

Lab Experiment # 7,8, and 9

Preparing Manual Technique Guides

Direct Radiography Lab

Purpose

This lab exercise is designed to demonstrate the necessary steps to be followed to develop a fixed-kVp technique chart from scratch.

Learning Objectives

After completing this lab, you should be able to:

1. Formulate a fixed-kVp technique chart from scratch.
2. Evaluate the effect of technique charts on SNR.
3. Determine the appropriate mAs when using a fixed-kVp technique chart.
4. Explain the importance of technique charts for eliminating guesswork.
5. Summarize the importance of technique charts when maintaining exposure index.
6. Predict the effect of the use of technique charts on quality assurance standards.
7. Predict the effect of the use of technique charts on reducing repeat radiographs.

Materials Needed

- FPD
- Whole Body Phantom

Pre-Lab Discussion

IMPORTANT INFORMATION

Technique guides or charts are an aid used to provide standard methods for consistently producing high-quality radiographs.

Radiographic technique guides provide a means for determining the specific technical factors to be used for a given examination.

When used properly, a technique guide will help the radiographer to produce consistently good diagnostic images.

When used properly, a technique guide will help the radiographer to reduce the number of repeat examinations.

The basic technique guides in use today are:

- Fixed kVp
- Variable kVp
- Automatic exposure (APR)

Radiographic technique-guides have become an important issue in radiation protection. Repeat examinations only increase the radiation dose to the patient.

Once a chart is put into use it must be constantly evaluated and changed when necessary.

A specific guide should be prepared and tested for each examination room.

Student radiographers should employ a technique guide for all examinations they perform on human subjects.

Fixed-kVp Technique Chart

Enter the **SID** used for the exam in the chart.

1. Enter the type of the image receptor used for the exam in the chart (CR, FPD).
2. Enter the **measurement-range** for average patients in the middle row of the chart.
3. Enter the **measurement-ranges** for small and large patients in the chart.
4. Enter the size-designations in the chart (**small, average & large**).
5. Using the 15% Rule, calculate the **optimum-kVp to penetrate all examinations** of this part and enter the value in the chart.
6. **Hint:** You must use a kVp for ALL examinations that is sufficient to penetrate ALL patients.

For each measurement-range, decide whether a **grid** should be used.

7. Enter **TT** (tabletop) or “**N**” if it does not.
8. Calculate the **mAs** for the **average** patient (step #6) and enter it in the chart.
9. Calculate the **mAs** for the **small** patient and enter it in the chart.
10. Calculate the **mAs** for the **large** patient and enter it in the chart.
11. Calculate the **exposure time** for the each measurement-range using the mA stations provided.
12. Check the answer key to see if your calculations are correct.

Verify all the calculated techniques at the control console.

1. Complete the second technique chart.
2. Remember, legally, you must list a time of exposure that you were able to set on the control console.
3. The calculated chart would be refined and verified as it was used.

4.

Abbreviations: GD= Grid, TT = Tabletop, NG = Non Grid, SFS= small focus, LGF = Large focus			Extremities DI<0.5 Total mAs by Part Size				
PROCEDURE	NOTES	VIEW	kVp	Avg cm	SMALL mAs (- 5 CM)	<u>AVG</u> <u>mAs</u>	LRG mAs (+ 5 CM)
Hand	PA / All fingers SFS 40" TT	PA / All fingers	64				
		OBL	64				
		Fanned Lat	64				
Wrist	SFS 40" TT	PA	64				
		OBL	64				
		LAT	64				
Forearm	SFS 40" TT	AP	72				
		LAT	72				
Elbow	SFS 40" TT	AP	72				
		OBL	72				
		LAT	72				
Humerus	SFS 40" TT	AP	80				
		LAT	80				
Toes	SFS 40"TT	ALL	66				
Foot	SFS 40" TT	AP	72				
		OBL	72				
		LAT	72				
Calcaneus	SFS 40" TT	AXIAL	76				
		LAT	76				
Ankle	SFS 40" TT	AP / OBL	76				
		LAT	76				
Leg	SFS 40" TT	AP	76				
		LAT	76				
Tabletop Knee	SFS 40" TT	AP / OBL	80				
		LAT	80				
Bucky Knee	LGF 40" GD	AP / OBL	84				
		LAT	84				
Femur	LGF GD 40"	AP / LAT	86				
HIP	LGF GD 40"	AP / FROG	86				
Shoulder	LGF 40" GD	Int / Ext	86				
		Transthor	90				
Clavicle	LGF 40" GD	AP / PA	86				
		Axial	86				
Scapula	LGF 40" GD	AP	86				
		LAT	96				

Abbreviations:
GD= Grid, NG = Non Grid

Torso / Skull $DI < 0.5$
Total mAs by Part Size

PROCEDURE	NOTES	VIEW	kVp	Avg cm	SMALL mAs (- 5 CM)	AVG mAs	LRG mAs (+ 5 CM)
GRID CHEST	72"	PA / AP	120				
		LAT	120				
NON-GRID CHEST	72"	AP	86				
		LAT	96				
RIBS / STERNUM	72"	AP	70				
		OBL	70				
ABDOMEN	GD	AP/PA	85				
PELVIS / HIP	GD	AP	90				
HIP UNILATERAL	GD	LAT	86				
SACRUM	AP & COCCYX		86				
	GD	LAT	90				
LUMBAR SPINE	GD	AP	90				
		45° OBL	90				
		LAT	90				
		L5/S1	105				
THORACIC SPINE	GD	AP	86				
		LAT	86				
TWINNING	GD	LAT	86				
CERVICAL SPINE	40" GD	AP/Odon	86				
	72" GD	OBL/LAT	86				
	72" GD	OBL/LAT	86				
SKULL	GD	PA/Cald	90				
		LAT	86				
		Townes	90				
SINUSES / FACIAL BONES	GD	PA/Cald	84				
		LAT	78				
		Townes	72				

