Medico legal format & language

Conventional Radiography

Normal & Pathological (Make detailed enough so you can close eyes & get accurate picture of what it is)

**Role of Report Writing**

* Record of findings
* Medicolegal documentation
* Permanent
* Inter professional communcation
* Provide important indications & contraindications
* Assisting in auditing radiographic quality
* Database for retrospective research & data collection

**Equipment**

* Viewbox
* Hot light-help view OVER exposed area
* Film storage
* Magnifying glass

**Reports are result of radiographic test**

**C's of Report Writing**

* Clear
* Correct
* Confidential
* Concise
* Complete

**MC reasons for malpractice suits:**

* Failure to communicate results clearly & effectively
* Failure to diagnose

**Prelimiary Info**

* Letterhead info
* Date of report
* Patient info-name, DOB, sex, file number
* Radiographic exams performed
	+ List the views
	+ Date/location films taken (may be same date or up to 2-3 days before)
* Clinical info
	+ Chief Complaint (radiating pain)
	+ Key Clinical findings (High Blood Pressure)
	+ Reason for study/DDx

In the Report:

* Technical Factors (kVp, mA, FFD, etc)-optional
	+ Allows you to remember all the factors for the next time you have to do xrays. Allows you to not have to fool around or get a bad xray
* Radiologic Findings-ABCs
* **Recommendations**
	+ Additional Imaging
	+ Management-proceed with chiropractic adjustments, Referal
	+ Indications and contraindications to treatment
	+ Follow up Procedures
* Signature and qualifications
* **Film Interpretation**
	+ Turn off lights to all unused viewbox spaces
		- Reduces glare and eye strain
		- Better detect subtle lesions
	+ Hot light examination (overexposed areas)
	+ Cover-up examination
	+ Film Tilt (uses radiographers fingerprints to see where the finding is)
* Optimum Environs
	+ Suboptimal viewing conditions:
		- Extraneous light and sources of distraction (when it's your time to read films, do JUST that)
		- Time allocation-if took films today, read them by tomorrow if possible. Don't go too long without reading them.
		- Targeting clinical concerns
		- Description of study
* Clarity of content and report structure
	+ Concise reporting
	+ Correct English
	+ Avoid jargon
	+ Avoid abbreviations-Transverse Process, NOT tp. Etc
	+ Quantifying terminology-if see abdominal aorta, measure it in centimeters and document ti
	+ Standardized format
	+ Measurements
	+ Proofreading
* Further Pitfalls
	+ Failure to produce a report
	+ Misdiagnosis
	+ Typographical errors
	+ Technical adequacy of studies-should you have taken another xray and didn't? It is

 over/under exposed and you didn't do another?

* Confidentiality
* Follow-up recommendations
* Lack of knowledge
	+ The eye does not see what the brain does not know
* Review and comparison of previous reports
* When to get a second opinions radiology review
	+ Complicating history with red flags (pain that wakes up at night, etc)
	+ Abnormal clinical examination findings
	+ Failure to respond to therapy/adjustments
	+ Unexplained deterioration of the condition
	+ Confirming the practitioner's interpretation
	+ Establishing a diagnosis
	+ Improving interpretation skill
	+ Interpreting equivocal findings (uncertain findings)
	+ Use of complex multimodality imaging
	+ Medicolegal support
* Reporting Flow Chart
	+ Orientation and placement of films
	+ Patient identification
	+ Systematic Reviews
	+ ABCs
	+ Conclusion and recommendations

**ABCs**

* Alignments
	+ Evaluate spinal curve
	+ Evaluate scoliosis
	+ Evaluate leg length inequality

**Use lines of mensuration**

* Bone
	+ Evaluate bone density
	+ Evaluate Cortical and cancellous bone for:
		- fracture and osseous destruction (if none, say "There is no evidence of fracture")
	+ Evaluate size, shape and configuration of all osseous structures
* Cartilage
	+ Cartilage not visualized on x-ray
	+ JOINTS
	+ Evaluate width of joint cavity between 2 opposing articular surfaces
		- Widening of joint
		- Loss of joint space
* Soft Tissue
	+ Overall thickness and desnity of the soft tissues
		- Retrotracheal airspace, psoas shadow
	+ Evaluate
		- Skin
		- Fat pads
		- Deposits
		- Tendons
		- Organs (Can see kidney stones in the area the kidneys should be)
		- Blood vessels
		- Aneurysms
		- Capsules
		- Calculi
		- Cysts
		- Ligaments
* Impressions
	+ Point by point summary of most important radiological findings
		- A conclusion (DIAGNOSIS)
		- Do not describe findings again
		- **List In decreasing order of importance.** (AAA more important than DJD)
* Categorize the pathological process…CATBITES….

Congenital

Arthritis

Trauma

Blood

Infection

Tumor

Endocrine

Soft Tissue

* Condition may fit into 2 or more categories
* If equivocal finding…list differentials in decreasing order of probability
* Recommendations
	+ Plan of action based on the impressions
	+ Recommend further studies-MRI
	+ Provide specific clinical or therapeutic advice-chiropractic adjustments
	+ Suggestions to improve radiographic quality
* General Guidelines
	+ All reports should be typed
	+ Be brief
	+ Use complete sentences
	+ Present tense for what is seen on the film
	+ Quantify all measurements
	+ Proof-read the report
* Also may recommend:
	+ Improved patient positioning
	+ Improved technical factors

Dexa Scanner-evaluates density

-quantitative

-T score-Compares density against someone in 30s

 Z score-Compares density to others her age

>-1=normal

-1 to -2.5=osteopenia

<-2.5=osteoporosis

Certified Rad Tech-can't read or interpret

General Practioner-take & read

Radiologist-lots of training for interpretation

REVIEW
1. George's Line-Alignment
2. Edema-soft Tissue
3. Fracture-bone
4. decreased disc space-cartilage
5. spondyloptosis-alignment
6. grade 2 spondylolisthesis-alignment
7. osteopenic -bone
8. hand written T/**F**9. present tense T/**F**10. name a recommendation-adjust

C SPINE Unremarkable Study

LETTER HEAD
33 year old male, Steven Smith  **(NAME, AGE, GENDER)**

Date xray taken: 7/26/2010

Date of report: 7/26/2010

File Number: 123456

Views: Lateral Cervical, AP Open Mouth, AP Lower Cervical

FINDINGS:

Decrease in cervical lordosis with anterior head carriage.

Bone Density is adequate (unremarkable). There is no evidence of fractures. There is no evidence of osseous pathology (or osseous pathology).

All disc spaces & joints are unremarkable.

There is no evidence of edema or pathology.

Impressions:

1. Postural changes

Recommendations:

1. NONE (can also put "No contraindication to adjustment")

Don't Number or Label each paragraph

BONE:

Density

Bone Fracture

Osseous Pathology

Congenital Anomalies (If present)

SOFT TISSUE:

Edema

Pathology

IMPRESSIONS:

Most significant to least significant

REVIEW:

Bone Density scan is the same as a DEXA? F

Report is optional? F

Kidney Stones are in Bone paragraph? F

C4 is anterior to C5 is called……anterior lysthesis/spondilolisthesis

Bone scans are not specific but are very sensitive

* Light up 'hot spots'

BONE

**Evaluate**

* Density-"Bone density is adequate" or "Bone density is decreased"
* Fractures-"There is no evidence of fractures"
* Osseous pathology- "There is no obvious sign of pathology"
	+ Lytic/Blastic Lesions
* Anomalies
* Report size, shape, quantity of any lesions
* If no findings, must still mention the osseous structures were evaluated
	+ Os Fabella-small bone ossicle located in the soft tissue in the patellar fossa
* Congenital Block-Wasp waist concavity at …….rudimentary discs, posterior elements of spinous processes are fused…..
* Paget's Disease-coursened trabecular pattern, expansile. Spiculated periosteum reaction.

(bone is whiter on CT than on MRI. In MRI, it's all a gray color)

Some indications for CT

* Trauma
* Patient with implantable device; therefore, cannot have MRI
* Chest lesions

Some indications for MRI

* Superior tissue contrast
* Trauma
* Any lesions
* Vascular
* Calcifications
* Fat
* CSF
* Muscle, tendons, ligaments

What goes Where?

Findings Vs. Impressions

* Findings are descriptive words.
	+ Don't give away what it is, but use words like 'Fused SI joints', "Bamboo Spine appearance". Don't put "DJD" in findings….use osteophytes, decreased joint space, etc. and tell what it is under the impressions
* Impressions gives it away. Name of the anomaly or disease process

**REVIEW**
George's line is used to grade spondylolisthesis of C4-should have said for evaluation-T

Date the films were read should appear on the radiology report. T

The best advanced imaging modality to evaluate for osseous metabolic activity is a DEXA-F

Soft tisse paragraph may be omitted if there are no findings noted-F

Recommending CT advanced imaging is the gold standard for any chest suspicious findings-T

**Reporting Cartilage findings:**

* Joints, joints, joints
* Increased or narrowed?
* Impact of joint disease on adjactent osseous structures
	+ Width, symmetry, subchondral bone, fusion, congruity
* ALL joints must be evaluated. If given shoulder, don't just look at the GH joint. Look at AC, etc as well
* If have a prosthesis, describe it in this paragraph as well (Could go in bone paragraph instead).

**Reporting Soft Tissue Findings**

* Organ enlargement or displacement
* Displacement of normal structures (tracheal air shadow for example)
* Abnormal accumulation of bowel gas (could be due to obstruction)
* Abnormal soft tissue calcifications
* Masses
* Displacement or blurring of fascial planes
* Foreign bodies (surgical clips/staples)
* Soft Tissue swelling (retropharyngeal airshadow)

**Impressions**

* A conclusion
* Use diagnostic terminology
* Label the conditions described:
	+ Ex. Compression fracture, ankylosing spondylitits
* Listed in order of severity

**Recommendations**

* Optional
* Specific follow up procedures (cardiomegaly-referral to cardiologist. Monitor Blood Pressure)
	+ Additional x rays
	+ Advanced imaging
	+ Lab evaluation
	+ Referral to specialist
	+ \*\*EXPLAIN WHY!\*\*

**Actual Look of Report**

DATES

* Lab assignments in lab
* Assignment 2-due week 5
* Midterm exam-week 6-no lab practical

Heading of your Practice

* Patient name: Patient #:
* DOB/Age of Patient:
* Date of Films:
* Date of Report: Referring Dr.

**Cervical Spine**

VIEWS:

FINGINGS:

IMPRESSIONS: (most important to least)

1.
2.

RECOMMENDATIONS: (most important to least)

1.
2.

SIGNATURE:

**Indicators for conventional radiographic imaging**

Probable: (go ahead and take them)

* Trauma
* Unexplained weight loss
* Night pain
* Neuromotor deficit
* ………pg. 683

Possible:

* >50 years of age
* Drug or alcohol abuse
* Corticosteroid use
* Unavailability of alternate imaging
* ……….pg. 683

Non Indicators:

* Patient education
* Routine screening
* Pre-employment status
* Financial gain

Standard Views

* Orthogonal views: AP & Lateral
* Why?

Accessory View

* Cervical Views:
	+ F/E
		- Comment on any intersegmental instability:
			* "There is no evidence of intersegmental instability at the level of C3 upon flexion and extension"
			* "There is a 4mm retrolisthesis of C3 upon flexion/extension. This is an unstable segment"….Recommendations: Evaluate the surrounding soft tissues using MRI (considered instable if over 3mm)
* Obliques
	+ Anterior or Posterior but not both
		- Posterior-pt. feels more comfortable standing with back to bucky instead of face
		- Comment on the IVFs visualized:
			* "All intervertebral foramina are free of occlusion"
			* The C3/4 Intervertebral foramen of the right appears stenotic.
				+ Recommendations:
* Swimmers
	+ (Can be in thoracic or cervical study)
	+ Evaluate appearance of the lower cervical or upper thoracic in the lateral projection
* Thoracic Views:
	+ Spot Projection-AP or lateral
	+ Chest Series-need to do AP and Lateral
* Lumbar Views:
	+ AP and Lateral L5/S1 spot shot
	+ **AP view=Ferguson's View**
		- Evaluate the lower lumbar segments in the AP projection
		- Evaluate sacrum
		- Evaluate SI joints
* Lumbar Oblique
	+ Comment on the pars interarticularis visualized
		- "All pars interarticularis are unremarkable"
		- "A fracture of the right L4/5 pars is visualized on the RPO study"
		- Michelle marker Anterior to spine (closest to posterior bodies) in posterior oblique and behind spine (closest to the SP) in anterior oblique
* Chest Series:
	+ Apical lordotic
		- Apices of the lung-extreme lordotic stance. Have pt. move slightly forward then lean back against bucky. Moves the clavicles out of the way of the apex of the lungs
		- Comment on the lungs bilaterally:
			* "The lung apices are clear and well defined"
			* "A well-defined ovoid opacity measuring 7mm is visualized within the right apex of the lung"
			* RECOMMENDATIONS: CT….soft tissue window
	+ Rib Series
		- Evaluate the ribs bilaterally for any fractures or osseous lesions

**REVIEW**

1. If there is evidence of 4mm retro of C4, a flexion/extension study is recommended. TRUE
2. Right pars is best seen in RPO xray FALSE
3. Swimmers is for upper cervical FALSE
4. Recommend continued chiropractic care is an acceptable recommendation TRUE
5. Apical lordotic view-superior lung space
6. Hepatologist-liver
7. Oncologist-cancer
8. Nephrologist-kidney
9. Orthopedist-bones & joints
10. Gastroenterologist-GI
11. rheumatologist-
12. Optician-glasses
13. Opthalmologist-MD who has a degree and can do surgery, etc
14. Optometrist-not an MD, but specialize in diseases of eyes (just no surgery)
15. Nutritionist vs. dietician-dietician has an actual degree and certification. Anyone can call themselves a nutritionist

**Reducing Interpretation Errors**

1. Become familiar with pt. data and clinical context
	* Age
	* Gender
	* Ethnicity
	* Clinical history
	* Consider DDX list-reason for xrays
2. Assess technical factors, image quality & artifacts
	* Over/underexposed
	* Pt. positioning
	* Standing vs recumbent
	* Static electricity
	* Artifacts
3. Use an intentional thorough visual search pattern
	* ABCs
	* Know normal anatomy
	* Read the whole film:
		+ Lung apices of APLC
		+ Proximal femurs of AP lumbopelvic view
		+ AC joint of chest x-ray
4. >1 problem
	* Satisfaction of search
5. Be proactive, "Attack the projection"
	* Zone in/reasons for taking the projection….
		+ APOM-assess dens
		+ Rib series-assess for fractures
		+ Lateral foot-assess calcaneus if….
6. Consult with someone on difficult or equivical findings
7. Compare current films with previous films
	* Presence of a lesion
	* Progression
	* Normal variant for this patient
8. Is the abnormal finding real?
	* Normal anatomy
	* Artifact
	* Confluence of overlying shadows
	* Order additional studies
	* Order advanced imaging

"Aunt Minnie" phenomenon-identifying a disease process by it's characteristic radiographic presentation

* Radiographic appearance is familiar
	+ Ex/ pictures frame vertebra…Paget's
* May shorten interpretive process

**Steps in radiographic interpretation**

* Reason for xray
* Search images
* Define abnormal findings
* "Aunt Minnie" findings or list DDX
* List recommendations if necessary