Self-Study
Intramuscular Co-administration of Ceftriaxone (Rocephin)
and 1% Lidocaine (Without Epinephrine)

This self-study was developed by ADPH staff to satisfy Alabama Board of Nursing rules for procedures beyond the scope of basic nursing education. Registered Nurses may administer ceftriaxone in ADPH clinics as outlined in the Clinic Protocol Manual which is covered by standing orders from the Assistant State Health Officer for Disease Control and Prevention, the Assistant State Health Officer for Personal and Community Health, and the Medical Director of Women's Health.

I. Purpose of Co-administration

One percent lidocaine is used to dilute ceftriaxone in order to reduce pain at the injection site.

II. Storage

A. Prior to reconstitution, Rocephin Sterile Powder should be stored at room temperature (at or below 77° F) and protected from light.

B. After reconstitution with lidocaine, ceftriaxone is light yellow to amber in color and is not sensitive to light. The solution is stable (in the original vial) at room temperature for 24 hours or 3 days in the refrigerator. In health department clinics the following storage procedure must be followed:

1. Medication should not be mixed until the patient has been evaluated by the nurse; and

2. When drawn into a syringe, the solution must be used in 1 hour.

III. Reconstitution

A. Read the package insert for specific directions.

B. A vial/dose size of 250 mg, 500 mg and 1000 mg will be available to county health departments.

C. Mix ceftriaxone using 1.0% lidocaine (without epinephrine). Mix 250 mg vial of ceftriaxone with 0.9 ml.

D. Mix the 500 mg vial with 1.0 ml or 1.8 ml and the 1000 mg vial with 2.1 ml of lidocaine 1% (without epinephrine).

Note: If the patient is 12 years of age or younger, a medical order must be obtained to adjust the amount of 1% Lidocaine to be used. The dosage must then be adjusted for age and weight.

E. Administer intramuscularly in the amount specified in program protocol.

IV. Lidocaine Information

Lidocaine is a common local anesthetic. At the injection site, it alters depolarization in neurons, by blocking the fast sodium (Na^+) channels in the cell membrane. With sufficient blockade, the membrane will not depolarize and so not transmit an action potential, leading to its anesthetic effects.

A. Contraindications:

1. Patients with known history of hypersensitivity to local anesthetics of the amide type such as prilocaine;

2. Patients with Adams-Stokes syndrome (syncope related to heart arrhythmias); and

3. Patients who do not have a pacemaker that have a severe degree of SA, AV, or intraventricular heart block.

B. Use cautiously in patients with:

1. Peripheral vascular disease and those with hypertensive vascular disease since lidocaine may cause exaggerated vasoconstrictor response resulting in ischemic injury or necrosis; and

2. Hepatic disease since lidocaine is metabolized by the liver.

C. Use during pregnancy:

Animal reproduction studies revealed no evidence of harm to the fetus caused by Lidocaine. No adequate and well-controlled studies in pregnant women are available. General considerations should be given to this fact before administering lidocaine to women of childbearing potential, especially during early pregnancy.

D. Nursing Mothers:

It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when lidocaine is administered to a nursing woman.

E. Adverse Reactions:

1. Central Nervous System:

CNS adverse reactions may include lightheadedness, nervousness, apprehension, confusion, dizziness, drowsiness, tinnitus, blurred vision, vomiting, numbness, tremors, convulsions, unconsciousness, respiratory depression and arrest. Drowsiness following the administration of lidocaine is an early sign of a high blood level of the drug and may occur as a consequence of rapid absorption;

2. Cardiovascular System:

Adverse reactions may include bradycardia, hypotension, and cardiovascular collapse which may lead to cardiac arrest; and

3. Allergic Manifestations:

Adverse allergic manifestations may include cutaneous lesions, edema, or anaphylaxis.

V. Ceftriaxone Information

Ceftriaxone is a broad-spectrum cephalosporin antibiotic used to treat bacterial infections in the lower respiratory tract, ear, skin and skin structures, urinary tract, bones and joints, and to treat conditions such as pelvic inflammatory disease, uncomplicated gonorrhea, meningitis, and septicemia.

A. Contraindications to ceftriaxone:

An allergy to the cephalosporin class of antibiotics is a contraindication to administration. Penicillin-sensitive patients may also be allergic to cephalosporins; therefore, ceftriaxone should be used with caution (alternate medication protocol for penicillin-sensitive patients is located in ADPH program protocol).

B. Precautions when administering ceftriaxone:

1. Patients who have liver AND renal disease should not be given more than 2 gm of ceftriaxone each day unless they are monitored closely;

2. Should be prescribed cautiously in individuals with a history of gastrointestinal disease, especially colitis.

C. Pregnancy:

Ceftriaxone should be used during pregnancy only if clearly needed. There are no adequate and well-controlled studies of pregnant women.

D. Nursing Mothers:

Low concentrations of ceftriaxone are excreted in human milk. Caution should be exercised when it is administered to a nursing mother.

E. Adverse Reactions:

1. Pain, induration or tenderness at site of injection;

2. Hypersensitivity reactions including rash, pruritus, fever or chills;

3. Hematologic reactions including eosinophilia, thrombocytosis, leukopenia, anemia, neutropenia, lymphopenia, thrombocytopenia and prolongation of prothrombin time;

4. Gastrointestinal reactions such as diarrhea, nausea or vomiting;

5. Elevation of SGOT and SGPT;

6. Elevation of BUN;

7. Reactions of the central nervous system such as headache or dizziness; and/or

8. Genitourinary reactions such as moniliasis or vaginitis.