A. The dialysis procedure may cause any of the following:
   1. Hypotension (15-30% of patients) which may result in angina, MI, dysrhythmias, altered mental status and/or seizures.
   2. Removal of therapeutic medications (e.g., Tegretol)
   3. Dysequilibrium syndrome caused by the shift of urea and/or nitrogen. Signs & symptoms – nausea, vomiting, altered mentation, seizure
   4. Bleeding – may occur at the catheter site, retroperitoneal space, gastrointestinal, or subdural space. These patients are often treated with heparin and may have a low platelet count.
   5. Equipment malfunctions – possible air embolism, cross contamination causing infection / fever

B. Dialysis patients frequently have a history of diabetes and may also suffer some of the following complications of renal disease: Congestive heart failure, electrolyte (especially potassium) imbalances, anemia, bleeding, pericarditis.

Basic EMT

A. Assess and manage airway
   1. Administer oxygen as needed to treat shock and/or respiratory distress
   2. Apply pulse oximeter and treat per pulse oximeter procedure

B. Evaluate patient’s general appearance, relevant history of condition and determine OPQRSTI and SAMPLE.

C. Obtain pertinent renal history:
   1. Cause of chronic renal failure
   2. Dialysis history: Number of years, current schedule, previous complications
   3. Current dialysis procedure
      a. Amount of fluid removed
      b. Amount of fluid scheduled to be removed
      c. Current signs & symptoms
      d. Any interventions made by dialysis staff

D. Specific components to evaluate:
   1. Patient’s fluid status
      a. Hypovolemia (tachycardic, hypotension, cool clammy skin) – place in shock position
      b. Hypervolemia (signs of CHF, dependent edema, hypertension) – place in upright seated position
   2. Mental status
      a. Altered or abnormal blood glucose level – Refer to Altered LOC Protocol
      b. Seizure activity – Refer to Seizure Protocol
      c. Hypoxia – treat per Pulse Oximeter Procedure
   3. Dialysis shunt
      a. Bleeding from shunt – NOTE: excessive pressure may result in shunt failure requiring surgical replacement
      b. Do NOT use arm with shunt for blood pressure

E. Transport
A. Apply monitor and check rhythm

B. Start IV normal saline, TKO, while en route to hospital. Do NOT delay transport. Do NOT use the arm with the dialysis shunt.

C. If patient showing signs & symptoms of hypovolemia, administer 250-500 ml saline bolus. Closely monitor vital signs and lung sounds.

D. If signs of pulmonary edema present, refer to Respiratory Emergencies – Pulmonary Edema Protocol.

E. Administer *albuterol* aerosols for bronchospasms.

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### Paramedic

A. Evaluate EKG for signs of hyperkalemia (tall, peaked T waves or wide QRS). If present:
   a. Administer continuous albuterol aerosol treatments
   b. Administer 50 mEq Sodium Bicarbonate IVP over 10 minutes
   c. Flush IV line generously after Sodium Bicarbonate and before Calcium administration or a precipitate may form.
   d. Administer Calcium gluconate 10% 15-30 ml IVP over 2-5 minutes

B. Other dysrhythmias – refer to Dysrhythmia Protocol

C. Cardiac Arrest – refer to Cardiac Arrest Protocol with consideration of treatment for suspected hyperkalemia
• ASSESS AND MANAGE AIRWAY
• MAINTAIN O2 SATS >95%
• EVALUATE PATIENT CONDITION
• MONITOR VITAL SIGNS
• OBTAIN MEDICAL AND RENAL HISTORY
  o CAUSE OF RENAL FAILURE
  o DIALYSIS HISTORY (# OF YEARS, SCHEDULE, COMPLICATIONS)
  IF CURRENTLY ON DIALYSIS:
    o AMOUNT OF FLUID REMOVED
    o AMOUNT OF FLUID SCHEDULED TO BE REMOVED
    o INTERVENTIONS BY DIALYSIS STAFF
• REASSURE PATIENT
• TRANSPORT

• IV NS (RUN TO MAINTAIN PERFUSION)
• MONITOR ECG
• FOR BRONCHOSPASMS ADMINISTER ALBUTEROL SULFATE (PROVENTIL) 3MG IN 3ML.
  ADULT DOSE: 3ML BY NEBULIZER / AEROSAL
  ALBUTEROL AEROSALS CAN BE ADMINISTERED PRN IF FURTHER TREATMENT NEEDED.

• IF PATIENT SHOWS SIGNS OF HYPERKALEMIA:
  o ADMINISTER CONTINUOUS ALBUTEROL SULFATE (PROVENTIL) TREATMENTS
  o ADMINISTER 50 MEQ OF SODIUM BICARBONATE IV PUSH OVER 10 MINUTES
    (FLUSH LINE AFTER ADMINISTRATION)
  o ADMINISTER CALCIUM GLUCONATE 10% 15-30 ML IV PUSH OVER 2-3 MINUTES
• TREAT DYSRHYTHMIAS PER PROTOCOL
• IF IN CARDIAC ARREST REFER TO CARDIAC ARREST PROTOCOL – CONSIDER TREATMENT FOR HYPERKALEMIA

KEY
- BASIC EMT
- ADVANCED EMT
- PARAMEDIC
- MED CONTROL
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