

NEPHROLITHIASIS ALGORITHM

RISK PROFILES FOR STONE DEVELOPMENT

- Certain medications may predispose a child to the development of kidney stones (Lasix, anti-epileptics, or calcitrol)
- Diet can attribute to stone development. A diet high in animal protein or salt may contribute to urine concentration and stone development.
- Certain metabolic disorders
- Dehydration
- Cystinuria is a genetic condition that causes an abundance of cysteine passage through the kidneys, creating cysteine stones.
- Other medical disorders including renal disease or urinary tract infections

CLINICAL PRESENTATIONS

Infants > 3 months	Young Children	Older Children
<ul style="list-style-type: none"> -UTI positive for Proteus on culture -Passing of stones in diaper 	<ul style="list-style-type: none"> -Hematuria -Pyuria 	<ul style="list-style-type: none"> -Abdominal pain with various localizations -Hematuria

DIAGNOSIS

-If a stone is suspected, both an abdominal x-ray (KUB) and a renal bladder ultrasound should be obtained.

MANAGEMENT

- Pain management should be titrated based on the severity of pain. NSAIDs are an appropriate pain medication as a first line management.
- If the child has a UTI, antibiotics should be prescribed.
- Increasing water intake and improving hydration level is essential.
- Dietary restrictions of salt intake should also be considered.
- If the diagnosis of a kidney stone is confirmed or there is a high suspicion, a referral to pediatric urology should be made for further management.
- Medical expulsive therapy is reasonable as long as the patient's symptoms (ie pain) are well controlled. Alpha blocker such as Flomax is the drug of choice (0.4mg PO QD taken before bedtime)

CLASSIFICATION OF STONE TYPES

- Calcium is the most common type of kidney stone.
- Cysteine stones are rare but do occur when there is an abundance of cysteine in the urine.
- Uric acid stones
- Struvite stones (also known as staghorn stones) are made of the mineral struvite. These stones are generally related to pyelonephritis or cystitis.