

# ADMINISTRATION OF AMIKACIN INJECTION

## SUPPLIES



- 5 mL syringe
- A 1-inch 22 or 23 gauge needle to draw medication
- A 1 ½ or 2-inch 23 gauge needle for injection
- Amikacin vial
- 1% Lidocaine vial
- Alcohol swabs
- Gloves, Band-Aid, cotton ball, dry gauze

## PREPARE INJECTION

**Procedure:** *Identify Patient* ⇒ *Select Site* ⇒ *Prepare Injection*

- Draw the Amikacin into the 5 mL syringe using the 1-inch 22 or 23 gauge needle.
- Draw 0.5 mL of 1% lidocaine\* into **the same** 5 mL syringe.
- Holding the syringe in an up right position, change the 1-inch needle to a 1 ½ or 2-inch 23 gauge needle.
- Discard the uncapped needle in a sharps container.



*Preparing the injection*

## ADMINISTERING INJECTION USING Z-TRACK

- Wash your hands, put on gloves and select site (Figure 1).
- Position the patient so that the muscle at the injection site relaxes.
- Clean the site with an alcohol pad and let it dry thoroughly .
- Use your non-dominant hand to pull the skin downward or laterally to displace the tissue about 1 inch. (Figure 2)
- With the needle at a 90-degree angle to the site, pierce the skin using a smooth, steady motion. (Figure 3)
- Aspirate for 5 to 10 seconds to ensure that you haven't hit a blood vessel.
- Inject the drug slowly at a rate of 10 seconds/mL of medication.
- Ensuring that the needle is completely empty, withdraw the needle with a smooth, steady motion and release the skin to its original position. (Figure 4)
- Use dry gauze to apply very gentle pressure to the puncture site.
- Never massage a Z-track injection site. This may cause irritation or force the drug into subcutaneous tissue.

Figure 2

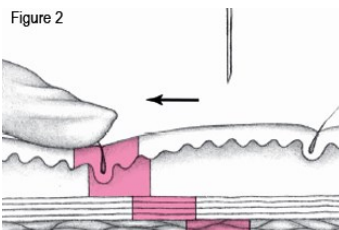


Figure 3

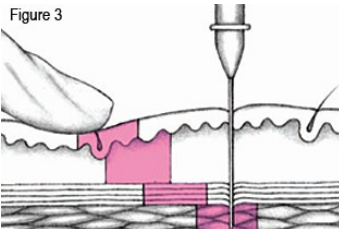
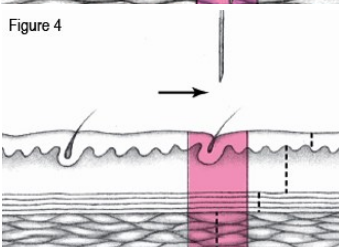


Figure 4



## LIMITATIONS AND PRECAUTIONS

- Do not place injections into a disabled limb. If there is decreased circulation, the medication absorption will be affected and an abscess formation can occur.
- Never inject more than 5mL of medication at a time when using the Z-track method. If a larger dose is ordered, divide it and inject it into two separate sites.
- Do not give a Z-track injection into skin that is lumpy, reddened, irritated, bruised, stained, or hardened.
- Encourage the patient to walk about to enhance absorption of the medication.
- Rotate the injection sites from one buttock to the other.

## PHARMACOKINETICS

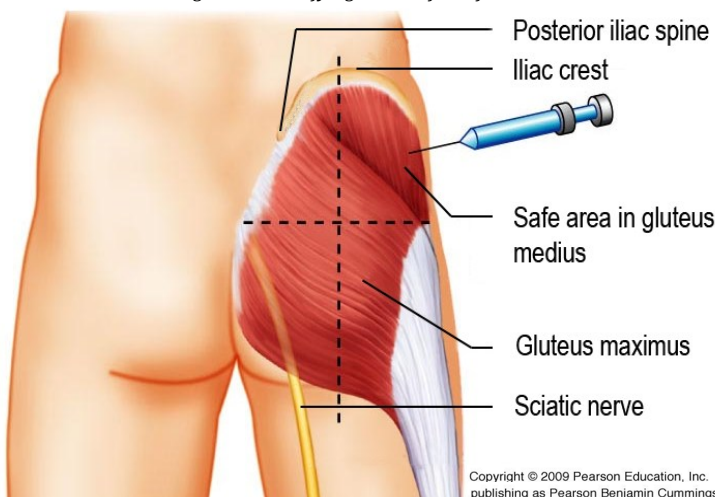
- Intramuscular absorption is complete within 4 hours.
- Peak concentrations are achieved at 1 - 2 hours.

**Peak Concentrations** for a 15 mg/kg dose are approx. 25 mcg/mL

## STORAGE

- Solution is stable at room temperature and requires no refrigeration.

*Figure 1 Identifying the site for injection*



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**\*Note:** The use of Lidocaine to ease the pain at the injection site is recommended based upon 30 years of public health experience and practice in Texas. During this time, treatment outcomes have been excellent and no adverse events have been documented related to the combined use of Lidocaine with Amikacin, Streptomycin or Capreomycin.

		Amikacin	Capreomycin	Streptomycin
Drug Information	Drug Class	Aminoglycoside	Cyclic polypeptide	Aminoglycoside
	Trade Name	Amikacin / Amikin	Capastat	Streptomycin sulfate
	Concentration	500 mg/2 mL or 1 gram/4 mL	1 gram capreomycin powder	1 gram streptomycin powder
	Storage	Prior to reconstitution, amikacin is stable at room temperature.	Prior to reconstitution, capreomycin is stable at room temperature.  Reconstituted capreomycin can be stored up to 24 hours under refrigeration.	Prior to reconstitution, streptomycin can be stored under controlled room temperature.
Dosing	Adults	15 mg/kg/day (max 1 gram), 5-7 days per week; 15 mg/kg/dose, 2-3 times per week after initial period of daily administration.		
	Children	15-30 mg/kg/day (max 1 gram) 5-7 days per week or 2-3 days per week after initial period of daily administration.		
	>59 years	10 mg/kg/dose (max 750 mg) 5 days per week or 2-3 times per week after initial period daily.		
	Renal Failure	12-15 mg/kg/day 2-3 times weekly ( <i>not daily</i> ).		
Side Effects	<ul style="list-style-type: none"> <li>♦ Electrolyte Abnormalities*</li> <li>♦ Nephrotoxicity</li> <li>♦ Vestibular toxicity/Ototoxicity</li> </ul>		<ul style="list-style-type: none"> <li>♦ Electrolyte Abnormalities*</li> <li>♦ Eosinophilia</li> <li>♦ Nephrotoxicity</li> <li>♦ Vestibular toxicity/Ototoxicity</li> </ul>	<ul style="list-style-type: none"> <li>♦ Electrolyte Abnormalities*</li> <li>♦ Giddiness</li> <li>♦ Hypersensitivity</li> <li>♦ Lichenoid eruptions</li> <li>♦ Nephrotoxicity</li> <li>♦ Perioral numbness</li> <li>♦ Vestibular toxicity/Ototoxicity</li> </ul>
Monitoring	An audiogram, vestibular testing, romberg testing, and serum creatinine should be performed at baseline and monitoring. Document creatinine clearance if there is baseline renal impairment. Assessment of renal function, and questioning regarding auditory or vestibular symptoms should be performed monthly. Follow monthly electrolytes potassium, magnesium, and calcium.			
Contraindications	Allergic reaction to aminoglycosides.  <b>Caution with renal, hepatic, vestibular, or auditory impairment.</b>  Pregnancy - relative contraindication (congenital deafness seen with streptomycin use in pregnancy).		Allergic reaction to capreomycin and aminoglycosides.  <b>Caution with renal, hepatic, vestibular, or auditory impairment.</b>  Pregnancy - generally avoided due to congenital deafness seen with aminoglycosides.	Allergic reaction to aminoglycosides.  <b>Caution with renal, hepatic, vestibular, or auditory impairment.</b>  Pregnancy - contraindicated; congenital deafness seen with streptomycin use in pregnancy.
Use in renal disease	Use with caution. Concentrations should be monitored for patients with impaired renal function. Adjustment of dosing interval is recommended for renal impairment or dialysis. The drug is variably cleared by hemodialysis.			

\*Electrolyte abnormalities include hypocalcemia, hypokalemia and hypomagnesemia

References: Curry International Tuberculosis Center and California Department of Public Health, 2011: *Drug-Resistant Tuberculosis: A Survival Guide for Clinicians, Second Edition* p. 58-93; Drug Information Online, 2013: *Amikacin*. Retrieved August 30, 2013 from <http://www.drugs.com/pro/amikacin.html>; Lippincott Williams & Wilkins, 2013: *Take 5 – Z Track Injections*. Retrieved August 26, 2013 from [http://www.nursingcenter.com/upload/static/592775/Take5\\_Ztrack.pdf](http://www.nursingcenter.com/upload/static/592775/Take5_Ztrack.pdf); Centers for Disease Control and Prevention, 2003: *Treatment of TB*.

