APPH 226:

Objectives: 10.1, 10.3, 10.4

MRT Program

Ideally….

- An x-ray exam will result in:
  - Creating diagnostic image
  - Correct diagnosis by physician
  - Satisfaction of all customers (internal and external)
    - Patient, referring physician

Outcomes Assessment

- Includes:
  - Repeat analysis
    - To avoid future repeats
  - Artifact analysis
    - Identify cause of the repeat
  - Accuracy, sensitivity and specificity analysis
    - Analysis of the combination of image quality and correct diagnosis

Repeat Analysis

- Process where rejected images are catalogued and classified with **reasons for repeat**
- Provides information regarding equipment performance, department procedures and staff skill levels
- Helps to develop solutions to decrease the number of repeats
- Can document effectiveness of QC and QA procedures

Advantages of Analysis

- Three main advantages of repeat/reject analysis
  - Improved department efficiency
    - With decreased repeats, amount of time that patients spend in the department is reduced.
    - Increase patient satisfaction, decrease wait times, more patients can be x-rayed
  - Lower costs
    - Equipment usage costs
    - Decreased wear on equipment (tube, IR)
  - Lower patient doses
    - Less exposure if images only need to be done once

Analysis

- Needs to include:
  - Procedures in department
  - Possible causes

- When analysis is done, should determine the:
  - Causal repeat rate
  - Total repeat rate

Causal Repeat Rate

- With QC program in place, most repeats are due to **positioning errors**
- Recommended for repeat analysis to be performed by the same person to ensure maximum consistency
  - Commonly done with worksheets
  - Need large sample for reliability
    - Usually at least 250 patients

Causal Repeat Rate

- Is the percentage of repeats from a specific cause (positioning)

$$= \frac{\text{\# of repeats from a specific cause}}{\text{total \# of repeats}} \times 100$$

Total Repeat Rate

$$= \frac{\text{\# of repeats}}{\text{total \# of views}} \times 100$$

Repeat Rate

- Affected by:
  - Quality of equipment
  - Staff skill level
  - Patient type
  - Data collection method
  - Radiologist

Repeat Rates

- General X-ray
  - Should be less than 4-6 %
- Mammography
  - Should be less than 5%
- If the repeat rate is greater than 10-12%, it needs to be investigated

Repeat vs Reject

- What is a reject exposure?
  - An exposure that did not require a repeat exposure on a patient
    - Test images
    - QC

What if the Repeat Rate is 0%?

- Possible that it is the most amazing department ever!
- More likely:
  - Low rate of technologist cooperation
  - Do not have right information
  - Very lenient radiologist

**Any repeat rate less than 2%, should be skeptical (not accurate).

Results

- Never single out a radiographer
- Constructive feedback should be given to the entire department
  - Work together to improve the rate
    - Inservices, equipment maintenance, support
      - Depends on the reason for the repeats, which is why that information is so critical
        - Without knowing why repeats are happening, cannot improve
- Reflects upon entire department, not just radiographers
  - QC, Management, radiologists
- Remember: without technologist compliance, the results will be inaccurate

Readings

- Radiologic Science for Technologists 11th Ed
  - Pg 396
  - Pg 590 (Repeat examinations)