

Plasma Refill

- ▶ The mortality rate for patients
- ▶ The process of fluid movement from interstitial space to plasma volume is known as plasma refill.
- ▶ If plasma volume is refilled at the same rate of ultrafiltration, the patient's blood pressure remains stable.
- ▶ However, when ultrafiltration is greater than plasma refill, the plasma volume falls and the patient becomes hypotensive

EDW

- ▶ Lowest possible Weight a Pt. can tolerate without intradialytic S/S of Hypotension in the absence of fluid overload/
- ▶ Post dialysis body weight that allows blood pressure to remain normal until the next dialysis without the need for anti-hypertensive medication despite intradialytic weight gains.
- ▶ Determined By
 - ▶ Physician Orders
 - ▶ Nursing Assessment
 - ▶ Blood Pressure
 - ▶ Fluid Gain and treatment tolerance
 - ▶ Pre Treatment signs and symptoms

Weighing Patient & Available Wt.

- ▶ Available weight = Pre - WT - EDW = AW
- ▶ What cause deviation
 - ▶ Seasonal attire, bathroom use, eating and drinking on treatment
 - ▶ Weighing patient, chair, flushes, medication, prosthesis
 - ▶ Staff
 - ▶ Pt. Manipulation & Language Barriers



Blood Pressure

- ▶ Systolic BP - Arterial Pressure-Pump blood = heart contracts
- ▶ Diastolic BP - Arterial Pressure during pumping = heart relax
- ▶ Difference between contract and relax = pulse pressure
- ▶ A 20 - 40 should be normally expected - with normal BP
- ▶ Increase diastolic approaching systolic is consider diastolic hypertension and may be the sign of underlying condition
 - ▶ ex. hardening of the arteries etc.
- ▶ If the value is too close the heart has to pump/work harder to keep the blood moving through the arteries.

Blood Pressure Deviation & Intervention

- ▶ Important to know normal B/P
- ▶ Reposition the cuff
- ▶ Correct cuff seize
- ▶ How to do manual B/P
- ▶ Recheck when not sure



Hypertension

- ▶ Cardiovascular disease (CVD)
- ▶ Mortality
- ▶ Myocardial Ischemia / Cardiac stunning



Hypotension

- ▶ B/P lower than normal
- ▶ Vomiting, weakness, dizziness, vision disturbance
- ▶ Tx- by giving more fluid, soups- juice, pickles, ...
- ▶ Cycle starts again



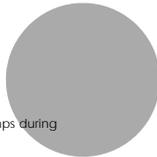
Sodium

- ▶ Priming and rinsing=3.5g
- ▶ Approximate 3.5 g of excess sodium every week from normal saline received during priming and rinse back
- ▶ Dialysate
- ▶ Dietary- Meals / snacks



Sodium Modeling (Na+) follows (H2O)

- ▶ **High Sodium Dialysate**
 - ▶ Minimally helps in fluid removal
 - ▶ Creates thirst and intradialytic weight gain
 - ▶ Leads to long term Complications
 - ▶ Creates vicious cycle of large weight gains leading to cramps during treatment
- ▶ **Low Sodium Dialysate**
 - ▶ Cramps
 - ▶ Headache
 - ▶ Hypotension



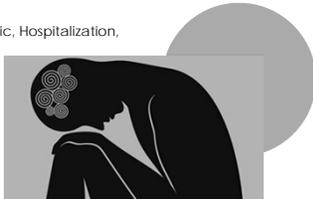
Sodium → Fluid → HTN

- ▶ Hypervolemia → SOB → CHF
- ▶ Na loading → Thirst → Fluid Overload



Root cause for low adherence

- ▶ Psychological / serious illness, Diabetic, Hospitalization,
- ▶ Anxiety
- ▶ Denial
- ▶ Grief
- ▶ Social isolation
- ▶ Schedule
- ▶ Sleep issue
- ▶ Substance abuse /dementia



Education, intervention Team

- ▶ Psychological - Referred to SW, specialist, controlling B/S,
- ▶ Anxiety - educate, positive reinforcement, SW, Meds
- ▶ Denial- Educate, involve family, community resource,
- ▶ Grief – death/loss, education, support
- ▶ Social isolation- live alone, support,
- ▶ Schedule – need another shift, missing weekend activity, darkness
- ▶ Sleep issue – hours slept, when they sleep, naps etc.
- ▶ Substance abuse /dementia – involve SW, MD, team



Crit-Line- Technology to assist with fluid removal

1. Non-invasively measures
 - a) Hematocrit
 - b) Change in blood volume
 - c) Oxygen saturation
1. Monitors how well a patient is tolerating ultrafiltration
2. Assists in identifying fluid overload
3. Visualizes plasma refill rate
--- determines if patients remains fluid overloaded



Plasma Refill

- ▶ The process of fluid movement from interstitial space to plasma volume is known as plasma refill.
- ▶ If plasma volume is refilled at the same rate of ultrafiltration, the patient's blood pressure remains stable.
- ▶ However, when ultrafiltration is greater than plasma refill, the plasma volume falls and the patient becomes hypotensive

Education Teaching Tips

- ▶ Sodium intake
- ▶ Reading labels
- ▶ Fluid allowance
- ▶ Proteins
- ▶ Dry mouth
- ▶ Miss treatment
- ▶ Checking B/S and taking adequate anti-diabetic medication



Education Teaching Tips

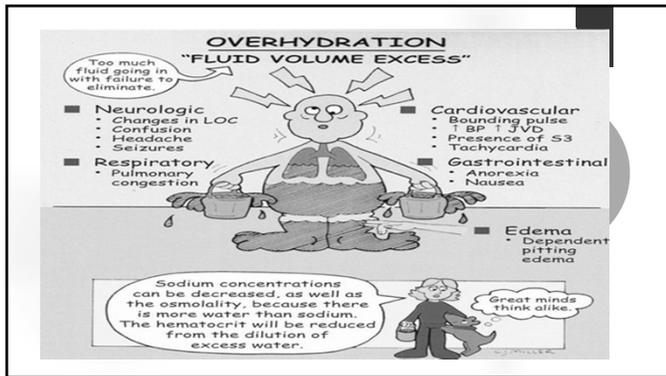
- ▶ "Controlling how much you drink isn't always easy, try these ideas for managing your fluid intake".
- ▶ Eat a piece of cold or frozen fruit, like grapes, strawberries or blueberries.
- ▶ Freeze your favorite beverage in a bottle and sip as the fluid melts.
- ▶ Suck on a piece of sugar-free hard candy or chew sugar-free gum
- ▶ Drink from small cups or glasses
- ▶ Rinse your mouth with mouthwash

Why limited fluid intake matter

- ▶ Headaches and low energy
- ▶ Swelling in your face, hands and feet (edema)
- ▶ Trouble breathing from fluid in your lungs
- ▶ Labs - low albumin - retain fluid
- ▶ Heart damage from stretching with too much fluid
- ▶ High blood pressure that can lead to a stroke
- ▶ Overall staying healthy decrease Mobility and Mortality
- ▶ Must get to EDW every treatment

Conclusion

- ▶ Fluid management is one of the most important parts of nursing care for dialysis patient.
- ▶ Understanding definition of EDW, routine assessment of EDW
- ▶ Understanding the root causes of Hypervolemia, decrease sodium loading, nutrition status, lab results, and machine/technology aspect of fluid management - will help us as a team and together we can achieve our goal of fluid management for our patients.
- ▶ Offer more education to staff, and continue to educate our patients.
- ▶ Together we can achieve acceptable outcomes while decreasing Morbidity and Mortality



References

- ▶ NKD-DOQI Clinical practice guideline 5 outline the control of volume and blood pressure.
 - ▶ <http://www.Kidney.Org/professionals/kdoqi/guidelines>
- ▶ NKF-KOQI (2006) KDOQI Clinical practice guidelines for cardiovascular disease in dialysis patients
 - ▶ <http://www.kidney.org/professionals/kdoqi/guidelines>
- ▶ Nephrology Nursing Journal May-June 2014 Vol. 41, No. 3
- ▶ Fresenius Medical Care Holdings, Inc.