



Fluid Management Weight Assessment in Dialysis Patients

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Objectives

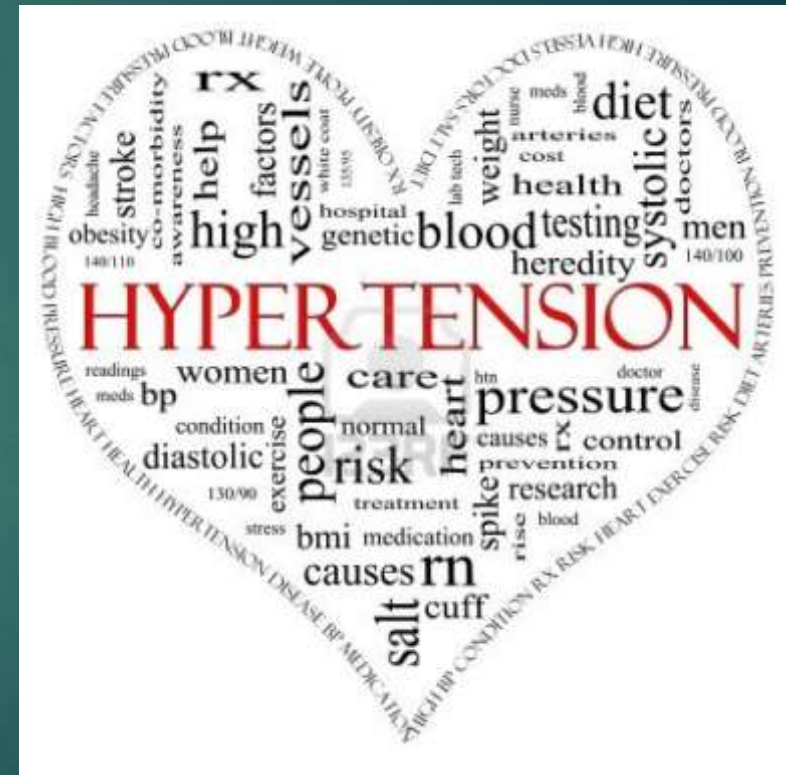
- ▶ History
- ▶ Body fluids compartments and how it moves
- ▶ Dry Weight – Definition, how it is determined
- ▶ Weighing patients –Pre and post weight, Available Wt
- ▶ Hypertension & Hypotension- interventions
- ▶ Association of Sodium and fluid retention
- ▶ Root cause for low adherence
- ▶ Crit-line & Education

History - Morbidity and Mortality

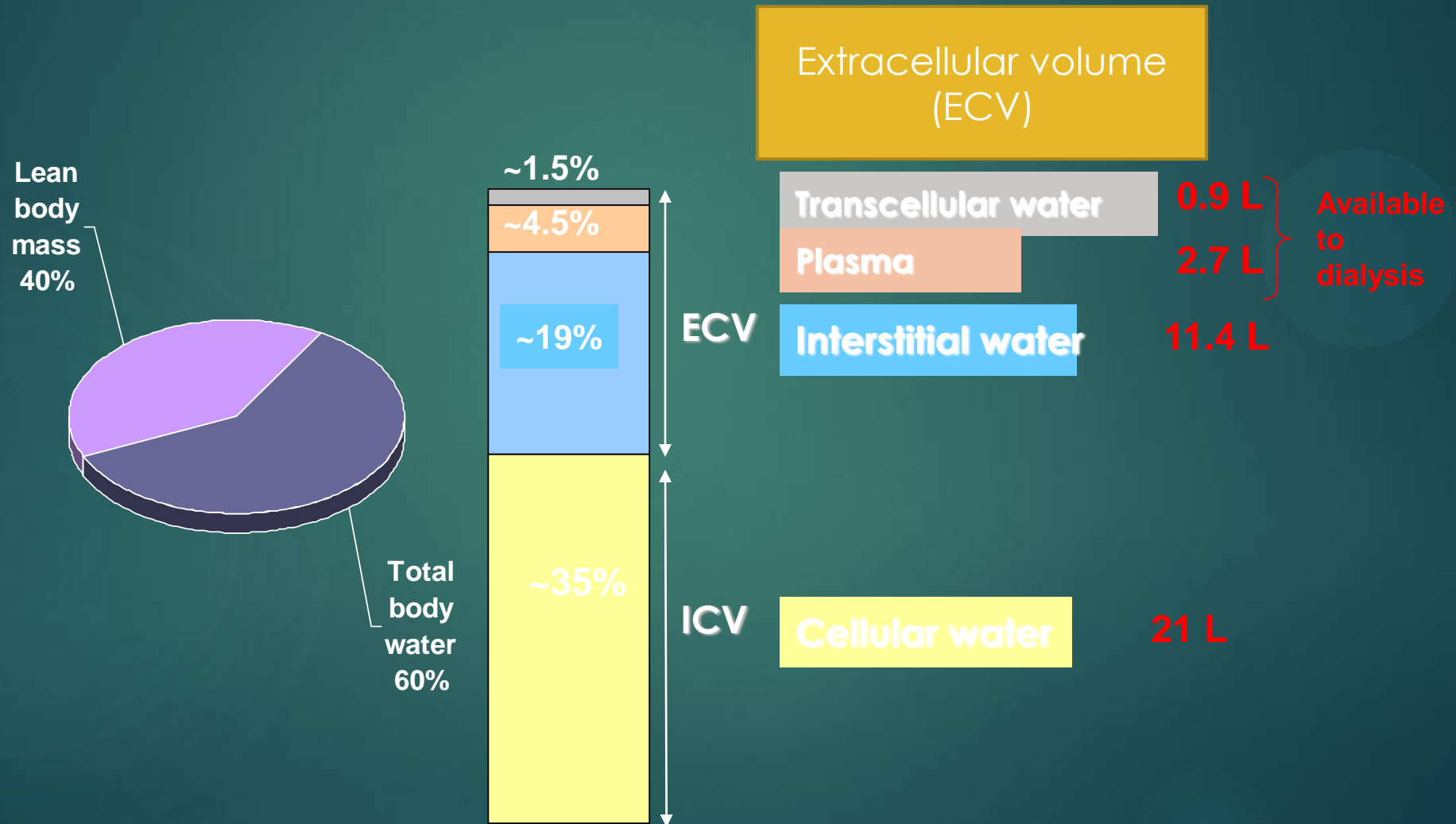
- ▶ The mortality rate for patients on hemodialysis ~20%
- ▶ 45% is due to cardiac disease
- ▶ Hypervolemia is the most common cause of hypertension, left ventricular hypertrophy and congestive heart failure
- ▶ Left ventricular hypertrophy exists in approximately 57 -77% of patients
- ▶ Cardiovascular disease is a major cause of hospitalization
- ▶ Congestive heart failure is a predictor of mortality

History - Morbidity and Mortality

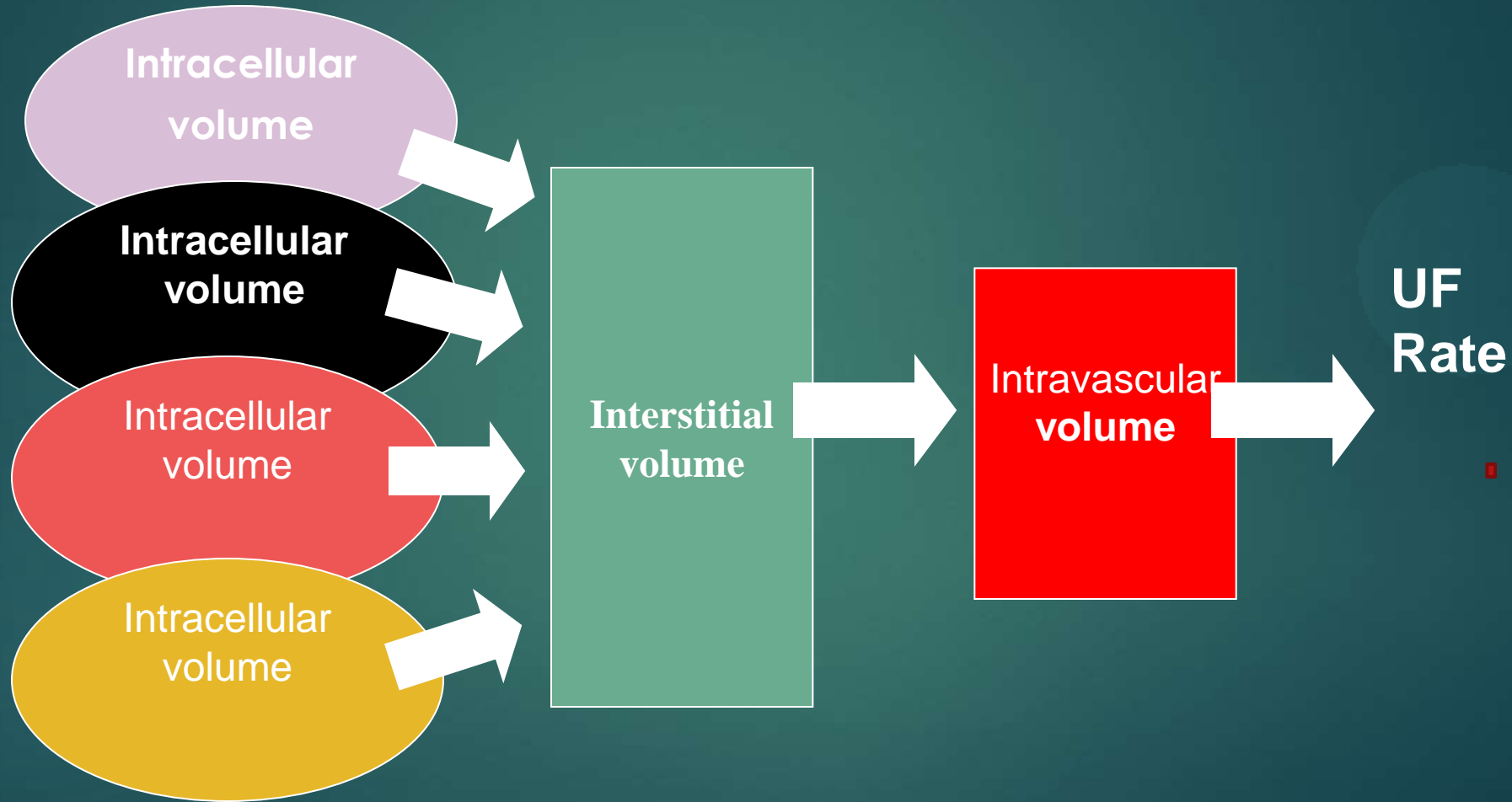
- ▶ Hypertension in hemodialysis patients is often related to excess fluid volume
- ▶ USRDS: mortality increase with weight gains between dialyses of more than 4.8% of body weight (normal gains=1kg/2.2lbs per day)
- ▶ USRDS suggests that Medicare spends at least 300 million dollars annually for hospital admissions related to fluid overload



History - Fluid Compartments



How Fluid Moves



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 size
- ▶ 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 weigh gain
- ▶ Leads to long term Complications
- ▶ Creates vicious cycle of large weight gains leading to cramps during treatment

▶ Low Sodium Dialysate

- ▶ Cramps
- ▶ Headache
- ▶ Hypotension

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



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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

OVERHYDRATION

"FLUID VOLUME EXCESS"

Too much fluid going in with failure to eliminate.

- **Neurologic**
 - Changes in LOC
 - Confusion
 - Headache
 - Seizures
- **Respiratory**
 - Pulmonary congestion

- **Cardiovascular**
 - Bounding pulse
 - ↑ BP ↑ JVD
 - Presence of S3
 - Tachycardia

- **Gastrointestinal**
 - Anorexia
 - Nausea



- **Edema**
 - Dependent pitting edema

Sodium concentrations can be decreased, as well as the osmolality, because there is more water than sodium. The hematocrit will be reduced from the dilution of excess water.



Great minds think alike.

C. MILLER

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.