080)
 - Encrypted audio and video



Monitor

- Medical Grade
- 1920 x 1080 resolution
- Digital inputs



Electronic Stethoscope

- Thinklabs One
 - Up to 100x amplification
 - 30hz to 1500hz Frequency Response
 - Built in adjustable filtering
 - Built in volume control
 - Rechargeable battery



Medical Camera

Hand Held Chassis

- High Definition (1920 x 1080)
- Interchangeable lenses for different medical specialties
- Built In Screen
- Live Video or Store and Forward File Capability



Medical Camera

- Otoscope Lens
 - Built in Illumination LEDs
 - Provides imaging for tympanic membrane and auditory canal.
 - Uses standard Heine or Welch-Allyn specula (adult and pediatric)



Medical Camera

- General View Lens
 - Built in Illumination LEDs
 - Provides imaging for dermatology, oral examinations, general body images



Medical Camera

- Surface Lens
 - Built in Illumination for targeting retina
 - Provides 2msec.
 - Built-in polarization for reduction of skin reflection
 - Equipped with 5mm ruler (1mm increments)



Medical Camera



- Anterior Chamber Lens
 - Built in Illumination LEDs
 - Built in cobalt blue lighting for fluorescein eye stain test
 - Provides highly magnified images of the anterior segment



Medical Camera

- Fundus Camera Lens
 - Built in IR LED lighting for focusing on retina
 - Press OK and 200ms flash captures the image.
 - Provides highly magnified images of the retina without dilating of the eye.



Other Options

- Ultrasound Integration
 - Any ultrasound with video output (HDMI, composite, S-Video, etc.) can be integrated for live ultrasound exams.



Other Options

- Microscopes
 - Any microscope with beam-splitter for attaching a camera can be integrated.
 - Camera adapters can be attached to one of the eyepieces if no beam-splitter option is available.



Provider Station

- Laptop or PC with HD Display
- I7 Quad Core Processor
- 8GB RAM
- 256GB SSD
- Built in Camera
- Video Conferencing Software



Provider Station

- Audio Puck
 - Built in Volume Controls
 - USB interface
 - Plug in headphones with no annoying popup on PC screen
- Headphones
 - 20-20Khz frequency response



Network Requirements

- Ethernet 100/FDX minimum (not wireless)
- 1Mb Up/Down clear data path to internet (minimum call is 768K plus overhead packetization)
- If institution has video infrastructure (gatekeeper/registrar and gateway) then registration with those existing systems is preferred.
- If the institution/facility has no video infrastructure then a static public IP and possible firewall modifications (pin-holing ports or allowing services) may be needed.



Room Requirements

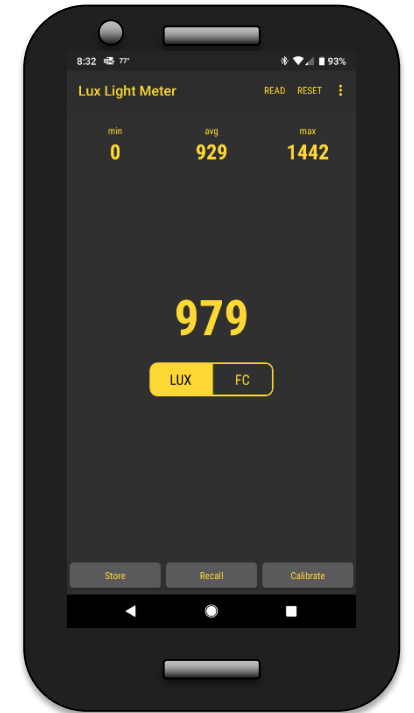
- Acoustics:
 - Ambient sound level should be no more than ideally 50db, preferably around 40 db.
 - Measured with HVAC active.
 - Measure with sound meter or app in smart phone (e.g. Sound Meter)
 - Room should be have solid walls to ceiling and acoustic insulation (*With dropped ceilings, verify solid walls to ceiling*)
 - Conversations inside the room should not be heard outside the door. If so, sometimes a white noise generator, placed outside the door can be used.



Room Requirements

- Lighting

- Lighting should be minimally 800 lux, preferably 1000 lux.
 - Measure with a light meter or app in smart phone (e.g. Lux Light Meter).
- No flickering (high frequency ballasts desired)
- Walls painted light neutral colors (white, beige...)
 - Dark or bright colors reflect their color and may tint image.
- Windows covered with curtains, blinds or some covering
 - Cuts out bright spots, reflections and is a failure to do so is a HIPAA compliance issue.



Thank you!



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