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Point of care ultrasound: The height of the column of fluid in the internal jugular vein as a measure of jugular venous pressure

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Introduction: Physicians use the jugular venous pressure (JVP) as a marker of volume status in a wide range of clinical conditions including congestive heart failure and renal failure. Unfortunately, the clinical assessment of JVP is highly subjective with significant variability even among experienced practitioners. Measurements of the JVP are recorded from the height of the pulsation of the internal jugular vein to the angle of Louis on the sternum with an additional 5 cm H₂O added to represent the distance to the right atrium. The height of the column of fluid above the sternal angle is said to remain constant independent of the angle of inclination. The purpose of this study is to determine if there is a significant difference in the height of the column of fluid of the internal jugular vein, as measured by ultrasound at 30, 45 and 60 degrees. **Methods:** The height of the column of fluid is measured by ultrasound on healthy subjects positioned at 3 different inclinations (30, 45, 60 degrees). These measurements are compared to each other using principles of the right triangle. The 2-ruler method is used to estimate the JVP. A one-way ANOVA is used to compare the results. The relationship between the height of the JVP and the cross sectional area (CSA) will also be studied. **Conclusions:** JVP measurement in the emergency department is difficult due to limitations in space and time. Determining a constant height of the column of fluid independent of position will improve clinical assessment of JVP in the emergency department. Ultrasound could provide these measurements, through direct visualization of the column of fluid.