



# The Effects of Acute Blood Loss on Blood Pressure Recovery from the Valsalva Maneuver

Anita Korsos\*

Department of Anaesthesiology and Intensive Care, University of Szeged, Hungary

## INTRODUCTION

When blood is lost, the body quickly draws water from tissues outside the bloodstream to keep blood vessels full. This thins the blood and reduces the hematocrit (the percentage of red blood cells in the body's total blood, or blood volume) [1]. Finally, increased production of red blood cells by the bone marrow improves anemia. However, over time, bleeding reduces the amount of iron in the body, and the bone marrow becomes unable to increase production of new red blood cells to replace those lost. Long-term (chronic) bleeding that can occur from different parts of the body [2]. Nosebleeds and hemorrhoids are noticeable, but small bleeds may go unnoticed. For example, small amounts of blood in stool may not be visible. This type of blood loss is called occultism [3]. A small amount of bleeding that lasts for a long time can lead to a large amount of blood loss. Such gradual bleeding can occur in common conditions such as gastric or duodenal ulcers, colon polyps, or colon cancer [4]. Other causes of chronic bleeding include kidney or bladder tumors, which can cause blood loss in the urine, and heavy menstrual bleeding. Losing as little as one-third of the can be fatal [5]. Dizziness when sitting or standing after lying down for a period of time (orthostatic hypotension) is common when blood loss is rapid.

## DESCRIPTION

If blood loss is slowed for more than a few weeks, the loss of up to two-thirds of the blood volume may cause only fatigue and weakness, or no symptoms at all if people are drinking enough fluids [5]. Other symptoms may develop as a result of the bleeding or the condition that caused the bleeding. If you have bleeding from the stomach or small intestine, you

may notice black, tarry stools [3]. Bleeding from the kidneys or bladder can cause red or brown urine. Women may notice long and heavy periods. Diseases that cause chronic bleeding, such as Gastric ulcers, causing abdominal discomfort [1]. Other conditions, such as diverticulosis, early colon cancer, and colon polyps, do not cause symptoms. Treatment of light or minor bleeding usually includes rest and fluids. A clot usually develops, temporarily limiting bleeding while the vessel repairs itself [4]. Over time, the surrounding body tissue replenishes the excess blood. Treatment of moderate to severe internal bleeding includes intravenous vitamin K, fresh frozen plasma, blood, and platelets [2]. More recently, doctors have begun administering very large doses of complexes and compounds that stimulate clotting. Doctors do blood tests to diagnose anemia when people complain of symptoms of anemia, notice bleeding or both.

## CONCLUSION

Stool and urine blood tests are done to determine the cause of the bleeding. Acute bleeding leads to hypovolemia and reduced oxygen-carrying capacity (hemoglobin). Although 15% to 20% hypovolemia is clinically detectable, life-threatening circulatory failure occurs at 30% to 40% hypovolemia. In addition, a decrease in hydrostatic pressure due to hypovolemia causes a decrease in filtration fraction and an increase in lymphatic flow as a result of sympathetic activation and a decrease in Central Venous Pressure (CVP). These changes result in a net movement of interstitial fluid into the vascular space. At the same time, the renin-angiotensin-aldosterone system is activated, resulting in decreased glomerular filtration rate, decreased urine production, increased renal sodium absorption, increased thirst and vasoconstriction.

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**Corresponding author** Anita Korsos, Department of Anaesthesiology and Intensive Care, University of Szeged, Hungary, E-mail: anita.\_korsos@hotmail.com

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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