

Document 19

State of Utah
Student Nursing Physical Demands

Eric Passey MPT
Intermountain Health Care

REPORT NAVIGATION

[Job Summary](#)

[Knowledge and Ability](#)

[Essential Physical Functions](#)

[Equipment](#)

[Environment](#)

[Essential Nursing Functions](#)

[Posture and Movement](#)

[Definitions](#)

JOB SUMMARY

Under the supervision of a licensed nurse the student nurse has responsibility for direct patient care for those assigned individuals during a scheduled shift. A shift varies in duration from 4 to 12 hours and may be during the day, night or weekend. They are also responsible for communication with families, caregivers, and other staff, be it written, verbal, electronic demonstration or other media in relation to their assignment. Duties may require sitting, standing, walking, lifting, bending, twisting, squatting, carrying, pushing, pulling, reaching writing, typing, pinching, gripping, bimanual dexterity.

KNOWLEDGE AND ABILITY

- Follow policies and procedures of the school and facility
- Comprehend and follow instructions
- Perform repetitive tasks
- Maintain an appropriate pace for the workload
- Relate to other people beyond giving and receiving instructions
- Influence other people
- Perform complex and or varied tasks
- Make generalizations, evaluations, and decisions without direct supervision
- Accept and carry out responsibility for direction, controlling, and planning patient care
- Assess patients' physical condition
- Eye hand coordination

ESSENTIAL FUNCTIONS

Standing or sitting

Perform CPR

Listening to the patient, family, other health care workers, and applicable monitors

Pushing

- Beds, gurneys, and wheelchairs, IV or monitor poles
- Laundry and trash containers
- Doors

Pulling

- Beds, gurneys, IV and monitor poles
- Objects from shelves such as linen, supplies monitors
- Laundry and trash containers
- Doors

Bimanual dexterity

- Draw blood
- Give "injections"
- Put on gloves while maintaining sterile field
- Administer medications (oral, rectal, eye drops, ear drops, nose drops, topical, or via feeding tube)
- Collect specimens (urine, sputum, stool, blood)
- Insert / maintain / remove urinary catheters
- Insert / maintain / remove nasogastric tubes
- Insert / maintain / remove intravenous catheters
- Use oxygen equipment including moving canisters
- Empty drains
- Remove sutures/staples
- Computer charting
- Hygiene care--brushing patients teeth, hair, shaving patient, bathing patient, other hygiene measures
- Maintain sterility of needles, catheters, dressings, etc. when performing complex procedures
- Set and maintaining pumps, monitors etc.
- Check and record vital signs
- Change dressings
- Place and maintain catheters

Lifting

- Patient transfers
 - Floor--kneel or sitting
 - Sitting--standing
 - Wheelchair--bed or gurney
 - Sitting--standing
 - Sitting or standing--lying
 - Bed--gurney
 - Bed mobility
 - Position in bed
 - Position in chair
- Objects
 - Linen
 - Monitors
 - Adaptive equipment- including CPM machines, walkers crutches, canes, wheelchairs, braces, splints, eyeglasses, contact lenses, hearing aids, prostheses, etc.
 - Patient personal belongings
 - Food trays
 - Patient supplies
 - Mannequins
 - Pumps
 - Fluid bags (IV, urinary, drainage bags, etc)

- Bedside Commodes

Visual Acuity

- Patient skin color, nail bed color, eye color, tissue appearance
- Eye, ear, nose, throat, structures with and without ophthalmoscope, otoscope
- Read temperatures on various thermometers
- Read vital signs on various monitors
- Venous location and size
- Anatomical landmarks
- Read orders and notes on computer and/or paper
- Read labels on medications
- Note markings on medications
- Reading measurements on syringes, medication cups, droppers, pumps, drainage bags etc.

Hearing Acuity

- Heart, lung, and bowel sounds; blood pressure, and fetal heart sounds using stethoscope
- Respiratory sounds without stethoscope
- Pulses and fetal heart sounds with doppler
- Patient verbalizations--speech, crying, moans, etc.

Touch

- Locate and count pulses in various sites
- Palpation of abdomen
- Palpation for edema
- Palpation for fetal position
- Temperature of tissue

Speech/Communication

- Communicate face to face with individuals
- Communicate via call system with individuals
- Communicate via telephone with individuals
- Read, write, speak and understand the English language

EQUIPMENT

Tools

- Stethoscope
- Sphygmodynamometer
- Scissors
- Pens
- Syringe
- Ophthalmoscope
- Otoscope
- Reflex hammer
- Tuning fork
- Thermometers
- Scales
- Gloves (sterile and non sterile)
- Eye protection
- Clamps

Machines

- Computer

- Vital sign monitors, BP, SATS
- Pumps: IV, PCA, Insulin, etc
- Patient lifts
- Monitors such as ECG, Glucose, Fetal

Tool belt

- Fanny packs or pockets commonly used

Vehicles

- Automobile or public transit to and from clinical sites, including home visits

Work aides

- Transfer boards
- Standard office tools including stapler, tape dispenser
- Computers

Safety equipment

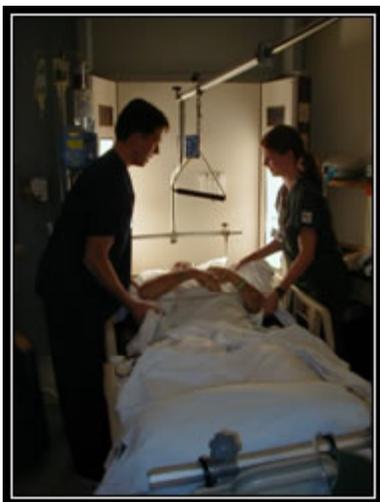
- Glasses, gloves, gowns, masks, face shields, HEPA respirators, per universal precautions

ENVIRONMENT

Senses	Extent	Comments
Near vision	Frequent	Computers, monitors, and patient care
Far vision	Frequent	Room call lights
Color discrimination	Occasional	Skin color, medications, blemishes, rashes
Depth Perception	Occasional	Direct patient care
Hearing Sensitivity	Frequent	Direct patient care, and monitors
Feeling	Occasional	Direct patient care
Proprioception	Occasional	
Taste	Infrequent	
Smell	Occasional	Smoke, infections, burning
Balance	Frequent	

Exposures	Extent	Essential Function	Comments
Chemicals--Contact	Occasional	Yes	Dispensing medications
Chemicals--Consumption	Never	No	
Chemicals--Inhalation	Rare	No	Mixing powdered medications, room sprays, skin cleansing agents

Confined	Spaces	Occasional	Yes
High elevation	Never	No	
Smoke	Never	No	
Moving Objects	Occasional	No	
Fumes	Occasional	No	
Slippery Surfaces	Rare	No	When making home visits
Wetness	Rare	No	When making home visits
Dust	Rare	No	When making home visits
Odor	Occasional	Yes	
Wind	Rare	No	Escorting patients leaving the hospital, making home visits
Rain	Rare	No	Escorting patients leaving the hospital, making home visits
Snow	Rare	No	Escorting patients leaving the hospital, making home visits



Pathogens	Occasional	Yes	
-----------	------------	-----	--

ESSENTIAL FUNCTIONS

Patient Transfers

Direct patient care involves assisting the patient into various positions and functions. The transfers can be divided into a few categories: bed mobility, sitting, standing, wheelchair, floor, and walking.

Physical Demands: Ability to bend, squat, twist, lift, pull, push, as well as guiding/standing by in case assistance is needed. Varied assistance is required depending on the ability of the patient. Lifting forces vary with patient weight

and level of ability to assist. Generally no more than 30% of the patient body weight is required.

requires the child to be independent; these forces are required. Draw sheets, transfer equipment may be used. **Bed Mobility**--A two-person lift to move the patient up in bed requires 28 lbs. force from

the side requires an approximate force of 10% of the patient's body weight of up to 50 degrees with a

posture occurs during positioning. Static holding of the patient with one upper extremity while manipulating/tucking sheets against the patient may be required during sheet changing, or bed baths. The process of rolling, holding the patient, and pulling the sheets across the bed would be required to complete the process.

Supine to Sit--Assisting a 251 lbs. patient from lying supine to sitting with Moderate assistance (50% help) requires 26 lbs. of force, and movement from trunk flexion to an upright posture during load. Dynamic standing with 16



pounds of force is required to assist the patient in a sustained sitting posture. **Bed to Wheelchair**--In the sitting position, the nurse can sit or stand to assist the patient in a bed to wheelchair transfer with standing pivot transfer as described below, or a sitting pivot transfer, including the use of a sliding board. The use of the sliding board requires the use of one upper extremity to stabilize the patient and shift the body weight to one side, while using the contralateral upper extremity to place the board under the patient's hip. Minimal force is then exerted to slide the patient from one surface to another. **Sitting to Standing**--Assisting a 251 lbs. patient from Sitting to standing with Moderate assistance (50% help) requires 26 lbs. of force, and movement from trunk flexion to upright standing during the dynamic lift. Dynamic standing with 16



pounds of force is required to assist the patient in a sustained standing posture. **Standing Pivot**--A standing pivot transfer to the wheel chair is accomplished with full body rotation and controlling the patient to sitting. The nurse will end with approximately 50 degrees of trunk flexion, although squatting during the patient

descent will minimize the trunk flexion.

Floor Transfers--Floor transfers are accomplished with a minimum two person lift, and generally occur only when a patient has fallen. The patient may be lifted directly, placed on a backboard, or pulled into a chair. Trunk flexion to 40°, full knee flexion, and hip flexion of 90°-120° may be required for a floor lift. Arms are in an extended elbow position. Assistance is sought as the need dictates. This transfer would be rare in occurrence.

Wheelchair Mobility--Wheelchairs are generally pushed or pulled, and require 20 to 30 pounds of pulling force on industrial grade carpet, 15 pounds force for turning, and 5 pounds force pushing on tile. Minimal trunk flexion is required, generally to lock or unlock brakes. Squatting or kneeling may be required to manipulate the footrests. Tight or confined spaces such as bathrooms may be encountered, and require flexibility of the torso, and extremities.

Patient Care

Vital signs monitoring requires bimanual upper extremity use for positioning the blood pressure cuff, and trunk flexion to 40 degrees, with slight rotation. The nurse position can be altered with adjusting the bed height or patient

position. Minimal grip strength

Placing canula with bimanual and trunk flexion to 40 degrees. position may be altered with and patients upright posture.

may be supported during such dressing changes, pillow



is required.

dexterity, The bed height

Extremities activities as positioning, or placing CPM (continuous passive

motion) devices. The force may be 10% of the patient's bodyweight. A dynamic lift followed by a static hold is required. The elbow may be maintained with 90 degrees of flexion. A unilateral static hold may be required while positioning heavy and/or awkward objects, such as CPM machines, under, on or around the extremity.



Bedside monitors require reaching and visual acuity. Reaching is occasional to head height, with shoulder elevation. Dexterity is required to operate the push Buttons of the monitors. Minimal sustained posture of the reaching extremity is required.



IV poles are commonly used and may be fixed to the wall, ceiling, or on a portable stand. Hanging the IV bag or bottle requires an overhead reach with shoulder elevation and a placing a weight of up to 5 pounds on the pole. Occasional reaching to shoulder height with finger dexterity and pinch grip is needed to adjust the flow of fluid. The contralateral upper extremity is often used to hold the tubing, or bag for control. Injections are made into the IV tubing portals, or into the bag. Dynamic pinching of various force less than 12 pounds is required to push the fluid through the syringe.

The IV pole is moved with the patient. Moving the pole requires 5 to 10 pounds of force to initiate movement. This

varies with the number of monitors, pumps and hanging fluids. Approximately 20 pounds of dynamic grip strength is required to keep the pole stable during movement. Upper extremity reaching at waist height, and static holding at the shoulder and elbow occur. The IV stand may be pushed or pulled requiring less than 5 pounds of force. Greater grip, wrist and forearm force may be required with top-heavy IV poles to avoid tipping.



Opening IV bags requires a bimanual grip and pinch force of 5 pounds to rip/tear the container. Spiking and priming the IV bag requires 16 pounds of force. The bag is held with one hand while the other hold the spike at the end of the tubing, and the spike is driven into the bag.



Foley catheters are positioned at the side of the bed and need to be emptied as needed, which can be as frequent as every hour. While squatting or kneeling the bag weighing on average 4 to 5 pounds is held in one hand while the other hand pinches and releases the clamp and then guides the tubing into the urinal. The clamp is then replaced and the bag hung on the bed. Drainage back may leak causing wet or slippery floors. The urinal is grasped and the nurse rises to a standing position. The volume is read from markings on the urinal, and then is poured into the toilet. Minimal walking is required, generally less than 10 feet.

Material Handling



Supplies including linens and various medical products are retrieved from their respective cabinets. Posture and forces include squatting, reaching overhead with shoulder elevation, forward reaching to full arm extension while manipulating forces less than 5 pounds.



Soiled linen is taken in rolling hampers to the appropriate closet, average less than 100 feet. The hamper may be pulled or pushed and requires approximately 10 pounds of force to manipulate while walking, with average grip. Two hampers may be moved at the same time. The linen bag is removed from the hamper frame with minimal trunk flexion to 30 degrees. The bag weighing up to 35 pounds is carried into the closet and placed in the bin with lifting including waist, shoulder and overhead heights.

Chart Review

Each shift charts are reviewed and a report on each of the assigned patients is given. At the beginning of the shift the nurse receives a report from the exiting shift member, then at the end of the shift the nurse gives a report to the incoming shift. The report is generally verbal. The nurse may sit, stand, or alternate positions during reporting. The report process generally lasts 20-30 minutes. Charts may also be reviewed throughout the shift, which can be performed sitting or standing. Minimal paper handling is required.



Documentation



Documentation is ongoing during the shift. Charting is done via computers, or on paper. Typical duration is less than five minutes writing or typing and occurs regularly throughout the shift.

Inserting Catheters

Various catheters are placed; these include nasogastric, oralgastric, tracheal suction, urinary, and intravenous. Visual acuity, reaching and dexterity are required to place the catheter, in addition some require maintaining a sterile field throughout the insertion. Trunk flexion to 30° may be required depending on patient positioning. 5-10 lbs of pinch grip is needed to hold and guide the catheter. Trunk flexion may be maintained 1-2 minutes with catheter placement for bladder drainage. Fine motor control in the distal upper extremities is needed to place the catheters. The patient position may be changed by adjusting the bed height. The patient may or may not be cooperative alert, or responsive.

Perform CPR

Communicate with individual to assess responsiveness, communicate with others in the immediate area to give directions, and seek assistance. A standing or kneeling position at the side of the individual is required to perform CPR. Performing kneeling chest compressions require a position of trunk flexion 30 to 40° , hip flexion 90° , knee flexion greater than 90° , full elbow extension and wrist extension to 75° . Chest compressions will require 40-60 lbs of force to compress the chest 1-2 inches.

Infant CPR can be performed with the infant on a supported surface, or with the infant resting on the forearm of the individual performing CPR, or airway clearing procedures. Infants are defined as birth to 1 year old, with an average weight from 3 ounces to 30 lbs. In airway obstruction remedies, the infant is supported on the forearm, while chest compressions are performed with the opposite arm. The infant is then turned over, and back blows are performed. The forearm is in a position of flexion to 90° for compressions, lacking 25° extension during back blows, with full forearm supination, and wrist flexion or extension less than 20° .

Physical Assessment

Assessing heart, lung and bowel sounds placing stethoscope on chest, abdomen and back. Minimal grip is required to hold and place the stethoscope against the body. Hearing sensitivity is essential.

Visual inspection is performed noting changes in color or appearance of structures and areas of the body.

Palpation is performed for temperature, tone of tissue, pulses, structure of the body, as a whole.

Position may be altered by adjusting bed with in-patient settings; home care may require trunk flexion of 30 to 40° , or the student may squat, or kneel. Physical demands are the same as those in the patient transfer section, as the patient may need to be positioned in sitting, standing, and lying positions.

School Based Course Work

Students are in school classes up to 8 hours per day for one to five days per week. The coursework includes classroom instruction via lecture, and media resources. During classroom presentations the student is sitting for

periods of 5-6 hours although 10-minute breaks may be given during that time period. The student is able to stand in the rear of the room if needed during these presentations. The seating environment is tables with molded plastic chairs, or chairs with attached desks and side entrance.

Practical application of the material includes laboratory for patient care skills, and computer labs. During patient care labs the student may need to lift or move a mannequin weighing 40-50 pounds. They will position themselves in kneeling, squatting, crouching, bending, sitting and standing postures. They may also act as patient and lay, sit, stand, bend, and twist for simulation exercises. Physical demands will be the same as outlined in the patient care component.



POSTURE AND MOVEMENT

Sustained Posture	Max. Consecutive Min. per hour	Total Daily Hours	Optional Possible Change	Essential Function
Sitting	60	5	Yes	No
Static Standing	60	5	Yes	No
Dynamic Standing	60	5	Yes	No
Walking	10	5	Yes	No

Movement/Posture	Frequency	Maximum Sustained Demand
Trunk Bending (<20°)	Occasional	2-5 minutes
Trunk Bending (>20°)	Occasional	1-2 minutes
Trunk Twisting	Occasional	1-2 minutes
Trunk Turning	Occasional	1 minute

Kneeling	Occasional	1 minute
Squatting	Occasional	1-2 minutes
Crawling	Rare	
Climbing	Rare	
Overhead Reaching	Occasional	1 minute
Side Reaching (<90° Abd.)	Occasional	1 minute
Side Reaching (>90° Abd.)	Occasional	1 minute
Forward Reaching (<90° Elev.)	Occasional	5 minutes
Forward Reaching (>90° Elev.)	Occasional	1 minute
Wrist Turning	Occasional	1 minute
Grasping	Occasional	5 minutes
Power Grip	Occasional	1 minute
Pinching	Occasional	1 minute
Finger Manipulation	Occasional	1 minute

Lifting

Position	Weight/Frequency	Weight/Frequency
Floor to waist	50lbs. occasional	20lbs. frequent
Waist to Shoulder	50lbs. occasional	20lbs. frequent
Overhead	50lbs. occasional	20lbs. frequent
Push	50lbs. occasional	20lbs. frequent
Pull	50lbs. occasional	20lbs. frequent
Carry	50lbs. occasional	20lbs. frequent

DEFINITIONS

The following definitions will assist in the interpretation of the exposures outlined in this report. These are in accordance with the U.S. Department of Labor and ADA guidelines.

Essential functions

Tasks that must occur for a given job task to be complete. (Jtech Medical Industries). These are tasks that may not be modified. For example if sitting was an essential task, the individual would have to sit during the specified time, not stand, kneel, lay etc.

Department of Labor Terminology

D.O.L. Term	Percentage of Shift Work	Time in Hours (Of an 8 hour day)	Approximate Exertions Per Time Frame
Never	0%	0 hours	None
Occasional	0-33%	>0 hours <3 hours	1 per half hour
Frequent	34-66%	>3 hours <5 hours	1 per 2 minutes
Constant	67-100%	>5 hours <8 hours	1 per 30 seconds

Never

The activity is never performed.

Occasional

Work done up to 33% of the workday or 0-3 hours of an 8-hour shift or workday excluding breaks. In terms of physical exertion, this is equivalent to approximately one exertion every half-hour or 15 exertions per shift.

Frequent

Work done from 34% to 66% of the shift or workday or 3-5 hours of an 8-hour day excluding breaks. This is equivalent to one exertion every 2 minutes or 200 exertions per shift.

Constant

Work done in excess of 67% of the shift or workday or 5 hours or more during an 8-hour day excluding breaks. This is equivalent to 1 or more exertions every 30 seconds, or 850 or more exertions per shift.