

ARIZONA  
TELEMEDICINE  
PROGRAM



# Overview of Teleradiology

Tim Hunter, MD

Professor Emeritus, Department of Medical  
Imaging University of Arizona



# Radiology (medical imaging)

- Radiography – “chest x-rays; bone x-rays...”
- Cross-sectional imaging – *Ultrasound; Computed Tomography (CT); Magnetic Resonance Imaging (MRI); Nuclear Medicine Studies*

# Definitions

- **Telemedicine:** the delivery of health care services over a distance
- *Teleradiology: radiology performed through the remote transmission and viewing of images*

# Teleradiology

- Teleradiology is one of the most clinically advanced areas in telemedicine
- Uses the store-and-forward approach
- Digital images from modern radiology equipment undergo advanced compression and then fast transmission to a remote site for interpretation

# Teleradiology

- The patient's radiologic study is performed at a location separate and remote from the interpreting radiologist
- The interpreting radiologist sends a preliminary or final electronic report to the patient's physician
- The patient's physician may or may not be at the same location where the patient had the imaging study





# Teleradiology is big business in the United States

- There are multiple (hundreds of ) teleradiology companies of all sizes
- Imaging studies are growing up to 15% annually
- The radiologist population is increasing 2% annually



- **Teleradiology** tends to bridge the gap between the imbalanced demand and supply of radiologists and diagnostic services across the globe
- With Covid-19 few radiologists work in an office or hospital setting



THE UNIVERSITY OF THE STATE OF NEW YORK  
EDUCATION DEPARTMENT  
IN SENIORITY  
LUKE R. SCAGIONE  
MEDICINE AND SURGERY  
BY THE BOARD OF MEDICAL EXAMINERS  
JULY 1, 2010

# Teleradiology - advantages

- After hours, weekend, holiday coverage
- Full or part time coverage for small, often, rural hospitals without in-house radiologic coverage
- Full or part time coverage for clinics and other outpatient facilities without regular radiologic coverage
- Subspecialty radiologic coverage

# Selected teleradiology companies

- vRad
- Cleveland Clinic eRadiology
- StatRad
- Massachusetts General Hospital
- NexxRAD Teleradiology Partners
- SimonMed

# Imaging modalities available through teleradiology

- Cross-sectional imaging: US, CT, MRI
- Abdominal Imaging: GI/GU
- Mammography; Breast MRI
- Neuroradiology: CT, MRI
- Nuclear Medicine
- Thoracic Imaging: chest radiographs, CT, MRI
- Ultrasound: Abdomen, OB/Gyn, Vascular, Extremity
- MRI: Head, Abdomen, Musculoskeletal (MSK)

# American College of Radiology (ACR) Technical Standard for Teleradiology

- Equipment used in teleradiology systems must receive approval from the Food and Drug Administration (*and the entire teleradiology process must be HIPAA compliant*)
- The integrity of the image data must be maintained for viewing at the same or higher resolution compared with the resolution used to acquire the original images

# American College of Radiology (ACR) Principles for Teleradiology

- Patient should always be the primary focus of all radiologic practice
- The standard for on-site radiologists and teleradiologists should be the same and should be high
- On-site coverage is preferred where possible





# Nighthawk

- A radiologist who provides after hours on-call coverage whether internally as a group member or externally as an employee of a teleradiology company
- A company providing teleradiology after hours on-call coverage
- *Nighthawk radiologists usually cover several locations, any one of which does not have enough work for a dedicated radiologist after hours*

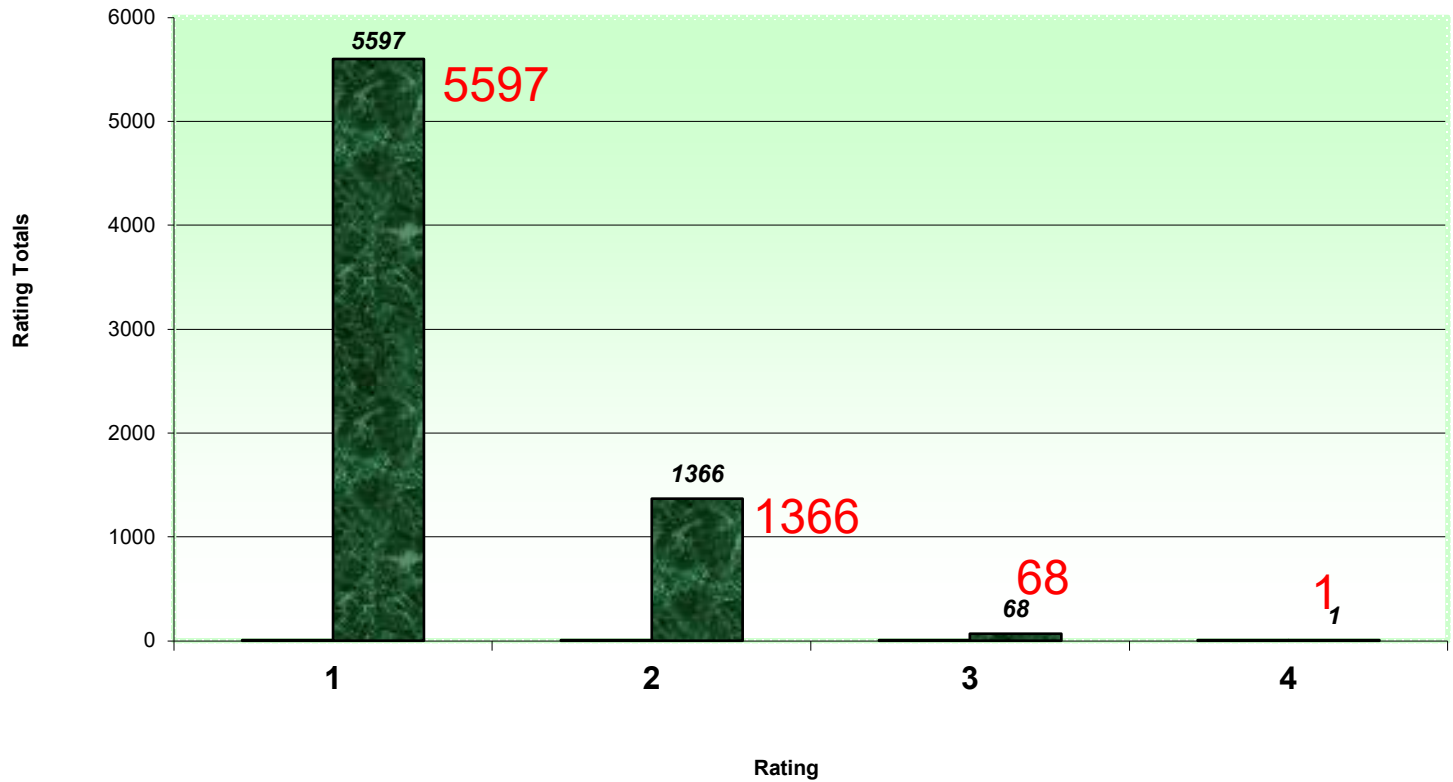
# State licensure

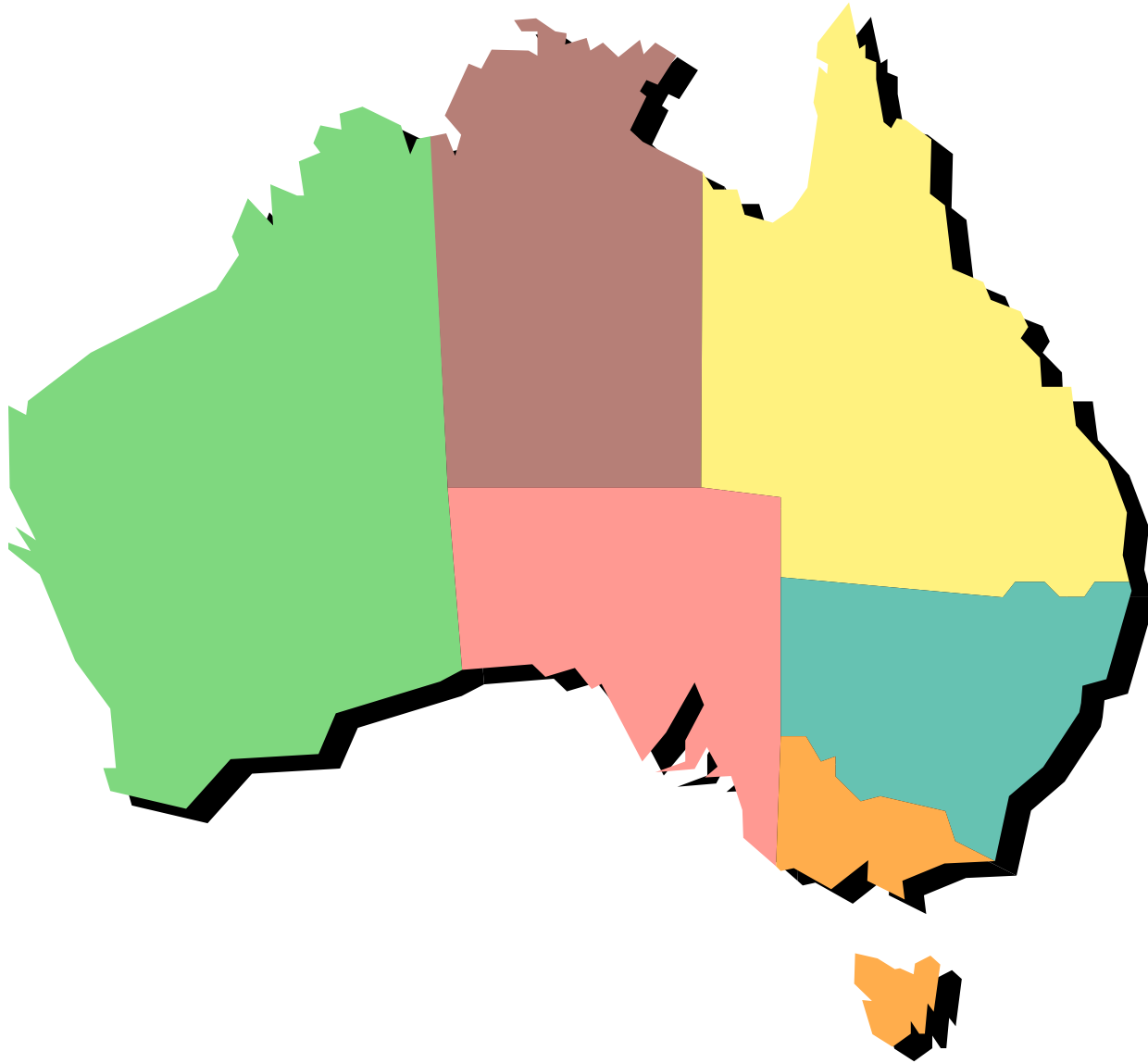
- The interpreting radiologist must be licensed in the transmitting state
- Some teleradiologists have 50 medical licenses
- Telemedicine licensure across state lines for physicians is complex and evolving, particularly with the ongoing Covid-19 pandemic

# Peer Review

Resident Doctor Ratings for Jan. 1st - Apr. 30th, 2011

Resident Peer Review Ratings Jan – April 2011





# Medicare requirement

Medicare and Medicaid laws require the interpreting radiologist to be on United States soil to qualify for reimbursement for final read.

Most teleradiology companies and most teleradiologists are US based

# Why do you want teleradiology?

- The prime use for teleradiology is coverage of urgent and emergent cases after hours: nights, weekends, holidays
- *Do you want a final reading or a preliminary reading?*

# Why do you want teleradiology?

- Provide radiology coverage for occasional local gaps in coverage: vacations, sickness
- Provide a daily supplement to local coverage to get the work done
- Provide subspecialty coverage: pediatric radiology, neuroradiology, body imaging, nuclear medicine, MSK imaging...
- Provide total radiology coverage where there is no local radiologist



# After hours radiology coverage

- What constitutes “after hours” ?
- Only urgent/emergent cases
- All cases whether urgent or routine
- Only cases specifically selected by an ED physician or attending physician needing urgent radiologic consultation

# Typical customer requirements for a teleradiology service provider

- **All urgent cases reported within 30-60 minutes**
- **All routine cases reported by 5:00 pm the next working day**
- ***Fully credentialed and licensed interpreting radiologists***
- ***American Board of Radiology (ABR) certified radiologists***
- ***Excellent coordination and cooperation between the teleradiology vendor and the on-site radiology technical staff!***
- ***Excellent peer review and quality assurance program***

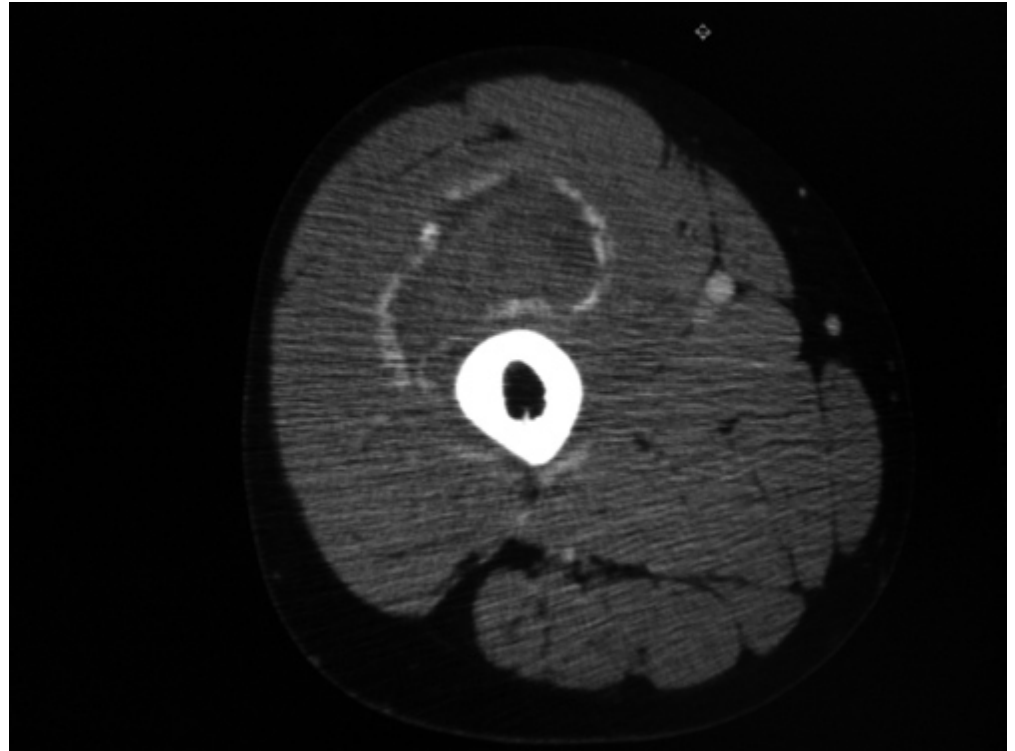
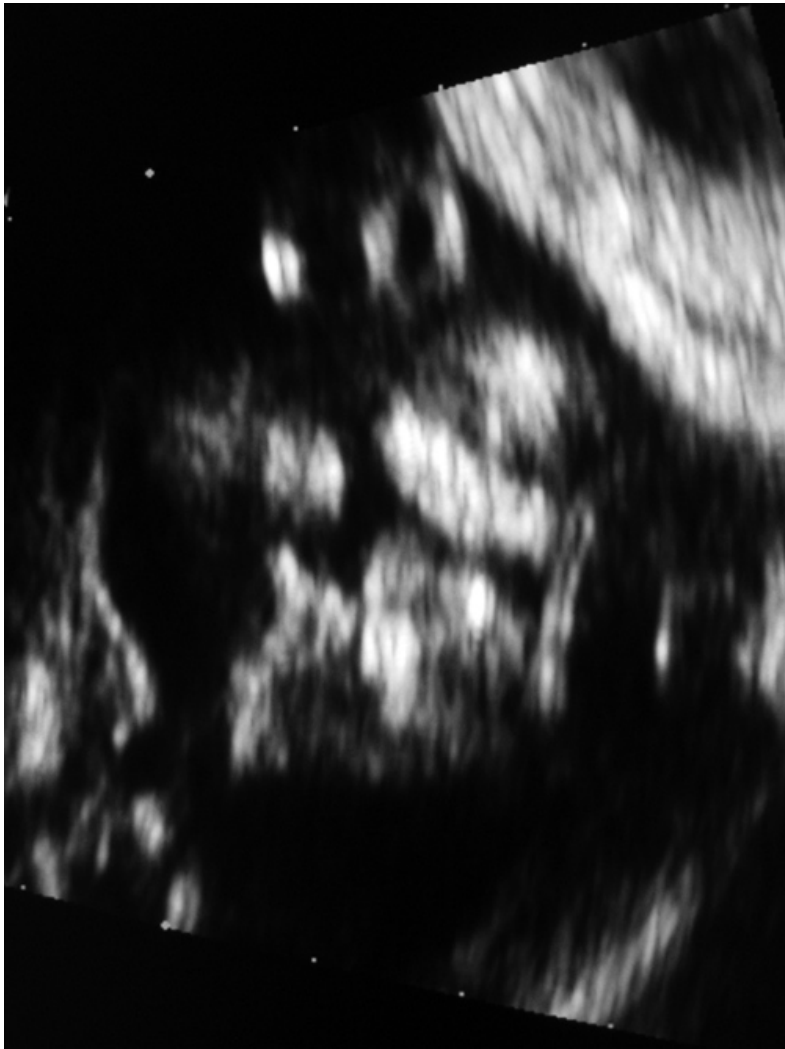
# Critical findings

- Critical findings must be reported urgently even if not ordered as an emergent or urgent study –requires a phone call!

# Critical Findings

- Large pneumothorax
- Unexpected or large pulmonary embolus
- New or unexpected stroke
- Unexpected or new mass
- Large or unexpected head bleed
- Large pericardial effusion
- Aortic dissection
- Unstable spine fractures
- Free intra-abdominal air







# Teleradiology Help

- Physicians Resource Line – to reach radiologist concerning patient issue
- Teleradiology Technical Help Line – for technical problems



# Teleradiology - disadvantages

- Rarely provides in-house coverage for procedures
- Interpreting radiologists are remote and may be difficult to reach for consultation
- Interpreting radiologists may not be familiar with local conditions and may not feel part of the local team
- Often little consistency in the daily coverage by individual radiologists
- Can be expensive if in-house coverage falls off in response to teleradiology coverage

# What teleradiologists need from customers

- Requisite hardware/software/IT support
- Good histories
- Patient name on requisition matches patient name on study...correct time and date...
- Good contact information – responsible physician, pager numbers and direct phone numbers

# Payment for radiologic services

- Typically, the contracting medical entity directly pays the teleradiology vendor
- Set payment per study – rates varying with type of study and time of day
- Medicare rates are often baseline for initial negotiation
- Global contract with annual fee for a set amount of work within defined parameters: # of cases +/- 10%...
- Teleradiology vendor bills “patient” directly

# Teleradiology - summary

- Can produce excellent after-hours radiology coverage and needed general radiology or subspecialty coverage
- Can produce poor results if selection of teleradiology services is not carefully performed
- Can be expensive if in-house coverage falls off in response to teleradiology coverage



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**"I thought you were finished!"**



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Rose Palmisano / The Albuquerque Journal