

PEDIATRIC RADIOGRAPHY REVIEW

Pediatrics

- Refers to the care of **infants, children, and adolescents**
- Children are **not just small adults** — they require:
 - Modified communication
 - Adjusted exposure techniques
 - Extra radiation protection

Child Behavior & Communication

- Children may show **regression** (acting younger when scared)
- Best practice:
 - Use **simple language**
 - Offer **limited choices** (gives sense of control)
 - Stay calm and reassuring
- Avoid:
 - Threats
 - Punishment
 - Shame

Immobilization in Pediatrics

- Movement is a major issue → causes repeat exposures
- Devices used:
 - Mummy wrap
 - Upright immobilizers for chest imaging
- Goal:
 - **Reduce motion**
 - **Avoid repeats (radiation safety)**

Pediatric Exposure Considerations

- Key priority: **Minimize motion**
- Use:
 - Short exposure times
 - Appropriate shielding
- Radiation sensitivity:
 - Children are **more radiosensitive**
 - Cells are rapidly dividing

Gonadal Shielding

- Critical in children due to:
 - Developing reproductive organs
 - Long-term genetic risk

GERIATRIC RADIOGRAPHY REVIEW

Aging Effects

- Bone density decreases
- Bones become:
 - Fragile
 - Less calcified
 - More radiolucent

Common Conditions

- Bone loss disorders
- Degenerative diseases
- Neurological conditions:
 - Memory loss
 - Confusion
 - Decreased cognition

Positioning Considerations

- Limited mobility
- Increased pain
- Risk of injury

Skin Integrity

- Elderly patients are prone to:
 - Pressure sores (decubitus ulcers)
- Prevention:
 - Cushion bony areas
 - Reduce pressure during exams

Neurological Disorders

- May affect:
 - Memory
 - Orientation
 - Coordination
- Some diseases present with:
 - Tremors
 - Slow movement
 - Muscle rigidity

RADIOGRAPHIC PRINCIPLES

Viewing Conditions

- Proper image evaluation requires:
 - Minimal ambient light
 - Reduced glare
- Helps visualize contrast and detail

Image Orientation

- Images must be displayed in **anatomical position**
- Consistency is critical for interpretation

Central Ray (CR) Alignment

- Must align with:
 - Image receptor (IR)
 - Anatomy of interest
- Misalignment can cause:
 - Cut-off anatomy
 - Unexposed areas

Long Bone Imaging

- Always include:
 - Entire bone
 - Joint above
 - Joint below

BODY MECHANICS & PATIENT CARE

Proper Body Mechanics

- Prevent injury to yourself
- Key principles:
 - Wide base of support
 - Bend knees (not back)
 - Keep objects close

Patient Positioning Issues

- Shortness of breath:
 - Elevate upper body
- Injured or weak patients:
 - Use proper transport devices

Incident Reporting

- Any workplace accident:
 - Must be documented
 - Even if no injury is apparent

INFECTION CONTROL

Chain of Infection

Includes:

- Infectious agent
- Reservoir
- Mode of transmission
- Susceptible host

Transmission Types

- Direct contact
- Indirect contact (objects)
- Airborne
- Droplet

Fomites

- Inanimate objects that carry pathogens
- Examples in radiology:
 - Equipment
 - Tables
 - IRs

Standard Precautions

- Apply to ALL patients
- Use barriers when exposure to:
 - Blood
 - Body fluids
 - Mucous membranes is possible

Hand Hygiene

- Most effective method to prevent infection
- Must be performed:
 - Before and after each patient

Cleaning & Disinfection

- Environmental surfaces must be:
 - Regularly disinfected
 - Cleaned with approved agents

VITAL SIGNS & EMERGENCY CARE

Cyanosis

- Bluish discoloration of skin
- Indicates poor oxygenation

Heart Rate Terminology

- Fast rate
- Slow rate
- Irregular rhythm

Pulse Assessment

- Common pulse sites:
 - Wrist
 - Neck
- Used to assess circulation

Respiration

- Observe:
 - Rate
 - Depth
 - Effort

Blood Pressure

- Measured using:
 - Cuff
 - Stethoscope
- Two values:
 - Top number
 - Bottom number

Oxygen Administration

- Used in emergencies
- Flow rate depends on condition

Emergency Conditions

- Severe allergic reactions
- Respiratory distress
- Diabetic emergencies
- Neurological events (stroke)

Stroke Warning Signs

- Sudden:
 - Weakness
 - Speech difficulty
 - Severe headache

Dizziness vs Fainting

- Spinning sensation vs loss of consciousness
- Important distinction clinically

IMAGE EVALUATION

Systematic Review (I AM ExpERT)

Focus areas:

- Patient identification
- Correct anatomy
- Proper markers
- Exposure quality
- Image appearance
- Radiation safety
- Error correction

Artifacts

- Anything that appears on image but **should not be there**
- Types:
 - External (jewelry, clothing)
 - Internal
 - Equipment-related
- Must be removed if possible before exposure

PATIENT POSITIONING

Body Positions

- Supine
- Prone
- Upright
- Special positions for medical conditions

Position for Blood Pressure Support

- Used in hypotensive patients
- Improves blood flow to vital organs

- Pediatrics = **motion + radiation sensitivity**
- Geriatrics = **fragility + communication challenges**
- Infection control = **hands + equipment cleaning**
- Imaging = **alignment + anatomy inclusion**
- Emergencies = **recognize symptoms quickly**