Fluid Volume Overload

What is fluid overload?

Fluid overload occurs when there is too much fluid in the body either inside or outside the vessels. Fluid intake or retention exceeds the fluid needs of the body.

Caused by:

- Excessive intake
  - Drinking too much fluid
  - Excessive intake of food
  - Excessive intake of sodium
    - Fluid follows sodium causing cells to shrink due to water being pulled out of the cells
- Faulty processes
  - Kidney Failure
  - Congestive Heart Failure
  - Liver Failure

Types of Fluid Overload

Isotonic Overhydration

- Results in excess fluid in the extracellular fluid compartments
- Only the extracellular fluid compartments are expanded, and fluid does not shift between the intravascular and interstitial fluid compartments
- Causes circulatory overload and interstitial edema;
- When severe or when it occurs with poor cardiac function, heart failure and pulmonary edema can result

Causes:

- Inadequately controlled intravenous therapy
- Kidney Disease
- Long term corticosteroid therapy
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Types of Fluid Overload

Hypertonic Overhydration
- Hypertonic overhydration is rare and is caused by an excessive sodium intake.
- Fluid moves from the intracellular fluid compartment to the extracellular fluid volume, causing the intracellular fluid volume to contract.

Causes
- Excessive sodium ingestion
- Fluid depletion of hypertonic solution
- Excessive sodium bicarbonate therapy

Hypotonic Overhydration
- Also known as water intoxication.
- The excess fluid moves into the intracellular space, and all body fluid compartments expand.
- Electrolyte imbalances occur as a result of dilution.

Causes
- Early Kidney Disease
- Heart Failure
- Syndrome of Inappropriate Antidiuretic Hormone Secretion (SIADH)
- Hypertonic urine can dilute low sodium fluids.
- Replacement of normal fluid loss with hypotonic fluids
- Irrigation of wounds and body cavities with hypotonic fluids

Our Body is Failing Us

Kidney Failure
- Cannot filter blood and release urine, leading to less or no urine output.
- Fluid will continue to collect in the body.

Congestive Heart Failure
- Stretched heart chambers make it difficult for blood to pump blood through the body.
- Causes blood to backup into our vessels, increasing hydrostatic pressure and pushing blood out of the vessels into interstitial spaces.

Liver Failure
- Increased pressure in the liver causes an increase in hydrostatic pressure and pushing blood out of the vessels into interstitial spaces.
- Low albumin levels allow tissues to push fluids from leaking out of vessels.
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Fluid Overload Complications

High Blood Pressure
- Fluid builds up in the vessels causing an increase in blood pressure

Increased Hydrostatic Pressure
- Increased hydrostatic pressure on vessels and causes fluid to leak out of the vessels

Fluid Building around Organs
- Fluid leaking builds up in the interstitial spaces and around the organs

Fluid in Lungs
- Fluid leaks out of the vessel walls into the alveolar spaces

Hyponatremia
- Too much fluid inside the blood vessels dilutes sodium causing hyponatremia

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Fluid Overload Patient Presentation

Cardiovascular System
-Bounding, increased pulse rate
- Elevated blood pressure
- Fluid builds up in the vessels causing an increase in blood pressure
- Distended neck and hand veins
- Elevated central venous pressure
- Dysrhythmias

Respiratory
- Increased respiratory rate (shallow respirations)
- Dyspnea
- Moist crackles on auscultation

Neuromuscular
-Altered level of consciousness
- Headache
- Visual Disturbances
- Skeletal Muscle Weakness
- Paresthesia

Renal
-Increased urine output if kidneys can compensate; decreased urine output if kidney damage is the cause

Integumentary
-Pitting edema in dependent areas
- Pale, cool skin

Gastrointestinal
-Increased motility in GI Tract
- Diarrhea
- Increased body weight
- Liver enlargement
- Ascites

Laboratory Findings
-Decreased serum osmolality
-Decreased hematocrit
-Decreased BUN level
-Decreased serum sodium level
-Decreased urine specific gravity
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Fluid Overload Patient Presentation Interventions

- ProBNP
  - Detects heart stress, stretching, and damage
- BUN & Creatinine
  - Determines if the kidneys have taken damage and diagnose kidney failure
- Albuamin Level & Liver Studies
  - Diagnose liver failure as a cause of fluid overload
- Sodium Level
  - Determines how dilute the sodium is and helps determine treatment
- Chest X-ray
  - Congestion or effusions in the lungs

Fluid Overload Patient Management

- Monitor Intake & Output
  - Important to document all intake and output to determine efficiency of treatment
- Daily Weight
  - Helps determine fluid retention
- Fluid Restrictions
  - You don’t want to make the fluid overload worse
- Diuretics
  - Helps remove fluid from the body
- Dialysis
  - May be necessary dependent on the state of kidney failure to remove fluid

Fluid Overload Patient Education

- Fluid Restrictions
- Sodium Restrictions
- Take Medications as Precribed
- Patients stop taking diuretics because they keep your too much
- Monitor Weight Daily

Education is based on the cause of the fluid overload

- Congestive Heart Failure: Restrict Fluid and Monitor Weight
- Hypernatremia: restrict sodium intake
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Fluid Overload Goals

- Restore Fluid Balance
- Correct Electrolyte Imbalances
- Eliminate or control the underlying cause of the overload