When pain can be managed with oral analgesics, urinary stones are managed in the community. The client needs to know how and why to collect the calculus and indicators of complications, such as reduced urine output and cloudy or bloody urine.

- **Teach** measures to prevent further urolithiasis.
  a. Increase fluid intake to 2500 to 3500 mL per day.
  b. Follow recommended dietary guidelines.
  c. Maintain activity level to prevent urinary stasis and bone resorption.
  d. Take medications as prescribed.

  **The risk of recurrent lithiasis is approximately 50%; however, this risk can be reduced by measures to prevent conditions favoring stone formation.**

- **Teach** about the relationship between urinary calculi and UTI, emphasizing preventive measures and the importance of prompt treatment. *Urinary tract infection promotes urolithiasis and thus requires prompt treatment to reduce this risk.*

### Using NANDA, NIC, and NOC

Chart 26–2 shows links between NANDA nursing diagnoses, NIC (McCloskey & Bulechek, 2000), and NOC (Johnson et al., 2000) for the client with urinary calculi.

### CHART 26–2 NANDA, NIC, AND NOC LINKAGES

<table>
<thead>
<tr>
<th>NURSING DIAGNOSES</th>
<th>NURSING INTERVENTIONS</th>
<th>NURSING OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Acute Pain</td>
<td>• Pain Management</td>
<td>• Pain Control</td>
</tr>
<tr>
<td>• Impaired Urinary Elimination</td>
<td>• Analgesic Administration</td>
<td>• Pain: Disruptive Effects</td>
</tr>
<tr>
<td>• Deficient Knowledge</td>
<td>• Fluid Management</td>
<td>• Urinary Elimination</td>
</tr>
<tr>
<td></td>
<td>• Specimen Management</td>
<td>• Knowledge: Illness Care</td>
</tr>
<tr>
<td></td>
<td>• Teaching: Disease Process</td>
<td>• Knowledge: Treatment Regimen</td>
</tr>
<tr>
<td></td>
<td>• Teaching: Procedure/Treatment</td>
<td></td>
</tr>
</tbody>
</table>


### Home Care

The client with urinary calculi needs to know how to manage existing stones and what to do to reduce the risk of future stone formation. Discuss the following topics to prepare the client and family for home care.

- Importance of maintaining a fluid intake adequate to produce 2.0 to 2.5 quarts of urine per day
- Prescribed medications, their management, and potential adverse effects
- Dietary recommendations
- Prevention, recognition, and management of UTI
- Any further diagnostic or treatment measures planned

When the client is to be discharged with dressings, a nephrostomy tube, or a catheter, teach the client and family about the following:

- How to change dressings, maintaining aseptic technique
- Assessment of the wound and skin for healing and possible complications such as infection or skin breakdown
- How to manage drainage systems and maintain their patency
- Emptying drainage bags and assessing urine output
- When to contact the physician and recommendations for follow-up care

### Nursing Care Plan

**A Client with Urinary Calculi**

Richard Leton, age 44, owns a small business. He is admitted to the medical unit from the emergency department after awakening at 4:00 A.M. with severe right-sided pain. His CBC is normal, and urinalysis reveals microscopic hematuria, but no protein or bacteria. A renal ultrasound shows a 4 to 5 mm stone partially obstructing the right ureter.

Stephen Phillips, Mr. Leton’s admitting nurse, notes that he is pale, diaphoretic, and very anxious. He complains of nausea and asks for an emesis basin. Mr. Leton received 4 mg of intravenous morphine sulphate shortly after admission to the ED, approximately 2.5 hours ago. He denies pain at this time, but says, “I’m scared to death that it’ll come back—I couldn’t even move, it hurt so bad.”

**ASSESSMENT**

Mr. Leton’s history reveals no previous episodes of renal calculi. He felt well until the pain awakened him during the night. He admits that he has been working under a deadline to complete a construction project and that he probably has not been drinking (continued)
THE CLIENT WITH A URINARY TRACT TUMOR

A malignancy can develop in any part of the urinary tract; however, 90% develop in the bladder, about 8% develop in the renal pelvis, and only 2% in the ureter or urethra (Braunwald et al., 2001). When diagnosed early, the 5-year survival rate for bladder cancer is 94% (American Cancer Society [ACS], 2002).

An estimated 56,500 new cases of bladder cancer were diagnosed in the United States in 2002, and 12,600 people died as a result of the disease. The incidence of bladder cancer is about 4 times higher in men than it is in women, and about twice as high in whites as it is in blacks (ACS, 2002). Most people who develop bladder cancer are over age 60.

Two major factors are implicated in the development of bladder cancer: the presence of carcinogens in the urine and chronic inflammation or infection of bladder mucosa (See Box 26–2). Cigarette smoking is the primary risk factor for bladder cancer. The risk in smokers is twice that of nonsmokers (ACS, 2002). The chemicals and dyes used in the plastics, rubber, and cable industries; substances in the work environment of textile workers, leather finishers, spray painters, hairdressers, and pe-

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**A Client with Urinary Calculi**

**Nursing Care Plan**

**A Client with Urinary Calculi (continued)**

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**PLANNING AND IMPLEMENTATION.**

Mr. Phillips plans the following nursing interventions to be implemented for Mr. Leton.

- Reassure that measures to prevent further episodes of renal colic are being implemented, and that medication is available to relieve pain promptly.
- Assess the effectiveness of analgesia and its adverse effects, especially nausea.
- Maintain IV as ordered until oral fluid intake exceeds 200 mL of fluid per hour while awake.
- Measure and strain all urine. Assess urine for color, clarity, and odor.
- Teach about urolithiasis and its risk factors, especially as they relate to Mr. Leton.
- Teach the importance of maintaining a high fluid intake, especially when working outdoors in hot weather; recommended dietary modifications and their rationale; ordered medications and their effects; how to identify and prevent UTI; and symptoms that should be reported to the physician.

**EVALUATION.**

Mr. Leton passed the obstructing stone the evening after admission and is discharged the following day. On discharge, he denies pain or nausea, his urine is clear and pale yellow, and urinalysis is normal. Laboratory analysis shows that the calculus was calcium. Mr. Leton is able to state the importance of continuing a high fluid intake. He verbalizes that he will reduce his intake of calcium-rich foods, such as milk and milk products, and that he will increase his intake of foods to acidify his urine. He is able to list foods to include in his diet. He states, “You’d better believe I’ll follow my diet, drink my water, and make sure I don’t get an infection. I hope to never feel pain like that again!”

**Critical Thinking in the Nursing Process**

1. What factors contributed to the onset and timing of Mr. Leton’s ureteral colic?
2. What is the rationale for administering indomethacin, an NSAID, to a client with ureteral colic?
3. Why did Mr. Phillips include a nursing intervention to assess for a relationship between Mr. Leton’s nausea, his pain, and the ordered analgesic agent?

See Evaluating Your Response in Appendix C.