

PROCEDURE FOR: Chest Percussion, Vibration, Postural Drainage

- POLICY:
1. Criteria for use of chest percussion and vibration include:
 - a. Presence of secretions - visible or per auscultation.
 - b. CXR findings of edema or atelectasis which is secretion-related.
 2. Contraindications to chest percussion and vibration:
 - a. Infants < 32w and <14 days of age.
 - b. Infants who have had thoracic or abdominal surgery.
*If deemed necessary because of post-extubation atelectasis (secretion-related), adequate pain management should be provided.
 - c. Infants with pneumothorax or chest tube.
 - d. Infants with pulmonary hemorrhage.
 3. Trendelenburg positioning will not be used for infants <32 week's gestation and <14 days.
 4. All infants will be assessed for individual tolerance of and effectiveness of treatment. Intolerance to therapy will be reported to MD/Advanced Practitioner.

SUPPORTIVE

- DATA:
1. Definitions:
 - a. Postural Drainage: Positioning the body to facilitate drainage of secretions of the lung by gravity.
 - b. Percussion (clapping): Rhythmic tapping of the chest wall using cupped hands or manual percussor to facilitate loosening and movement of bronchial secretions from small airways into the large bronchi.
 - c. Vibration: Shaking of the chest wall on exhalation to facilitate loosening and movement of bronchial secretions from the small airways into the large bronchi.

EQUIPMENT: Manual percussion cup
Vibrator

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PROCEDURE:

<u>ACTION</u>	<u>POINTS OF EMPHASIS</u>
1. Assess infant's baseline cardio-respiratory status:	
a. Obtain baseline respiratory rate and heart rate.	
b. Observe for respiratory distress, retractions, nasal flaring, etc.	
c. Assess O ₂ saturation.	
d. Assess breath sounds.	
2. Check time of last feeding. If done immediately after feeding, vomiting may occur.	
3. Provide bronchodilator and/or nebulizer treatment if ordered.	3. It is easier to raise mucus mechanically after the bronchi are dilated and the secretions are thinned.
	a. Inhaled steroids are to be given after completion of percussion, vibration and suctioning.
4. Preoxygenate by increasing FiO ₂ by 10 to 20% or as needed.	
5. Place infant in a series of appropriate positions (as tolerated):	
a. The area to be drained should be elevated and its respective bronchus placed in a vertical position (See Appendix I).	a. Postural changes use gravity to facilitate the movement of pulmonary debris from smaller to larger bronchi.
b. The spine should be as straight as possible to permit optimal expansion of the ribcage.	b. Positions are selected and modified according to the lung area involved, the infant's general condition, infant's age and gestational age, and equipment.
6. Percussion:	
a. Apply manual percussor to the ribcage directly over the pulmonary segment being drained.	a. Light clothing or a single thickness cloth diaper can be used between the manual percussor and the infant's chest wall to minimize discomfort during the procedure.

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ACTION

- b. A hollow "popping" sound should be produced by the trapped air between the manual percussor and the infant's chest wall.
- c. Manual percussion should be utilized throughout the inspiration and expiration cycles of the infant.
- d. Unless contraindicated percuss the chest wall for 30 seconds to 1 min.

POINTS OF EMPHASIS

- b. Percussion should not be performed directly over recent incisions, open wounds or drainage tubes.
- c. Percussion should be discontinued if the percussion site is noted to be reddened or clinical status deteriorates.

7. Vibration:

- a. Vibrate chest wall during 3-5 exhalations.

- 7. Vibration can be done with fingertips or manual vibrator.

8. Suction as per Suction Procedure.

9. Documentation:

- a. Assess and record effectiveness of therapy and how well it was tolerated by infant.
- b. Observe and record changes in vital signs, breath sounds, work of breathing and oximetry.
- c. Observe and record amount and characteristics of sputum obtained.

10. Gradually return FiO₂ to baseline levels as indicated by oximetry.

APPROVAL: Nursing Standards Committee

EFFECTIVE DATE: 1/85 (as procedure for chest physiotherapy)

REVISION DATES: 1/86, 4/88, 11/91, 5/92, 10/93, 5/99

REVIEWED DATES: 12/08

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APPENDIX I

THE CHILDREN'S ORTHOPEDIC HOSPITAL AND MEDICAL CENTER
 PROCEDURE FOR BRONCHOPULMONARY HYGIENE

UPPER LOBES
 APICAL SEGMENTS



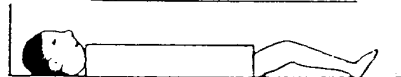
SITTING, LEAN BACK 20°. CLAP & VIBRATE OVER COLLAR BONE ON BOTH SIDES.



SITTING, LEAN FORWARD 20°. CLAP & VIBRATE OVER BOTH SHOULDERS.

ANTERIOR SEGMENTS

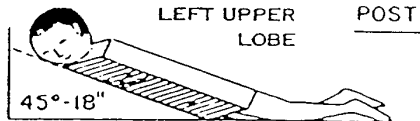
LEFT UPPER LOBE



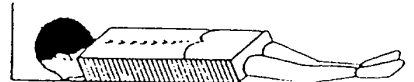
RIGHT UPPER LOBE

LYING ON BACK, PILLOW UNDER KNEES, CLAP & VIBRATE JUST BELOW THE COLLAR BONE HALFWAY BETWEEN THE NECK AND SHOULDER ON BOTH SIDES.

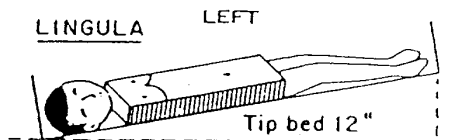
POSTERIOR SEGMENTS



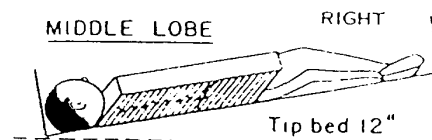
LYING ON RIGHT SIDE, 3/4 TURN TOWARD FACE DOWN, (PLACE 3 PILLOWS UNDER LEFT SHOULDER AND HEAD TO LIFT 12 INCHES OFF BED.) CLAP & VIBRATE OVER LEFT SHOULDER BLADE.



LYING ON LEFT SIDE, 3/4 TURN (ON TO PILLOW) FACE DOWN, CLAP & VIBRATE OVER THE RIGHT SHOULDER BLADE.



LIE ON RIGHT SIDE, ROLL 1/4 TURN BACK ON TO PILLOWS, CLAP & VIBRATE OVER LEFT NIPPLE AREA.



LIE ON LEFT SIDE, ROLL 1/4 TURN BACK ON TO PILLOWS, CLAP & VIBRATE OVER RIGHT NIPPLE AREA.

ADAPTED FROM DESIGN AND MATERIAL BY ELOISE DRAPER, LPT, FOR PEDIATRIC DEPARTMENT OF THE UNIVERSITY OF LOUISVILLE MEDICAL SCHOOL.

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APPENDIX I (Continued)

LOWER LOBES

SUPERIOR SEGMENTS

LEFT LOWER
LOBE

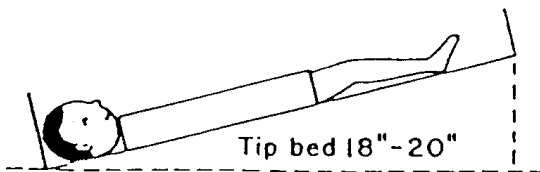


RIGHT LOWER
LOBE

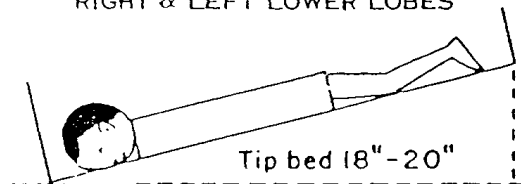
BED LEVEL, LYING FACE DOWN WITH PILLOW UNDER STOMACH, CLAP & VIBRATE JUST BELOW THE SHOULDER BLADES .

BASAL SEGMENTS

ANTERIOR
RIGHT & LEFT LOWER LOBES



POSTERIOR
RIGHT & LEFT LOWER LOBES

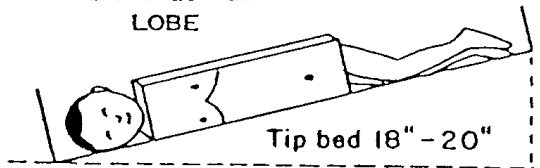


LYING ON BACK WITH PILLOW UNDER KNEES
CLAP & VIBRATE OVER LOWER RIBS

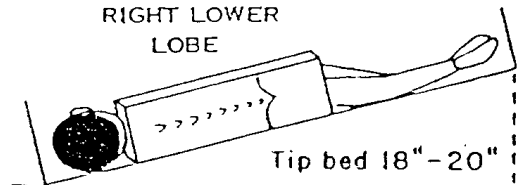
LYING FACE DOWN, CLAP & VIBRATE OVER
LOWER RIBS

LATERAL

LEFT LOWER
LOBE



RIGHT LOWER
LOBE



LYING ON RIGHT SIDE, CLAP & VIBRATE OVER
LOWER RIBS

LYING ON LEFT SIDE, CLAP & VIBRATE
OVER LOWER RIBS

PLACE ARMS AND LEGS IN COMFORTABLE POSITIONS.