

Ergonomic (MSI) Risk Factor Identification and Assessment

Ergonomics Risk Assessment Project

Department/Work Area: Medical Imaging Specific Location: Assessment Date:	Occupation: Radiation Technologist Contact Name: Assessed By:
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Task List Worksheet

Job Summary: Performs standard radiology procedures; prepares equipment and patient for examination, performs exam and records results and maintains clean and safe environment.
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Where possible, transfer list of job tasks from job description onto this sheet. Determine whether ergonomics (MSI) risk assessment is required, if no, provide rationale. For more information on the use of the form, see reverse.

Tasks and Description of Activities	Frequency/Duration	Risk Assessment Required?
1. Performs radiology procedures by setting equipment and patient, and obtaining and recording views: <ul style="list-style-type: none"> • Setting up patient/patient handling • Setting up equipment • Handling cassettes • Reviewing and inputting patient information • Processing film 		
2. Performs portable exams using portable equipment.		
3. Miscellaneous duties: Ensures proper maintenance of equipment including routine cleaning; ensures room and equipment are clean and prepared for procedures; participates in the evaluation of new equipment, advises Supervisor of need for equipment repairs, assists to monitor use of supplies and the need to reorder.		
TOTAL		

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Description of workstation:
Hours of Work/Shift Schedule:
Discomfort noted on surveys:

Tasks for Ergonomics (MSI) Risk Assessment (from Task Analysis Worksheet):	Frequency of Task:	
1. Performs radiology procedures: setting up patient/patient handling; setting up equipment; handling cassettes; reviewing and inputting patient information; processing film		
2. Performs portable exams.		

	Task	Risk Factors	Freq/Dur	Mag/Range	Assessment / Observations / Comments		
IDENTIFICATION	Setting up patient, including portering	Awkward posture			<ul style="list-style-type: none"> For each exposure, patient and/or limbs may have to be moved or repositioned. Time and postures assumed vary according to type and number of exams and exposures per patient, nature of problem, patient characteristics etc. Stretcher and table heights can be adjusted to optimize posture. Patients can be asked to assist (but may not be able to). For initial positioning, X-ray table heights are sometimes not able to adjust low enough to the corresponding height of the stretcher. 	Risk Factors to consider: <ul style="list-style-type: none"> - Joint posture: wrist, elbow, shoulder, neck, back, knees - Awkward posture: reach, twist, bend, stoop, squat, climb, static - Force: lift, lower, carry, push/pull, pinch or power grip, surface - Repetition, frequency, duration, exposure - Object weight, location, size, shape, handles, stability - Work height, layout, seating, space - Tool/equipment use - Contact Stress - Environment: layout, flooring, temp., noise, light, glare, vibration - Work Organization: recovery, schedule, workload, task variability, pace, PPE use, interruptions - Psychosocial variables - Other 	
		Force (lift, push/pull)					<ul style="list-style-type: none"> Positioning: For each exposure, patient and/or limbs may have to be moved or repositioned. Patient can be asked to assist as much as possible to minimize effort. Ensure initial patient assessment is conducted. Mechanical lift is available and reportedly used weekly. Transfer board also available.
		Force (push/pull)					<ul style="list-style-type: none"> Portering: May be required to porter patients from other areas (primarily pushing stretchers or wheelchairs), especially during evening and night shift (e.g. from Emergency, in/out of DI and X-ray rooms). Some areas are awkward and cramped for maneuvering increasing forces required (e.g. turning in tight spaces, hallways in DI, Emergency area)
					ASSESSMENT		

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	Task	Risk Factors	Freq/Dur	Mag/Range		Assessment / Observations / Comments
IDENTIFICATION	Setting up equipment	<ul style="list-style-type: none"> Awkward posture Static posture 			ASSESSMENT	<ul style="list-style-type: none"> In general, setting up equipment requires awkward postures that are usually sustained for a short period of time (less than 1-2 minutes). Time in any particular posture and postures assumed varies according to patient, type of exam and number of exams and exposures per patient, nature of problem, patient characteristics etc.
		Awkward posture (upper extremity)				<ul style="list-style-type: none"> Setting up X-ray machine: current work method is to set appropriate vertical height of X-ray tube from patient, then move machine laterally into position. With vertical height set, shoulders are flexed greater than 90 degrees, often above shoulder height with full elbow extension. Work method may be altered to move machine laterally into position then set appropriate height in order to reduce shoulder flexion. X-ray machine computer input: low duration (< 1 minute per exam) and appropriate heights for keyboard input.
		Force (power grip)				<ul style="list-style-type: none"> Power grip and thumb extension required to squeeze handles to move X-ray machine. Activity is low duration, < 1 minute per exposure.
		Force (push/pull)				<ul style="list-style-type: none"> Push/pull forces to move X-ray tube into position, lateral forces and back/forth are generally higher with vertical and rotational forces lower. Forces are within guideline levels; see tips for optimal postures.
		Force				<ul style="list-style-type: none"> Various styles of aprons are available; depending on procedures and area working in, the aprons may be worn up to 3-5 hours a shift. Aprons with waist belts (to transfer some of the load) are available. Suggested method for putting on lead apron: shrug shoulders prior to fastening on hips to reduce direct loading on the shoulders. Apron should be removed in between exams as much as possible to minimize muscular effort.
	Handling cassettes	Awkward posture				<ul style="list-style-type: none"> Sizes of cassettes vary, including 14x17, 11x14, 8x10, 10x12. Storage shelf heights vary; examples 50 cm, 53 cm, 96 cm. Shelving has been organized so that most frequently used cassettes are in the best storage shelves to minimize bending. Storage area is close to processing area to minimize carry distances.

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	Task	Risk Factors	Freq/Dur	Mag/Range		Assessment / Observations / Comments
IDENTIFICATION	Handling cassettes (continued)	Force (lifting, grip force)			ASSESSMENT	<ul style="list-style-type: none"> Pinch grip used to handle cassettes in and out of storage area. Number of cassettes handled per shift varies depending on the number and type of procedure. Best handling method is to use both hands for handling of cassettes.
	Reviewing, inputting patient information	Awkward posture (upper extremity)				<ul style="list-style-type: none"> Standing computer workstations (2) with slide-out keyboard drawer set on top of counter. Set up is adequate. Input is minimal and of short duration; no concerns noted.
		Awkward posture (neck)				<ul style="list-style-type: none"> Viewer is positioned above counter height. Minimal note taking; no concerns noted.
	Processing film	Force (lifting)				<ul style="list-style-type: none"> Handling processor fluids within guideline levels. Two hands can be used to carry and position into place.
		Awkward posture (bending)				<ul style="list-style-type: none"> Bending to retrieve film; low weight and interspersed throughout the day: no concerns noted.
	Performs portable exams	Awkward posture				<ul style="list-style-type: none"> Have to position portable machine into place, may have to assume awkward posture (bend, reach, twist) to get into the correct position. Handle height will vary depending on patient when setting up equipment. Handle height for pushing may require trunk flexion for taller individuals (cannot be changed since the start/stop bar is located on the handle and there is no adjustability with the handle).
		Force (push/pull)				<ul style="list-style-type: none"> Machine is motorized for movement to location; minimal force required and reported to be easy to maneuver. Forces are within guidelines levels (Snook). Pushing portable X-ray machine to location and to do adjustments when setting up equipment.
		Force (grip force)				<ul style="list-style-type: none"> Minimal power grip force required along handle (full width of the machine) to activate motor for movement of machine from location to location.
		Force (patient handling)				<ul style="list-style-type: none"> Often required to position patient in bed properly for the exam. Can ask for assistance from ward staff if available, or request additional assistance from DI staff (depending on availability). Patient can be asked to assist as much as possible.
		Work organization				<ul style="list-style-type: none"> One designated staff per day perform portable exams, can be rotated.

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**Control Priority Note: 1 = recommended for implementation to reduce risk factors; 2 = optional, for consideration as a means of reducing risk factors; 3 = not for immediate action but for future consideration as appropriate.*

	Risk Factor	Potential Cause	Recommended Controls	Control Priority	Responsible Person	Status
CONTROLS	• Force	• Setting up patient, including portering	1. Staff to be provided with information about the risk factors for MSI and strategies for preventing risks. Job technique tips will be provided to all staff and possibly posted in the work area.			
	• Awkward posture	• Setting up equipment	2. Work method should be altered to move the X-ray tube laterally into position first (set at a level as low as possible), then set at appropriate vertical height. This will reduce time spent with shoulders extended and will reduce muscular effort and reduce fatigue.			
	• Force	• Wearing lead aprons	3. Aprons with waist belts (to transfer some of the load) are available and should be used as much as possible. Suggested method for putting on lead apron: shrug shoulders prior to fastening on hips to reduce direct loading on the shoulders. 4. Apron should be removed in between exams as much as possible to minimize muscular effort.			
	• Force • Awkward posture	• Handling cassettes	5. Minimize muscular effort when handling cassettes: select the smallest (lightest) size possible; keep frequently used cassettes in storage shelves at the optimal height (to minimize bending and reaching); always handle and carry cassettes with 2 hands to spread out effort to both arms.			
	• Force • Work organization	• Doing portable exams	6. For portable exams: request patient assist with positioning as much as possible, request additional assistance from DI or ward staff for patient positioning; rotate staff that perform portable exams.			
	• Force • Awkward posture	• General duties	7. Stretching exercise and relaxing routines should be incorporated; encourage micro-breaks (e.g. stretch, walk in-between patients). Information on job-specific exercises will be provided, specifically for neck, back, shoulder and upper extremity.			

Additional Comments: