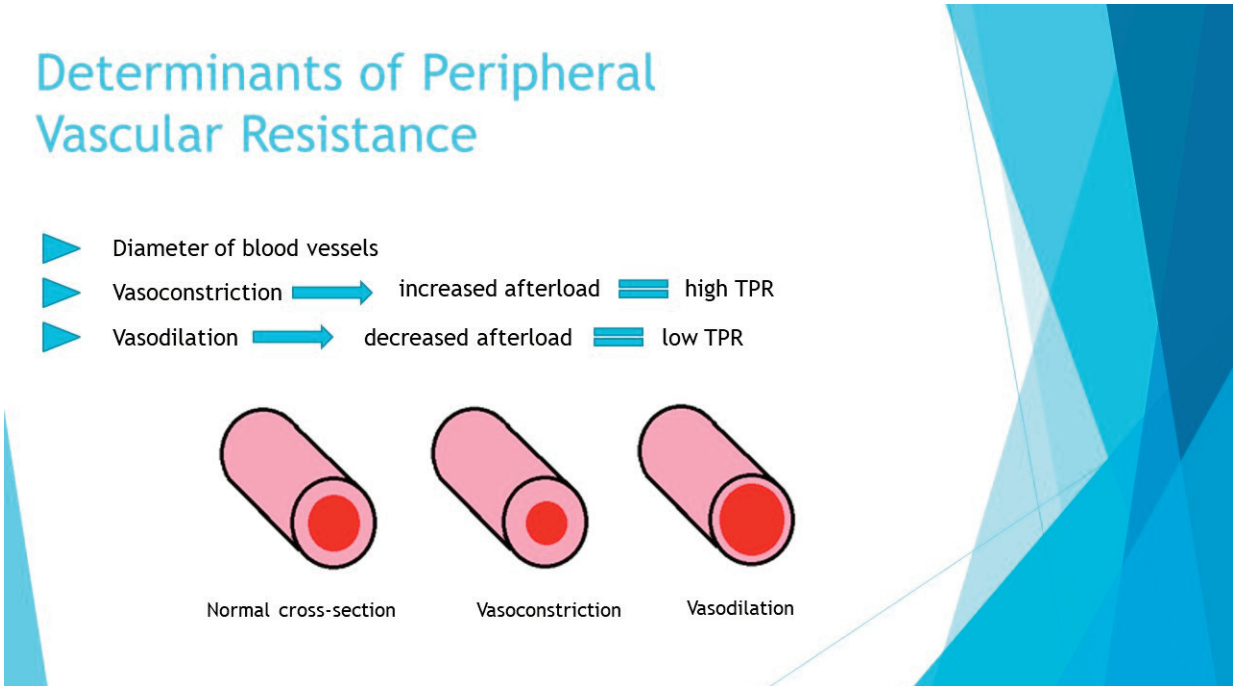
Regulation

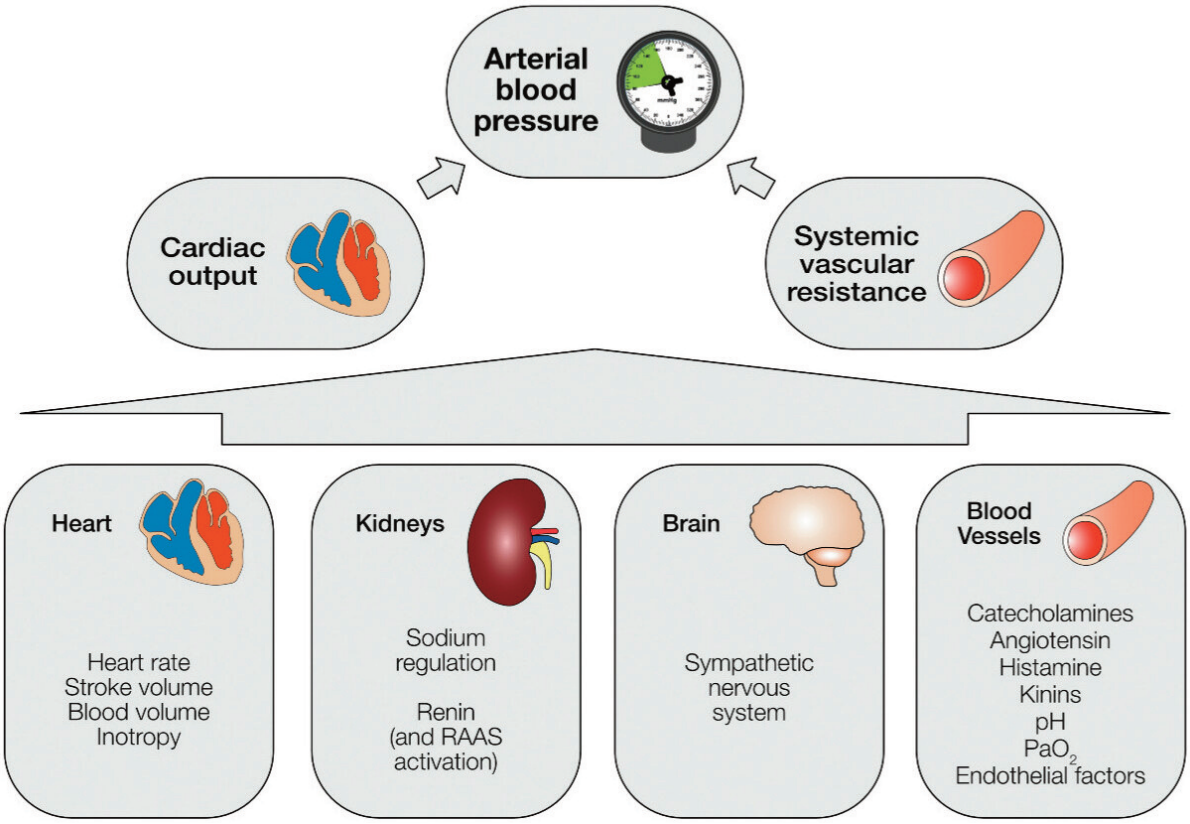
Blood pressure (BP) is the product of cardiac output (CO) and total peripheral resistance (TPR).

- BP = CO X TPR
- CO = heart rate (HR) x stroke volume (SV)
  - Stroke volume is related to diastolic filling volume (preload), afterload, and contractility
  - The higher the ventricular filling volume, the higher the SV
  - The greater the strength of ventricular contraction, the greater the SV
- TPR, sometimes referred to as Peripheral Vascular Resistance, is determined by the diameter of blood vessels
  - Vasoconstriction leads to increased afterload resulting in high TPR
  - Vasodilation leads to decreased afterload resulting in low TPR



- Other determinants of blood pressure include:
  - Kidneys: sodium regulation via the kidneys and the renin-angiotensin-aldosterone system (RAAS)
  - Brain: sympathetic nervous system and central nervous system regulation
  - Blood vessels: vasculature tone regulation via release off catecholamines, angiotensin, histamine, kinins, pH, PaO2, and endothelial factors

Regulation continued



Overview of some of the important mechanisms involved in the regulation of blood pressure.
RAAS = renin-angiotensin-aldosterone system.

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