STANDARD TREATMENT WORKFLOW (STW)

Renal and Ureteric Stones

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**Standard Treatment Workflow (STW) for the Management of RENAL AND URETERIC STONES**

**ICD** N20.0

**How will your patient present and what to suspect**

<table>
<thead>
<tr>
<th>Clinical Scenario</th>
<th>Suspect</th>
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<tr>
<td>Flank pain</td>
<td>Renal Stone</td>
</tr>
<tr>
<td>Colicky pain starting from back and radiating to front</td>
<td>Upper ureteric stone</td>
</tr>
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<td>Colicky pain starting from back</td>
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</tr>
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**Symptoms**
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ICD N20.0

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<td>Mid ureteric Stone</td>
</tr>
<tr>
<td>Colicky pain starting from back &amp; radiating to upper thigh &amp; scrotum in male</td>
<td>Lower ureteric Stone</td>
</tr>
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</table>

- Harmatoura may be present with stone at any location
- Lower ureteric stones may also present with difficulty in passing urine
- Colic may be associated with nausea and vomiting
- Can present as anuria in bilateral ureteric stones, ureteric stone in a solitary kidney

INVESTIGATION

RADIODIAGNOSIS

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<th>NAME</th>
<th>ADVANTAGES AND DISADVANTAGES</th>
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<tr>
<td>X-RAY</td>
<td>Readily available, inexpensive, minimal radiation but needs preparation hence may not be the preferred test in emergency settings</td>
</tr>
<tr>
<td>USG</td>
<td>Readily available, safe test in pregnancy, detects radiolucent stones. High sensitivity for hydronephrosis. Can miss a ureteric calculus</td>
</tr>
<tr>
<td>IVU</td>
<td>Anatomical and functional imaging, aids in planning surgery but high radiation and needs preparation. Not useful in your renal function</td>
</tr>
<tr>
<td>CT Scan</td>
<td>No contrast required, highly sensitive and specific, detects radiolucent stones, detect other causes of flank pain, but risks higher radiation and cost</td>
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</table>

INITIAL BIOCHEMICAL EVALUATION IN ALL STONE FORMERS

- Urine analysis: serum creatinine, electrolytes namely calcium, phosphorus and uric acid. Insect parathyroid hormone and stone analysis are preferable.

MANAGEMENT ALGORITHM

- Increase daily fluid intake to ensure urine output @ 1L/day
- Restrict extra salt intake and increase dietary fibre
- Do not restrict calcium intake
- Increase citrate rich food such as lemon, orange juice etc
- Decrease consumptions of food rich in oxalate like spinach, nuts, beetroot, potato chips, fresh fruits
- Avoid purine rich foods like animal protein, alcoholic drinks like beer

- Analgesics
- Hydration
- Fevers with chills & rigors
- Anuria
- Empiric Antibiotic hydration

- Single stone < 5mm, baseline investigation normal
- Renal stone <1cm, baseline investigation normal
- Kidney/ureteric stone <1cm

- Counsel the patient for future preventive strategies
- Medical expulsive therapy

- Healthcare worker

- Keep a high threshold for invasive procedures

This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are Advisory, and are based on expert opinion and available scientific evidence. There may be variations in the management of an individual patient based on further specific condition, as decided by the healthcare worker. For country specific information, please refer to the respective state/district health department's guidelines.