

Procure/Kaiser Pilot Mobile Integrated Health
Procedures

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I. General Procedure for MIH Pilot Program Patients

Indications: This procedure provides general guidance for the evaluation of patients who have been enrolled by Kaiser in the Kaiser HSCRC Grant MIH Pilot Program and who have consented to such enrollment.

Consults: For this MIH pilot program, MIH Consult Physician is defined as the Kaiser Virtual Home Care Physician who has completed the Maryland Base Station course and annual protocol updates or a Maryland MIH Consult Physician.

- A. All referrals shall be made by Kaiser to Procure through the Kaiser HSCRC Grant Program in advance and home visits will be pre-scheduled with the patient's prior consent.
- B. All patient referrals will be made immediately post-discharge from a facility so that the first MIH encounter occurs between 2-4 hours post-discharge.
- C. Prior to initiation of patient contact, the MIH Clinician should obtain from the Procure Communications Center all available patient information to include:
 - 1. Patient Complaint/Illness/Discharge Diagnosis
 - 2. Discharge Summary and treatment plan
 - 3. Any previous pertinent patient care records
 - 4. Expected time of arrival to the home, or if patient is being transported from a healthcare facility to home by Procure, the expected time of arrival to the healthcare facility for patient pick up
 - 5. Address of the healthcare facility and/or home, as applicable
- D. Follow the *Maryland Medical Protocols for Emergency Medical Services (MMP)*: Mobile Integrated Community Health Program protocol.
- E. Contact the MIH Consult Physician via the Telehealth Link to be provided by the MIH Consult Physician. Contact with the MIH Consult Physician will take place on every MIH Visit.
 - 1. Provide patient report including reason for the visit and assessment findings.
 - 2. In consultation with the MIH Consult Physician and the patient, determine disposition (stay at home vs. transport).
 - 3. Communicate a continuity plan as directed by MIH Consult Physician.

- F. If the on-scene MIH Clinician discovers indications of current or impending patient instability or it is determined by the MIH Consult Physician that transportation is recommended:
1. Continue treatment per MMP or as directed by MIH Consult Physician.
 2. The MIH Clinician will make transportation arrangements with either Procure Ambulance or 911 as appropriate to transport to the ED or alternative treatment facility as per the MMP.

A. Asthma/COPD

Indications: Discharge diagnosis includes asthma or COPD

Procedure:

- A. Initiate assessment and treatment per MMP: Adult Respiratory Distress Protocol: Asthma/COPD.
 - 1. Alternative: Paramedic may administer prednisone 40-60 mg PO instead of dexamethasone as specified in the MMP.

- B. In addition, perform medication review and patient education.
 - 1. Review pathophysiology of Asthma/COPD with patient
 - 2. Record the patient's current history including frequency of symptoms with rest, activity and with sleep.
 - 3. Further history will include exacerbating factors, including viral exposure, allergen exposure, exercise, cold air, tobacco smoke, chemical irritants (aerosols, candles), pet exposure and filters, etc.
 - 4. Evaluate the patient's home to possibly identify exacerbating factors.
 - 5. Review devices (spirometer) used by the patient, including short/long acting medications and continuous nebulizer devices.
 - 6. Storage of Medications (consider refrigerator if no AC in home).
 - 7. Review with patient when it would be appropriate to call a health care provider.
 - 8. Contact the MIH Consult Physician via telemedicine link to confirm the treatment and continuity of care plan.

- C. Return visit must be scheduled for the next day for patients who received on-scene treatment.

B. Congestive Heart Failure (CHF)

Indications: Discharge diagnosis includes congestive heart failure (CHF)

Procedure:

- A. Initiate assessment and treatment per MMP: Adult Respiratory Distress Protocol: CHF/Pulmonary Edema.
 - 1. Alternative: MIH Consult Physician may order (considering medication history and recent labs):
 - i. Furosemide (20-40 mg IVP/PO), if no history of taking this medication.
 - ii. Furosemide (up to 80 mg IVP/PO), if the patient has a prior history of taking this medication.
 - iii. Captopril 25 mg PO.

- B. In addition, perform medication review and patient education.
 - 1. Review pathophysiology of CHF with the patient.
 - 2. Record the patient's current history, including diet, fluid intake, success of diuretic treatment if ongoing.
 - 3. Review devices used by the patient including oxygen, diuretics, CPAP and other medications being used for maintenance.
 - 4. Review when to call patient's physician.
 - 5. Contact the MIH Consult Physician via telemedicine link to confirm the treatment and continuity of care plan.

- C. Return visit must be scheduled for the next day for patients who received on-scene treatment.

C. CPAP/BiPAP, HFNC, Sleep Apnea, Oxygen Sat Checks

Indications: Discharge diagnosis includes sleep apnea, hypoxic respiratory failure or the patient has newly-prescribed CPAP or oxygen home delivery device

Procedure:

- A. Assess the patient per the MMP: General Patient Care protocol.
- B. In addition, perform medication review and patient education.
 1. Review pathophysiology of sleep apnea, chronic hypoxic respiratory failure with patient
 2. Review devices used by the patient including oxygen, CPAP/BiPAP/HFNC devices and other medications being used for maintenance.
 3. Review when to call patient's physician.
 4. Patient should be monitored for hemodynamic instability the first 8 hours after starting CPAP / BiPAP.
- C. Assess for modifiable lifestyle factors, including:
 1. Weight / BMI
 2. Sleep habits (note if the patient works nights or has an irregular work schedule)
 3. Note if the patient has alcohol or recreational drug use, prescription drug use. Note if the patient is compliant with their prescribed medications.
 4. Quality of Life – noticeable changes after usage.
- D. Evaluate home equipment needs
 1. Troubleshoot CPAP oxygen delivery device, if necessary, including ensuring proper fit of mask and use of machine as well as general conditions of machine.
 2. If oxygen is being used, assure the patient has connection with necessary resources (oxygen supply company, etc.) to maintain continued supply.
- E. Contact MIH Consult Physician via telemedicine link to confirm the treatment and continuity of care plan.
- F. Return visit should be scheduled if oxygen saturation is less than 95% after on-scene assessment and treatment.

D. Urinary Complaints

Indications: Patients with urinary complaints, including: pain with urination, urinary retention, and hematuria.

Exclusion criteria: signs of hemodynamic compromise or sepsis, generalized abdominal pain

Procedure:

- A. Assess the patient per the MMP: General Patient Care protocol.
- B. In addition, obtain a urine sample for urine dip stick testing. The urine should be clean catch, or current Foley Sample.
- C. If patient complains of inability to void urine, consult with the MIH Consult Physician.
- D. Contact the MIH Consult Physician via telemedicine link to discuss results of the urine dipstick and discuss treatment and continuity of care plan.

E. GI Complaints and Dehydration

Indications: Patients with gastrointestinal (GI) complaints, including: nausea, vomiting, diarrhea of short duration or signs/symptoms of dehydration. Discharge diagnosis includes dehydration.

Exclusion criteria: signs of hemodynamic compromise, accompanying chest pain, dyspnea or abdominal pain

Procedure:

- A. Assess and treat the patient per the MMP: General Patient Care protocol and Nausea and Vomiting protocol.
 - 1. Alternative: May administer normal saline (NS) or lactated ringers (LR) as specified in the MMP.

- B. In addition to assessment and treatment,
 - 1. Assess orthostatic vital signs (for single practitioner visits, obtain lying and sitting orthostatic test only)
 - 2. Obtain point-of-care lab testing, if indicated through contact with MIH Consult Physician
 - 3. If potassium level is between 3.0-3.5, consider repletion of potassium with PO potassium chloride. If potassium level is less than 3.0, give potassium to the patient and contact MIH Consult Physician.
 - 4. Reassess the patient after treatment. Treatment goals include: the cessation of nausea and/or vomiting, tolerance of PO fluids, cessation of abdominal symptoms and indications of complete rehydration such as lack of orthostatic vital sign changes.
 - 5. Note: If peripheral IV has been in place for 3 days or more, using sterile techniques, the MIH clinician should remove the peripheral IV from the patient, assuring that the site is clean, and any bleeding has stopped. Cover the IV with the appropriate bandage material and advise the patient to keep the site clean. New peripheral IV access will have to be obtained at the next visit. IV may be left in place for up to 3 days.
 - 6. If initial labs were abnormal, re-check POC lab tests. Reassess orthostatic vital signs.

- C. Contact the MIH Consult Physician via telemedicine link to discuss treatment and continuity plan.

F. Diabetic Patients

Indications: Discharge diagnosis includes diabetes mellitus, or patient presents with hypoglycemia or hyperglycemia

Procedure:

- A. Assess and treat the patient per MMP: Glucometer protocol

- B. In addition, for the hypoglycemic patient (blood glucose < 70 mg/dL):
 1. Once the patient becomes alert, feed the patient (consider foods with high carbohydrates and high fat foods such as milk or peanut butter) and assess the patient for any infections or other complicating issues.
 2. Recheck the blood glucose 10 minutes after glucose administration and recheck as indicated.
 3. Criteria to consider home management (remaining at home after treatment):
 - i. Patients who become alert after receiving either high caloric foods or after administration of dextrose AND
 - ii. After 10 minutes, the blood glucose remains above 90 mg/dl, AND
 - iii. Patient continues to tolerate oral intake (food) without nausea or vomiting, AND
 - iv. The patient is taking insulin only (not oral hypoglycemic agents or other diabetic medications)
 4. Hypoglycemic patients who do not meet home management guidelines will require transport to the ED.
 5. Contact the MIH Consult Physician via telemedicine link to discuss treatment and continuity plan. The option of being seen at an ED or CDU should be provided to the patient.
 - i. Inform MIH Consult Physician if clinician has any uncertainty about patient's ability to understand or manage their diabetes at home.
 - ii. Provide diabetic education on hypoglycemia and importance of eating regular meals when taking insulin.

- C. In addition, for the hyperglycemic patient (blood glucose > 126 mg/dL):
 1. Assess the patient's medication compliance and diet.
 2. Obtain a blood sample for point-of-care (POC) lab evaluation; see POC testing procedure. Discuss lab results with MIH Consult Physician. If any signs or concerns for diabetic ketoacidosis, transport the patient immediately to the closest appropriate facility.
 3. Observe the patient in self-administration of their own diabetic treatment medications as indicated by MIH Consult Physician.

4. Consider administration of IV fluid boluses as indicated by MIH Consult Physician.
5. Recheck blood glucose and reassess the patient every 30 minutes during treatment.
6. If a blood sample cannot be obtained for POC testing on a hyperglycemic patient, contact the MIH Consult Physician.
7. Contact the MIH Consult Physician via telemedicine link to discuss treatment and continuity of care plan.
 - i. Inform the MIH Consult Physician if clinician has any uncertainty about patient's ability to understand or manage their diabetes at home
 - ii. After consultation, for all patients remaining at home, provide diabetic education on hyperglycemia

G. Respiratory Infection

Indications: Discharge diagnosis includes influenza, COVID-19 infection, viral upper respiratory infection (URI), bronchitis, or pneumonia

Procedure:

- A. Assess and treat the patient per the MMP: General Patient Care, Respiratory Distress: Asthma/COPD protocols and Viral Syndrome Pandemic Triage Protocol.
 - 1. Alternative: After contact with MIH Consult Physician, MIH clinician may leave oxygen tank(s) with the patient if the patient's own supply of oxygen has not yet arrived.

- B. In addition, perform medication review and patient education.
 - a. Review pathophysiology of the respiratory illness with the patient.
 - b. Record the patient's current history, including diet, fluid intake, success of diuretic treatment if ongoing.
 - c. Review devices used by the patient including oxygen, CPAP and other medications being used for maintenance.
 - d. Review isolation or quarantine precautions, if applicable.
 - e. Review when to call patient's physician.
 - f. Contact the MIH Consult Physician via telemedicine link to confirm the treatment and continuity of care plan

H. Elevated Blood Pressure

Indications: Discharge diagnosis includes hypertension or the patient presents with elevated blood pressure (>130/80)

Exclusion criteria: Patients with chest pain, shortness of breath, headache, or neurologic symptoms (numbness, weakness, change in speech, vision or ability to walk)

Procedure:

- A. Assess and treat the patient per the MMP: General Patient Care protocol.
- B. Obtain manual and automated vital sign readings and obtain patient hypertensive medication prescription and usage.
- C. In addition, asymptomatic hypertensive patients with systolic blood pressure less than 220 and diastolic blood pressure less than 120 may be appropriate for home treatment and close follow up.
 - 1. Ensure patient is taking prescribed medications (medication reconciliation) and understands when and how often to take their medications. If patient is taking medications appropriately, relay this information to MIH Consult Physician for consideration of potentially either increasing medication dosage or changing to a different medication.
 - 2. Contact the MIH Consult Physician via telemedicine link to discuss treatment and continuity of care plan.

I. Skin Complaints: Post-Surgical Care, Wound Care, Skin Rash

Indications: Discharge diagnosis includes chronic wound or post-surgical procedure.
Patients

Procedure:

- A. Assess and treat the patient per the MMP: General Patient Care protocol.
- B. In addition, assess the patient's wound area and determine the following:
 1. Establish baseline wound status for future comparison (first visit)
 - i. Wound measurements – to include length, width, and depth and obtain a photo of the wound to be relayed to the MIH Consult Physician for evaluation.
 2. Presence of absence of injury
 3. Location and extent of any skin changes: size of wound, etc.
 4. Additional local symptoms: Pain, redness, drainage, weeping, ascending redness, swelling, warmth of skin, necrotic tissue.
 5. Presence of systemic symptoms: fever, chills, diaphoresis, weakness, dizziness, changes in mental status.
1. If skin rash is present, assess for:
 - i. History of exposure to possible allergen (oral) or skin contact exposure (poison ivy/oak)
 - ii. Location and extent of skin changes
 - iii. Additional local symptoms: redness, drainage, weeping, ascending redness, warmth of the skin.
 - iv. Presence of systemic symptoms: fever, chills, diaphoresis, weakness, dizziness, changes in mental status, breathing difficulty, or erythema.
- C. Contact the MIH Consult Physician via telemedicine link to discuss treatment and continuity of care plans.
 1. MIH Consult Physician must be able to visualize the wound during consultation
 2. Patients with systemic symptoms may need to be transported to the ED for evaluation.
 3. Patients without systemic symptoms may be appropriate for home treatment and close follow up.
 - i. Review clinical plans specific for the wound
 - ii. Review home wound care procedures with patient

Antibiotics Procedure

Indications: Patients who have been prescribed an IV antibiotic

Procedure:

- A. The MIH Clinician will confirm orders for IV antibiotic with MIH Consult Physician prior to use.
 1. Correct Patient
 2. Correct medication
 3. Correct route (IV)
 4. Correct Dosage
 5. Correct time
- B. The MIH Clinician should establish a peripheral IV as per Maryland Medical Protocols on the patient if a patent IV site is not already available. MIH Clinicians should not access PICC or Central Lines for IV antibiotic administrations.
- C. Once the IV Site is established and the orders have been confirmed by the MIH Consult Physician, connect the mediated drip set to the IV site and start the IV to begin administering the antibiotics.
- D. Utilizing the dial-a-flow tubing provided by Kaiser with the antibiotics, establish the correct rate for the medication to be administered.
- E. The MIH Clinician will monitor the patient during the administration of the antibiotics and monitor any potential side effects. Administration of most IV antibiotics will take approximately 1 hour (Exception: vancomycin which is 2 hours). The MIH Clinician should also monitor the patient IV site for any swelling or redness that develops during the infusion.
- F. Monitor for any adverse effects or signs/symptoms of allergic reaction. If suspected allergic reaction, provide treatment per MMP: Respiratory Distress: Allergic Reaction or Anaphylaxis. Stop the antibiotic infusion. Contact the MIH Consult Physician.
- G. Once completed, the MIH clinician should stop the IV Flow. If IV has been in place for 3 days or more, using sterile techniques, the MIH clinician should remove the IV from the patient, assuring that the site is clean, and any bleeding has stopped. Cover the IV with the appropriate bandage material and advise the patient to keep the site clean. New IV access will have to be obtained at the next visit. IV may be left in place for a maximum of 3 days.

Point-of-Care (POC) Lab Testing Procedure

Indications: Patients with hyperglycemia, dehydration, GI complaints, or as ordered by MIH Consult Physician

Procedure:

- A. Only clinicians who have been formally trained with documented competency on this device and protocol may utilize this device.
- B. A 2 mL blood sample will be obtained via a new venous cannula or closed vacutainer technique.
- C. Turn the device ON.
 1. Do NOT insert the cartridge to start the device.
 2. Do NOT open the cartridge pouch before scanning the barcode.
- D. Press “2” for I-STAT.
 1. If Quality Check Codes “69,” “140,” or “147” appear, STOP the test, and notify the MIH Consult Physician.
- E. Follow prompts.
- F. Scan the lot number on the cartridge pouch.
 1. Position barcode 3–9 inches from scanner window on the device.
 2. Press and hold “SCAN” to activate the scanner.
 3. Align the red laser light so it covers the entire barcode.
 4. The device will beep when it reads the barcode successfully.
 5. If the cartridge pouch does not have a barcode, enter the lot number manually using the numbered keys or press “ENT” to bypass this prompt.
- G. Obtain the blood sample.
 1. Fill and seal the cartridges with the blood sample.
- H. Push the sealed cartridge (EC8+) into the device port until it clicks into place.
- I. Wait for the test to complete.
- J. Results should be relayed to the MIH Consult Physician for review and to determine appropriate potential in-home treatment or transport decision.
- K. Print lab results of device for patient records or save in electronic patient care report.

VI. MIH Medication List

The MIH Clinician may administer the following medications in addition to the medications listed in the *Maryland Medical Protocols for Emergency Medical Services*:

- A. Captopril - PO
- B. Furosemide (Lasix) – PO and IV
- C. Ibuprofen (Advil, Motrin) – PO
- D. Magnesium Oxide - PO
- E. Normal saline – IV solution
- F. Potassium Chloride – PO
- G. Prednisone – PO
- H. Intravenous Antibiotics
 - 1. Rocephin
 - 2. Ancef
 - 3. Doxycycline
 - 4. Zosyn
 - 5. Vancomycin

Captopril (Capoten)- PO

- A. Pharmacology
 - 1. Inhibits angiotensin converting enzyme, which converts angiotensin I to angiotensin II
 - 2. Promotes systemic vasodilation and reduces afterload on the heart
- B. Pharmacokinetics
 - 1. Peak effect occurs in about 1 hour
 - 2. Duration of action is dose-related
- C. Indications
 - 1. Respiratory distress from Pulmonary Edema or Congestive Heart Failure
- D. Contraindications
 - 1. Known hypersensitivity
 - 2. Known history of angioedema
 - 3. Pregnant patients
 - 4. Systolic blood pressure less than 110 mmHg
- E. Adverse Effects
 - 1. Angioedema, hyperkalemia, renal impairment, rash
- F. Dosage
 - 1. Adults: 25 mg PO for mild or moderate dyspnea related to pulmonary edema, with MIH Consult Physician approval

Furosemide (Lasix) - IV and PO

A. Pharmacology

1. Potent diuretic
2. Inhibits renal sodium reabsorption
3. Vasodilation, especially of the pulmonary veins

B. Pharmacokinetics

1. For the IV dose, onset of vasodilation is 5 minutes after IV dose and onset of diuresis is 10 minutes; duration of diuresis is approximately 2 hours.
2. For the PO dose, onset of diuresis is two hours; duration of diuresis is approximately 6 hours.

C. Indications

1. Acute pulmonary edema (congestive heart failure)
2. Edema related to kidney or liver disease
3. Indications of Fluid Overload as evidenced by increase in dry weight (with appropriate consultation with patient physician).

D. Contraindications

1. Known hypersensitivity
2. Known allergy to sulfonamides
3. Hypotension or dehydrated patients
4. Pregnancy
5. Patients exhibiting signs and symptoms of electrolyte imbalance (primarily hypokalemia)

E. Adverse Effects

1. Dehydration
2. Decreased circulatory blood volume
3. Decreased cardiac output
4. Loss of electrolytes, specifically magnesium and potassium
5. Transient hypotension due to decreased cardiac output
6. Transient vasoconstriction in patients with chronic heart failure

F. Dosage

1. Adults:
 - a. IV - administer 0.5-1mg/kg slow IVP (to avoid tinnitus) to a maximum of 80mg IV, in consultation with MIH Consult Physician
 - b. PO - 20 to 40 mg, with MIH Consult Physician approval

Ibuprofen (Advil, Motrin) - PO

A. Pharmacology

1. Inhibit cyclooxygenase (COX) enzymes
2. Analgesic (pain reliever)
3. Antipyretic (fever reducer)

B. Pharmacokinetics

1. 1-2 hours after oral administration peak serum concentration is reached
2. The majority of ibuprofen is metabolized and eliminated within 24 hours in the urine however, 1% of the unchanged drug is removed through biliary excretion.

C. Indications

1. Used primarily to treat fever
2. Mild to moderate pain
3. Headaches
4. Osteoarthritis

D. Contraindications

1. Known sensitivity to ibuprofen (Advil, Motrin) or naproxen (Aleve)
2. Pregnant patients
3. Patients who have taken an NSAID within the past 6 hours
4. History of chronic kidney disease
5. Recent history of gastrointestinal bleeding

E. Adverse Effects

1. Nausea
2. Dyspepsia
3. Diarrhea
4. Constipation
5. Headache
6. Dizziness
7. Rash

F. Dosage

1. Adults: 600 mg PO

Magnesium Oxide - PO

A. Pharmacology

1. A supplement used to maintain adequate magnesium in the body.

B. Indications

1. Mild Hypomagnesemia
2. Antacid to relieve heartburn

C. Contraindications

1. Caution with renal impairment
2. Caution with Myasthenia Gravis and other neuromuscular diseases

D. Adverse Effects

1. Diarrhea
2. Upset Stomach
3. Nausea/Vomiting

E. Precautions

1. Administer at least TWO hours apart from other medications
2. Must review magnesium level obtained within the past 24-48 hours with MIH Consult Physician
3. Must review any magnesium supplements given within the past 24 hours with MIH Consult Physician

F. Dosage

1. Adults: 1-2 tablets (400-800 mg) PO daily; Maximum 2 tablets (800 mg) PO within 24-hour period

Normal Saline (IV Solution)

A. Pharmacology

1. A crystalloid fluid which provides hydration

B. Indications

1. IV Therapy for rehydration or maintaining patency of an IV line
2. Saline Flush to follow medication administrations
3. Flush wounds

C. Contraindications

1. Congestive Heart Failure Patients
2. Renal Impairment
3. Liver cirrhosis or other conditions of sodium retention

D. Adverse Effects

1. Injection site swelling, redness
2. Infection
3. Volume overload

E. Dosage

1. Adults: IV Flush – 5 to 10 ML flush to push medications through IV tubing
2. Adults: IV Maintenance – dose with order from MIH Consult Physician

Potassium Chloride - PO

A. Pharmacology

1. A mineral needed for several functions of the body found in many foods.

B. Indications

1. Mild Hypokalemia (between 3.0 and 3.5)
2. Prevention of Hypokalemia (anticipated with diuresis)

C. Contraindications

1. Hyperkalemia
2. Known Allergy to Potassium
3. Severe/Complete Heart Block/Ventricular Fibrillation
4. Potassium-Sparing Diuretic (such as spironolactone)

D. Adverse Effects

1. Hyperkalemia
2. Hypotension
3. Weakness
4. Nausea, Vomiting, Diarrhea
5. Abdominal Pain
6. Tingling in hands and feet
7. Dysrhythmia

E. Precautions

1. Must obtain potassium serum level on-scene or review labs within the past 24 hours prior to administration
2. Must review lab results and any doses of potassium given within the past 24 hours with Medical Consultation prior to administration
3. Monitor Patients with impaired mechanisms for excreting potassium closely (chronic renal disease, adrenal insufficiency, etc.)

F. Dosage

1. Adults:
 - i. Dose dependent on patient condition and lab values with order from MIH Consult Physician
 - ii. 20-40 mEq PO; may repeat dose once in one hour after last dose

Prednisone - PO

A. Pharmacology

1. Steroid used for its anti-inflammatory and immunosuppressive properties.

B. Pharmacokinetics

1. Absorbed in the gastrointestinal tract, with time of onset of 4-6 hours, and half-life of 2-3 hours.

C. Indications

1. Asthma
2. COPD
3. Allergic Reactions

D. Contraindications

1. Known Sensitivity
2. Active, untreated Tuberculosis
3. Herpes Simplex infections
4. Fungal Infections

E. Adverse Effects

1. High blood glucose levels (especially in patients with Diabetes Mellitus).
2. Increased risk of unusual infection
3. Slow wound healing
4. Poor Diabetic and Blood Pressure control
5. Increased appetite and weight gain

F. Dosage

1. Adults: 40 to 60mg PO, with order from MIH Consult Physician

IV Antibiotics

Cefazolin (Ancef)

A. Pharmacology

1. Beta-lactam antibiotic used to treat bacterial infections

B. Indications

1. Used to treat a wide variety of bacterial infections, including infections of the skin, heart valves, GI, respiratory, bone, urinary tract infections

C. Contraindications

1. Hx of allergic reaction to penicillin
2. Hx of allergic reaction to cephalosporins

D. Precautions

1. Elderly Patient may be at greater risk for side effects due to decline in kidney function
2. Caution with Pregnant or breast-feeding women.

E. Adverse Effects

1. Swelling
2. Redness
3. Pain or Soreness at the injection site
4. Nausea and Vomiting

F. Dosage

1. Adults: 1-1.5 g IV administered over 1 hour, maximum total daily dose 6g/day. Dose must be confirmed with ordering physician or MIH Consult Physician prior to administration. * Rates per PDR

Ceftriaxone (Rocephin)

A. Pharmacology

1. Broad-spectrum cephalosporin antibiotic used to treat infections caused by bacteria.

B. Indications

1. Respiratory Tract Infections
2. Acute Bacterial Otitis Media
3. Skin and Skin Structure Infections
4. Bacterial septicemia
5. Meningitis

C. Contraindications

1. Hypersensitivity
2. Neonates up to a postmenstrual age of 41 weeks.

D. Adverse Effects

1. Nausea/Vomiting
2. Injection Site Reactions (swelling, redness, soreness, etc.)
3. Headache
4. Dizziness
5. Diarrhea
6. Loss of appetite
7. Hyperreflexia
8. Pain or swelling in tongue
9. Sweating

E. Dosage

1. Adults: 1-2 g in 50 ml solution should be administered over 30 mins. Total daily dose should not exceed 4 grams. Dose must be confirmed with ordering physician or MIH Consult Physician prior to administration. *Rates per PDR

Doxycycline

A. Pharmacology

1. Tetracycline antibiotic used to treat bacterial infections.

B. Indications

1. Respiratory Tract Infections
2. Urinary Tract Infections
3. Selective infections when penicillin is contraindicated
4. Intestinal Infections

C. Contraindications

1. Allergy to tetracycline antibiotics
2. Children under the age of eight (8) years if age
3. Pregnancy/Breastfeeding mothers

D. Precautions

1. Staphylococcal infections are commonly resistant to tetracyclines, should not be used microorganism has been demonstrated to be susceptible
2. Recent Colitis by anti-biotic use
3. Current diarrhea
4. History of yeast infections
5. Liver or Kidney disease

E. Adverse Effects

1. Nausea
2. Vomiting
3. Diarrhea
4. Rash
5. Abdominal Pain

F. Dosage

1. Adult weighing more than 45 kg: 200 mg IV over 1 hour on day 1, then 100 – 200 mg IV over 1 hour, once daily. Dose must be confirmed with ordering physician or MIH Consult Physician prior to administration.
* Rates per PDR

Piperacillin-Tazobactam (Zosyn)

G. Pharmacology

1. Broad spectrum antibiotic used to treat a variety of bacterial infections.

H. Indications

1. Intra-abdominal infections
2. Skin and skin structure infections
3. Female pelvic infections
4. Community-acquired pneumonia

I. Contraindications

1. Hx of allergic reaction to penicillin
2. Hx of allergic reaction to cephalosporins
3. Hx of allergic reaction to beta-lactamase inhibitors

J. Adverse Effects

1. Diarrhea
2. Constipation
3. Nausea and Vomiting
4. Headache
5. Rash
6. Fever
7. Joint Pain

K. Dosage

1. Adults: 3.375g in 50ml IV administered over 30 mins. Dose must be confirmed with ordering physician or MIH Consult Physician prior to administration. * Rates per PDR

Vancomycin

- A. Pharmacology
 - A. Broad spectrum antibiotic used to treat infections caused by bacteria, particularly methicillin-resistant staphylococcus aureus
- B. Indications
 - 1. Staphylococcal Infections
 - 2. Methicillin Resistant Staphylococcus Aureus
 - 3. Pseudomembranous Colitis
 - 4. Enterococcus Faecium
- C. Contraindications
 - A. Known Hypersensitivity to this antibiotic
 - B. Allergy to corn or corn products
- D. Adverse Effects
 - A. Hypersensitivity Reactions
 - B. Dizziness
 - C. Itching/Hives
 - D. Indigestion
 - E. Hypotension
 - F. Pain/Redness at injection site
 - G. Diffuse erythematous rash
- E. Dosage
 - A. Adults: 750mg – 2000mg, depending on patient's weight diluted in 100 ml per 500mg administered over the course of 1 hour or at a maximum rate of 10mg/min, whichever is longer. Dose must be confirmed with ordering physician or MIH Consult Physician prior to administration. * Rates per PDR