

Orthostatics Protocol

Orthostatic, tilt or postural vital signs (VS) are serial measurements of blood pressure (BP) and pulse (P) that are taken with the patient in the supine, sitting and standing positions. The results are used to assess possible volume depletion. This test is commonly performed on patients who complain of nausea, vomiting, diarrhea, GI bleed and syncope. The results can help the clinician decide if the patient needs fluid replacement, more extensive testing or treatment and transport to the hospital.

Normal Pathophysiology

When a patient stands, gravity causes blood to pool in the large vessels of the legs and lower trunk (up to 500 cc). This may cause a temporary change in blood pressure. Normally, baroreceptors in the aortic arch and carotids sense this change in blood pressure and volume. This stimulates an endocrine, catecholamine, rennin/aldosterone response. This response causes the peripheral vessels to constrict, the heart rate and contractility to increase, and the kidneys to hold fluids. This action pulls blood into the central core circulation to supply the primary organs (heart, lungs, kidneys, liver and brain).

In patients who are volume depleted (hypovolemic), there is not enough circulating blood to be pushed into core circulation, especially when the patient moves from supine to standing position. That is why we think a positive orthostatic test is indicative of volume depletion, and institute fluid replacement.

There is little agreement as to what constitutes a significant orthostatic change and what is considered a positive tilt test. For our purposes at First Responders, the “20-10-20” rule may be used as a guide. These numbers refer to an expected decrease in systolic BP (up to 20mm Hg), a rise in diastolic pressure of 10 mm Hg, and an increase in the heart rate by 20 beats per minute. Should you get these results, you should expect the nurses to institute IV therapy.

Some of the causes of a positive orthostatic test include:

Diseases or conditions

Diabetes
Hyponatremia (common during running events)
Alcohol consumption
Heat exhaustion
GI illnesses (N/V/D)

Medications

Blood pressure medications
Anti-depressant medications
Urinary flow medications (Flomax)

Clinical Indications:

- 1) **Almost every adult patient who is syncopal and/or has a history of exposure to outside weather, humidity, indoor exercising, etc., should have orthostatics performed as well as a glucose-stick. Many will also need cardiac monitoring.**
- 2) **Patient situations with suspected blood/fluid loss/dehydration.**

Procedure:

- a. Assess the need for orthostatics.
- b. Place the patient in a supine position and wait at least 2 minutes before obtaining any readings.
- c. Obtain patient's pulse and blood pressure while supine.
- d. Assist patient to a standing position and have him remain standing for a minimum of one minute.
- e. Repeat the pulse and blood pressure. If the pulse increases by 20 BPM **or** systolic blood pressure decreased by 20 mmHg, the orthostatics are considered positive.
- f. If the patient is unable to stand, orthostatics may be taken while the patient is sitting with feet dangling.
- g. If positive orthostatic changes occur while sitting, **DO NOT** continue with the standing position reading.
- h. Determine the appropriate treatment based on protocols.
- i. Document the procedure, time, and patient response in the incident report.

Documentation

Using symbols or writing out the name of the position and the results in each position are necessary. You should also indicate whether the pulse was regular and, if on a monitor, document the rhythm. Also include and symptoms the patient reports as well as your clinical observations. If fluid replacement is ordered, repeat orthostatics after the fluid therapy has been completed and document its effectiveness.