

Certification Review Course



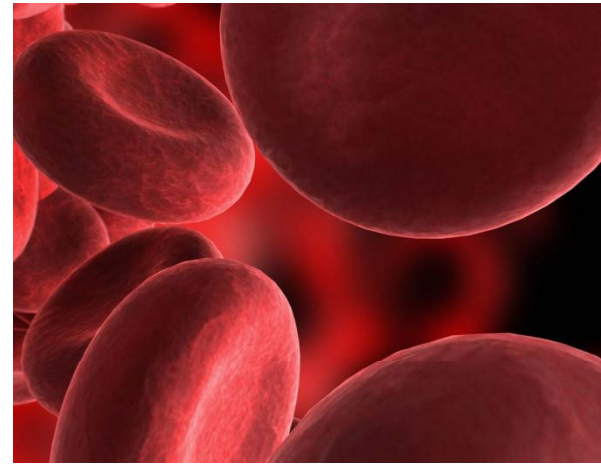
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Patient Management

- Glucose Management
 - Blood sugar is used to check the status of a patients Diabetes
 - Diabetes is the most common cause of Renal Failure
 - Glucose helps to pull water (osmotic effect) that aids in Ultrafiltration

Patient Management

- Anemia Management
 - Hematocrit-measure of RBC's in the blood.
 - Hemoglobin-A protein contained in the blood that helps carry Oxygen to all the cells in the body



What is your Role in Anemia Management?

- Before rinsing a patient back, make sure they have received their Epogen, Procrit, etc.
- Rinse back as many RBC's as possible
- If your center reuses, report poor clearances & poor numbers
- Ask the pt about unusual bleeding, signs of infection, redness, tenderness, chest pain

Signs/Symptoms

- Poor Hct/Hgb

- Dizziness
- Shortness of Breath
- Muscle Weakness
- Leg Cramps
- Chest Pain

- Good Hct/Hgb

- Improved Exercise Capacity, More Energy
- Sleeps Better
- Less Body aches
- Good Appetite

Bloodborne Pathogens

- 3 Major Bloodborne Pathogens
 - Hepatitis B (HBV)
 - Hepatitis C (HCV)
 - HIV



Bloodborne Pathogens

Mon April 20, 2007

28 VA hospital patients infected with HIV, hepatitis

TRIBUNE NEWSPAPERS

One patient each in South Florida, Georgia and Tennessee have tested positive for the AIDS virus in medical assessments sparked by incomplete cleaning of colonoscopy machines at Veterans Affairs hospitals, the VA reported Friday.

Another 25 have tested positive for hepatitis B or hepatitis C viruses, including seven in South Florida, out of 8,328 for whom test results have been received at the three hospitals, the agency said in an update posted on its Web site.

But no infections have been proved to have been caused by the potentially contaminated colonoscopy equipment, and the VA says it may never know.

Those who tested positive for HIV or hepatitis may have been infected by other means.

The VA disclosed last month that its hospitals in

Who's at risk?

How many: More than 8,000 VA patients.

When: Some but not all colonoscopies performed from May 2004 through March.

What: Potentially affected people should receive blood tests to see whether they are infected with HIV, hepatitis, etc.

Info: Call 305-575-7256 or 1-877-575-7256, or visit tinyurl.com/dfcgba

Miami, Murfreesboro, Tenn., and Augusta, Ga., had failed to follow manufacturer recommendations to disinfect secondary tubes used to connect colonoscopy machines.

Miami VA officials estimate that 3,341 people were potentially exposed since May 2004 and have located and notified all but 157 to come in for testing. So far, in tests for 1,880 patients, eight tested positive.

Bloodborne Pathogens

- Hepatitis B (HBV)
 - A highly contagious virus transmitted through infected blood and body fluids
 - Can live 7 days or longer on a surface
 - Most outbreaks are due to cross-contamination:
 - Poor Handwashing
 - Not cleaning supplies between patients
 - Caring for HBV (+) pts and those who are susceptible at the same time

Bloodborne Pathogens

EDUCATION

- Patients with Hepatitis B must be Isolated
- Vaccinate both patients and staff against Hepatitis B

Bloodborne Pathogens

- Hepatitis C (HCV)
 - Spread like HBV through infected blood and body fluids.
 - Can be killed by disinfectants & germicides
 - Not easy to transmit
 - No need to Isolate these patients
 - Dialyzers can be reused
- Outbreaks have been linked to cross-contamination

Bloodborne Pathogens

- Human Immunodeficiency Virus (HIV)
 - A virus that attacks the body's immune system
 - Causes AIDS (Acquired Immunodeficiency Virus)
 - Transmitted by blood and body fluids that contain the virus

Bloodborne Pathogens

- Ways to Prevent Transmission
 - Follow Infection Control Precautions with all patients
 - No need to Isolate these patients in a separate room or dedicated machine
 - Can participate in Reuse program

Patient Complications

- Hypotension
 - Rapid Fluid Loss
 - Antihypertensive Drugs
 - Low Blood Volume
 - Eating on Treatment
 - Unstable Cardiovascular condition
- Signs/Symptoms
 - Yawning
 - Sudden or gradual drop in BP
 - Dizziness
 - Nausea, vomiting
 - Cold, clammy skin

Patient Complications (Hypotension)

- Treatment
 - Assess Blood Pressure
 - Discontinue Ultrafiltration
 - Administer Saline
 - Place patient in Trendelenburg
- Prevention
 - Adjust Dry Weight
 - Use Sodium Modeling
 - Use UF Profiling or Pure Ultrafiltration

Patient Complications

- Hypertension
 - Due to fluid Overload
 - Missing Treatments
 - Anxiety
- Signs/Symptoms
 - May have no symptoms
 - Headache
 - Nervousness

Patient Complications (Hypertension)

- Treatment
 - Refer patient to Dietitian
 - Watch UF Rate
 - Refer to Physician or his/her representative regarding BP meds
- Prevention
 - Make sure fluid goal is calculated correctly
 - Ask patient if BP meds are being taken
 - Encourage patient to limit their fluid intake

Patient Complications

- Muscle Cramps
 - Rapid shift in compartmentalized fld
 - Shifts in concentration of blood solutes
 - Hyponatremia
 - Hypocalcemia
- Signs/Symptoms
 - Painful muscle contractions in hands,feet

Patient Complications (Muscle Cramps)

- Treatment
 - Normal Saline bolus
 - Reduce UFR
 - Apply opposing force
 - Assess dry weight
- Prevention
 - Use Sodium Modeling
 - Weigh Patient Correctly
 - Calculate Goal Correctly
 - Encourage pt to limit salt and fluid intake

Patient Complications

- Disequilibrium Syndrome
 - BUN removed too fast from the blood than from the brain (fluid will move into the brain cells)
 - Seen more in patients with Acute Renal Failure
 - BUN > 150
 - New patients
 - Pts who skip treatments
- Signs/Symptoms
 - Headache
 - Nausea
 - Hypotension
 - Restlessness
 - Confusion
 - Blurred Vision
 - Seizures

Patient Complications (Disequilibrium Syndrome)

- Treatment
 - Monitor the patient closely
 - Notify the nurse of major vital signs changes
 - Shorter, slower dialysis treatments

Patient Complications

- Fever and Chills
 - Systemic Infections
 - Access Infections
 - Contaminated dialyzer and/or bloodlines
 - Too cold dialysate
- Signs/Symptoms
 - Fever during dialysis
 - Temperature >99°F
 - Feeling too cold
 - Feeling cold without a fever (cold dialysate)
 - Redness, swelling, tenderness or drainage from access or other sites (feet, skin wounds)

Patient Complications (Fever and Chills)

- Treatment
 - Evaluate the patient for signs of infection
 - Obtain blood cultures per facility protocol
 - If you suspect pyrogen reaction, stop the treatment and follow your facilities policies regarding LAL cultures from dialyzer
- Prevention
 - Use aseptic technique to set up equipment
 - Check pt vital signs
 - Tell nurse promptly about major changes in vital signs
 - Check dialysate temperature before tx
 - Facility to test water and equipment routinely

Patient Complication

- Seizures
 - Severe Hypotension
 - Electrolyte Imbalance
 - Dialysis Disequilibrium Syndrome
 - History of Seizure Disorder (Epilepsy)
- Signs/Symptoms
 - Change in level of consciousness
 - Convulsions

Patient Complications (Seizures)

- Prevention
 - Monitor BP closely
 - Encourage patients with a history of Epilepsy to take their meds as prescribed

Patient Complications

- Cardiac Arrest
 - Extreme Hypotension
 - Electrolyte Imbalance due to High Potassium
 - Arrhythmias
 - Heart Attack
 - Air Embolism
 - Severe Blood Loss
- Signs/Symptoms
 - No Pulse
 - No Breathing
 - Loss of Consciousness

Patient Complications (Cardiac Arrest)

- Prevention
 - Monitor Vital Signs Closely
 - Stay in attendance when patients are dialyzing
 - Inform your nurse immediately of major changes in vital signs (sweating profusely, c/o chest pain)

Access Complications

- Air Embolism

- Air enters the patient's bloodstream leading to Cardiac Arrest

- If you suspect air has entered the venous system
 - Have the patient lie on their left side

- Line Separation

- Leads to Exsanguination (excessive blood loss)

Access Complications

- Line Separation (cont.)
 - Needle comes out
 - Blood lines separate

 - Prevention
 - Tape lines/needles securely
 - Set machine limits
 - Check patient's access every time you check vital signs

Access Complications

- Blood Loss

- Ways to Prevent Blood Loss

- Don't allow patients to cover their access
 - Don't let blood tubing touch the floor
 - Tape needles so they can't pull loose
 - Test your machine to ensure that all alarms are working properly

Access Complications

- Infiltration/Hematoma
 - Occurs when a needle goes into the vein and out the other side and allowing blood to enter the tissue
 - Most common complication
 - Harms the access
 - Can lead to access failure
 - Can be painful
 - Leads to extra cannulations

Access Complications

- Venous Infiltration
 - Increases the venous pressure, shuts off the blood pump
- Arterial Infiltration
 - Increases the arterial pressure, makes the arterial pressure more negative

Access Complications

- Ways to Prevent Infiltrations
 - Don't Rush
 - Use a gentle technique
 - Don't flip needles
 - If you know the access is problematic, use “wet sticks” or
 - Use the Buttonhole Technique

Long Term Access Complications

- Steal Syndrome

- Fistula or graft “steals” too much blood away from the distal part of the limb (hand or foot)
- Pain is felt, but can lessen with time
- Body may compensate by growing extra vessels (Collateral Circulation)
- Can lead to Necrosis in your Diabetic patients
 - Watch them closely

Long Term Patient Complications (Steal Syndrome)

- Signs/Symptoms
 - c/o pain in access limb
 - Tingling in access limb
 - Cold feeling in access limb
 - Discolored or blue nail beds
 - Necrotic (dead or black) spots on skin
 - Decreased feeling in access limb
- Treatment
 - Decrease Blood flow
 - Surgeon may need to tie off some vessels
 - Notify your nurse or supervisor to notify the surgeon early on

Long Term Access Complications

- Aneurysm

- Weakened wall causing a ballooning or bulge from the access occurring at sites that are repeatedly cannulated.
- The normal flow of an AV Fistula continues to increase and the vein continues to enlarge.

Long Term Access Complications (Aneurysm)

- Treatment
 - Avoid Cannulation in areas of already existing aneurysms
 - Rotate sites or use the Buttonhole Cannulation Technique
 - Don't cannulate in thin areas it will lead to rupture

Long Term Access Complications

- Stenosis
 - Narrowing of the vessel that slows the flow of blood to the access
 - Signs/Symptoms
 - A high pitched or loud pitched bruit
 - Decreased Thrill
 - Trouble threading or inserting the needle
 - High venous pressure
 - Recirculation
 - Clotting dialysis system often
 - Increased bleeding post treatment
 - Decreased Kt/V or URR
 - Can't meet prescribe Qb (blood flow)

Long Term Access Complications

- Thrombosis
 - Formation of thrombus or clot in vessels
 - Caused by Stenosis of Low Blood Pressure

Long Term Access Complications (Thrombosis)

- Signs/Symptoms
 - Reduced Thrill/Bruit
 - Poor Blood Flow
 - Can't Obtain ordered Qb
 - High Venous Readings
 - High TMP
- Prevention
 - Measure venous pressure and watch trends
 - Listen for bruit changes q treatment

Patient Education

- Encourage your patients not to sleep on their access arms
- Don't wear tight clothing
- Don't carry heavy objects with the access arm
- Don't put too much pressure when holding their sites post treatment

QUESTIONS



**GOOD LUCK & THANK
YOU FOR ALL YOU DO!**