

# PATIENT ASSESSMENT AND VITAL SIGNS MEASUREMENT AND DOCUMENTATION

**SUMMARY:** Sleep technologists observe and monitor physical signs and symptoms, general behavior and physical responses and perform and document patient assessment and vital signs measurement, under the general supervision of a licensed physician to assist in the evaluation, treatment and follow-up of sleep disorders patients of all ages. The ability to perform an accurate assessment and document certain standard measures and vital signs, including height, weight, BMI, neck circumference, pulse, respiratory rate, blood pressure and body temperature are standard processes in the evaluation of sleep facility patients.

## KEY DEFINITIONS

**SLEEP FACILITY** refers to any hospital-based physician practice or independent Sleep Center or Laboratory for Sleep Related Breathing Disorders.

**SLEEP TECHNOLOGIST** refers to a trainee, technician or technologist for the purpose of this document. Note that the sleep technologist designation refers to those who have passed a credentialing examination and are identified by the Registered Sleep Technologist (RST) or Registered Polysomnographic Technologist (RPSGT) credential.

## 1.0 SCOPE

This technical guideline will address patient assessment and measurements of height, weight, body mass index (BMI) and standard vital signs that are routinely performed as part of the technologist's evaluation of patients with sleep disorders.

## 1.1 ASSESSMENT

Vital signs show how well the vital organs of the body, such as the heart and lungs are working. All vital signs should be assessed when the individual is at rest. Wait 30 minutes to assess vital signs if a person has just eaten, drank a hot or cold beverage, smoked, or exercised. The following are the typical measurements and assessments performed and documented by a technologist:

1. Height
2. Weight
3. BMI
4. Neck Circumference
5. Pulse
6. Respiratory Rate

7. Blood Pressure
8. Body Temperature

Prior to beginning any assessment the technologist assures equipment is clean and ready for use, washes hands, identifies the patient, introduces himself, and explains the procedure. All measurements and assessments are accurately documented in the patient's medical record.

## **2.0 ASSESSMENT TECHNIQUES**

### **2.1 MEASURING HEIGHT**

Height measurements are usually taken using a drop down measure attached to a scale or wall. The patient should remove their shoes, be positioned directly underneath the drop down measuring device stand straight and look directly forward. Lower the measuring device until it rests gently on the top of the head. Document the measurement.

### **2.2 MEASURING WEIGHT**

To reliably measure body weight zero the scales, have the patient remove heavy clothing and items in pockets, and stand still on the scale. Wait for the needle or digital reading to stabilize before recording the measurement. Document the measurement.

### **2.3 CALCULATING BODY MASS INDEX (BMI)**

The BMI calculation is based on comparing weight against height. BMI is easy to calculate and the results are repeatable and consistent.

The equation for BMI is:

$$\text{BMI} = \text{Weight (kg)} / \text{Height (m)}^2$$

(Weight in kilograms divided by height in meters squared)

BMI can also be calculated by dividing weight in pounds by height in inches squared and multiplying by a conversion factor (703).

### **2.4 MEASURING NECK CIRCUMFERENCE**

Use a flexible measuring tape to measure circumference in inches or centimeters.

For males place the tape underneath the Adam's apple to measure. To find the Adam's apple, have the patient tilt his head back and feel for a lump or protrusion. Place the tape underneath the protrusion. Measure and document circumference.

For females, place the tape over the point just below your larynx. To find the larynx, gently place a few fingers on the front of the patient's neck and ask her to swallow. You will feel a lump after the swallow. Place the tape just below that point. Measure and document circumference.

### **2.5 ASSESSING THE PULSE**

Pulse can be assessed at the radial artery (in the wrist at the base of the thumb), the carotid artery (on each side of the neck) or apically (over the heart with a stethoscope). A regular pulse rhythm is steady beat with even spacing between beats. An irregular pulse has no pattern, may have skipped beats and spacing between beats may vary. The pulse is usually strong with easy to feel

beats. A weak and thready pulse is more difficult to feel and inconsistent. An irregular pulse and/or weak pulse could be a sign of a serious health concern.

The pulse is generally assessed at the radial artery in the wrist using two fingers (never the thumb) to feel the artery, pressing just hard enough to feel the pulse. Count beats for 30 seconds using a watch or clock with a second hand. Double the number counted in 30 seconds. Recount if pulse is irregular. Document pulse rate, regularity and strength of beat; and report any irregularities.

## **2.6 ASSESSING RESPIRATORY RATE**

Measuring the number of breaths in one minute determines respiratory rate. Respirations may be counted by watching the number of times the chest rises and falls or by placing the hand on the chest or stomach and feeling the number of times the chest rises and falls in one minute. One respiration is equal to the chest rising (inhale) and falling (exhale) one time. Count respirations for 60 seconds using a watch or clock with a second hand. It may be helpful to pretend to continue checking the pulse while determining the respiratory rate. Patients may alter their respiratory rate if they see you are trying to obtain it. Document the respiratory rate and any abnormal findings or irregularities.

## **2.7 MEASURING BLOOD PRESSURE**

Blood pressure is affected by time of day (low at night; peak about eight hours after awakening); emotions (stress increases blood pressure); weight (obesity typically increases blood pressure); activity level; excess sodium (salt) intake; excessive alcohol consumption; and use of certain drugs, including birth control pills, steroids, decongestants, and anti-inflammatory medications.

A blood pressure is taken with a stethoscope and a blood pressure cuff (sphygmomanometer) or an electronic blood pressure instrument placed on the finger, wrist, or arm that displays the blood pressure (systolic and diastolic) and pulse reading digitally. Follow the manufacturer's instructions for the proper use of digital equipment. Wipe blood pressure instrument cuffs with an approved hospital disinfectant wipe after each use.

### **2.7.1 Manually Measuring Blood Pressure**

Locate the brachial pulse one to one and a half inches above the inside of the elbow. Wrap and fasten a deflated blood pressure cuff smoothly and snugly around the upper arm at least one inch above the elbow (point arrow or dot on cuff at brachial pulse). Place earpieces of stethoscope in your ears and diaphragm of the stethoscope over the brachial pulse, close valve on air pump (turn knob to the right to close) and pump air to inflate cuff until the dial reaches at least 170. It may be necessary to increase the pressure to a higher level if the patient's blood pressure is higher. Slowly deflate cuff at a constant rate (turn knob to the left slowly) and watch numbers as the needle falls. Listen for the first thumping sound (systolic pressure) and the last clear thump (diastolic pressure). Deflate cuff completely and document the systolic and diastolic pressures. Report any abnormal readings. Wipe blood pressure instrument cuffs and stethoscope with an approved hospital disinfectant wipe after each use.

## **2.8 MEASURING TEMPERATURE**

Temperature may be assessed using a variety of thermometers: a glass thermometer, digital

thermometer, or a tympanic (ear) thermometer. The easiest and most commonly used is a digital thermometer. Document date, time and temperature as oral (O), axillary (A), or ear (E). Example: 98.6 (O).

### **2.8.1 Using a Digital Thermometer**

Cover the thermometer with a plastic sleeve. Press the button to set the thermometer. Place the thermometer under the tongue and have the patient close his mouth and breathe through the nose for several minutes. Take the thermometer out of the individual's mouth and read the temperature when the indicator lights. Document the instrument reading. Discard plastic sleeve after use.

An axillary temperature (under the armpit with tip of the thermometer against dry skin and held in place by the arm for 5 minutes) may also be obtained using a digital thermometer.

### **2.8.2 Using a glass thermometer:**

Hold the thermometer by the stem and shake the thermometer down to below 96 degree. Use a plastic slip to cover the thermometer and place under the tongue. Have the patient close his mouth and breathe through the nose for at least three minutes. Remove the thermometer, remove the plastic cover and hold thermometer at eye level by the stem rotating until the line is visible. Read and document temperature. Wipe the thermometer with alcohol and rinse in warm water after use.

### **2.8.3 Using a tympanic thermometer:**

Follow manufacturer's directions for use. Attach a disposable ear tip and insert tympanic thermometer in the ear canal. Document the instrument reading. Discard disposable ear tip after use.

## **3.0 DOCUMENTATION**

Document all values obtained in the patient's electronic medical record in discrete value fields if possible, or in the patient's sleep facility chart.

### **4.0 BMI SCALE<sup>1</sup>**

Underweight = <18.5

Normal = 18.5-24.9

Overweight = 25.0-29.9

Obese = >30.0

## **5.0 NORMAL RANGES FOR ADULT VITAL SIGNS<sup>2</sup>**

Pulse: 60 – 90 beats per minute

Respirations: 12 – 28 breaths per minute

Blood pressure: Systolic 90 - 120, Diastolic 60 - 80

Temperature: 97.8 to 99.1 (F), 36.6 to 37.3 (C)

## **6.0 NORMAL RANGES FOR PEDIATRIC VITAL SIGNS<sup>3,4</sup>**

### **6.1 Age 6 months to 12 months**

Pulse: 80 – 120 beats per minute  
Respirations: 25 – 40 breaths per minute  
Blood pressure: Systolic 80 - 100, Diastolic 55 - 65  
Temperature: 97.6 to 99.6 (F), 36.5 to 37.6 (C)

**6.2 Age 1 year to 3 years** Pulse: 70 – 110 beats per minute  
Respirations: 20 – 30 breaths per minute  
Blood pressure: Systolic 90 - 105, Diastolic 55 - 70  
Temperature: 97.7 to 99.5 (F), 36.5 to 37.5 (C)

**6.3 Age 3 years to 6 years** Pulse: 65 – 110 beats per minute  
Respirations: 20 – 25 breaths per minute  
Blood pressure: Systolic 95 - 110, Diastolic 60 - 75  
Temperature: 97.5 to 98.6 (F), 36.4 to 37.0 (C)

**6.4 Age 6 years to 12 years** Pulse: 65 – 95 beats per minute  
Respirations: 14 – 22 breaths per minute  
Blood pressure: Systolic 100 - 120, Diastolic 60 - 75  
Temperature: 97.5 to 98.6 (F), 36.4 to 37.0 (C)

**6.5 Age 12 years & up**  
Pulse: 65 – 95 beats per minute  
Respirations: 14 – 22 breaths per minute  
Blood pressure: Systolic 100 - 120, Diastolic 60 - 75  
Temperature: 97.5 to 98.6 (F), 36.4 to 37.0 (C)

## 7.0 REFERENCES

1. National Heart, Lung and Blood Institute (NIH) website at [http://www.nhlbi.nih.gov/health/educational/lose\\_wt/risk.htm](http://www.nhlbi.nih.gov/health/educational/lose_wt/risk.htm) accessed on 3/6/2015.
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3. Kleigman, R.M., et al. *Nelson Textbook of Pediatrics*. 19th ed. Philadelphia: Saunders, 2011.
4. Silvestri, L.A. *Comprehensive Review for the NCLEX-RN Examination*. 6<sup>th</sup> ed. Philadelphia: Saunders, 2013.