Blood Volume-BNP feedback control system

INPUT: Disturbance in controlled variable

- Rise in BV: hypervolemic state
  - Input: Measurement by low-pressure volume receptors in the atrium
  - Integrator: Set point for a 'euvolemic CVP value' in hypothalamus
  - Effector: Adjustment via BNP release affecting (a) kidneys & (b) blood vessels

- Fall in BV: hypovolemic state

OUTPUT: Compensatory response

- Decrease in BV due to High BNP causing Natriuresis & Diuresis/Vasodilatation
- Increase in BV due to Low BNP causing Sodium & Water conservation/Vasoconstriction

COMP. PATHWAY

EFFECT: Controlled variable restored to normal set point

- Fall in BV (towards the euvolemic state)
- Rise in BV (towards the euvolemic state)

The 'basic unit of feedback control system (U)' consists of an interdependent Sensor (≡ "Measurement"), Integrator (≡ "Set point"), and Effector (≡ "Adjustment") using both positive (+ve) and negative (-ve) feedback control systems to complete a closed loop gear to maintain homeostasis for the variable being regulated. COMP. PATHWAY = compensatory pathway. Therefore, Figure 2 illustrated the 1U BV-BNP endocrine system (€), which is an example of a complex biological system.