

IF BLOOD PRESSURE IS TOO LOW (< 80 MMHG), WHAT SYSTEMS WILL ENGAGE TO FIX IT?

1. Aortic arch & carotid artery baroreceptors sense it, and medulla cardiac and vasomotor center respond by increased heart rate and vasoconstriction of systemic arterioles, respectively, to increase BP.
2. Low BP in renal artery stimulates JGA to secrete renin. Renin tells liver to convert angiotensinogen into angiotensin 1. Angiotensin 1 gets converted by ACE in the lungs to angiotensin 2. Angiotensin 2 can cause systemic arteriole vasoconstriction, and angiotensin 2 also tells adrenal cortex to secrete aldosterone. Aldosterone increases salt retention, and then water retention, by kidneys, which decreases urine output, and increases blood volume and BP.

IF BLOOD PRESSURE IS TOO HIGH (> 160 MMHG), WHAT SYSTEMS WILL ENGAGE TO FIX IT?

1. Aortic arch & carotid artery baroreceptors sense it, and medulla cardiac and vasomotor center respond by decreased heart rate and vasodilation of systemic arterioles, respectively, to decrease BP.
2. Heart baroreceptors detect stretch in ventricles from increased blood pressure, and secretes ANP. ANP increases glomerular filtration rate by kidneys causing decreased water retention, increased urine output, and decreased blood volume and BP.

IF BLOOD OSMOLARITY IS TOO HIGH (> 290 mOsm/L), WHAT SYSTEMS WILL ENGAGE TO FIX IT?

1. Hypothalamus senses it and (supraoptic nucleus) secretes ADH. ADH causes water retention by the kidneys, which decreases urine output, increases blood volume & BP, AND decreases blood osmolarity. Hypothalamus also stimulates thirst response.

IF BLOOD OSMOLARITY IS TOO LOW (< 280 mOsm/L), WHAT SYSTEMS WILL ENGAGE TO FIX IT?

1. Hypothalamus senses it and inhibits ADH secretion. Without ADH there is decreased water retention by the kidneys, which increases urine output, decreases blood volume & BP, AND increases blood osmolarity.