Thanks for using our Health Guides. We'll be taking them down soon. For the latest Health news, visit our Health section. Questions? Visit our directory for a comprehensive list of contact options. TODAY'S PAPER TIMES TOPICS Log In Register Now Help HOME PAGE MOST POPULAR Search All NYTimes.com The New York Times **Health Guide** G٥ Thursday, February 25, 2021 WORLD **BUSINESS** TECHNOLOGY HEALTH OPINION ARTS TRAVEL REAL ESTATE **AUTOS** U.S. N.Y. / REGION SCIENCE **SPORTS** STYLE **JOBS** RESEARCH FITNESS & NUTRITION MONEY & POLICY VIEWS HEALTH GUIDE Search Health 3,000+ Topics SEND FEEDBACK Tara Parker-Pope HEALTH > TIMES HEALTH GUIDE > K > KIDNEY STONES > IN-DEPTH REPORT : DIAGNOSIS **Kidney Stones Four Bowls of Pho** April 27, 2012, 11:06 AM **Diagnosis** In-Depth From A.D.A.M. Overview For Back Pain, Steroid Shots No More Effective Than Placebo April 27, 2012, 8:30 AM The doctor will perform a physical exam. This includes pressing against the **In-Depth Report** abdomen for tender locations that might indicate the presence of the stone. Daily Activity Tied to Lower Alzheimer's Risk Background April 27, 2012, 7:16 AM **MEDICAL HISTORY** Causes **Early Menopause Linked to Bone Fracture Risk** Risk Factors The patient's age is a significant factor. Kidney stones that occur in children and

young patients are more apt to result from inherited problems that cause cystine,

xanthine, or, in some cases, calcium oxalate stones. In adult patients, calcium

A medical history may help predict which crystal has formed the stone. The

Any medications being taken, including non-prescription substances,

particularly high doses of vitamins D or C and calcium-containing antacids

Many conditions can cause symptoms similar to kidney stones. Usually the

Diverticulitis (infection or irritation of abnormal pockets in the intestines)

diagnosis is easily made because of the specific nature of the symptoms, but it is not always clear. Urinary tract infections can cause similar, but usually less

intense, pain. In fact, infection may be present with a kidney stone. Other causes

- Symptoms Diagnosis
- Treatment Medications

- Other Treatments Complications
- Prevention
- References

News & Features

Reporter's File

Expert Q & A Questions for Your Doctor Clinical Trials

5 Things to Know

View & Print In-Depth Report »

Multimedia Kidney Stones

Web Links

- National Kidney and Urologic
- Diseases Information Clearinghouse

- American Urological Association
- Oxalosis and Hyperoxaluria
- Foundation

- " Hiatal hernia (when the upper part of the stomach bulges into the chest through
- National Kidney Foundation

IMAGING TECHNIQUES Various imaging techniques are helpful in determining the presence of kidney

safer, and similar in cost.

Intestinal blockage

Irritable bowel syndrome

an opening in the diaphragm)

Pelvic inflammatory disease

Pancreatitis (inflammation of the pancreas)

Inflammatory bowel disease (Crohn's and colitis)

Blood clots

Appendicitis

Hepatitis

Heart attack

Stomach ulcers

stones are most common.

doctor will need to know the following:

Histories of cancer, sarcoidosis, or small bowel disease

Any previous kidney stone attacks

RULING OUT OTHER DISORDERS

of pain that may mimic kidney stones include:

stones. The best approach uses spiral (or helical) computed tomography scans. If these scans are not available, the patient will need ultrasound or standard x-rays. If no stones show up, but the patient has severe pain that suggests the presence of kidney stones, the next step is an intravenous pyelogram. *X-Rays*. A standard x-ray of the kidneys, ureters, and bladder may be a good first step for identifying stones, since many are visible on x-rays. Calcium stones can

Spiral (or Helical) Computed Tomography. A type of computed tomography (CT) scan called a spiral or helical CT scan is currently the best method for diagnosing stones in either the kidneys or the ureters. This test is fast, does not require instruments or foreign chemicals to enter the body, and provides detailed accurate images of even very small stones. If stones are not present, a spiral CT

scan can often identify other causes of pain in the kidney area. It is better than xrays, ultrasound, and intravenous pyelogram -- the previous standard test for detecting kidney stones. Experts hope spiral CT will eventually be able to

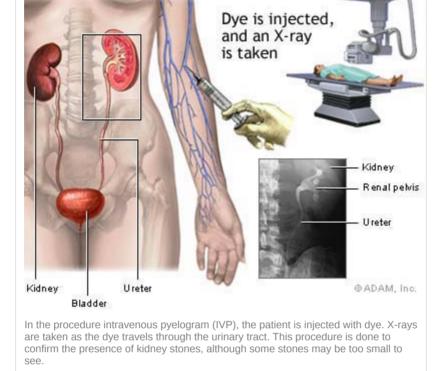
be identified on x-rays by their white color. Cystine crystals can also show up on

identify the chemicals present in a stone. Ultrasound. Ultrasound can detect clear uric acid stones and obstruction in the urinary tract. It is not useful for finding very small stones, but some research indicates that it may be a useful first diagnostic step in the emergency room to help predict the likelihood of a stone, including suspected stones in children. Intravenous Pyelogram. With intravenous pyelogram (IVP), the doctor injects a special dye into the patient. A technician will then take x-rays as the dye enters

the kidneys and travels down the urinary tract. IVP is invasive but, until recently,

was the most cost-effective method for detecting stones. Where it is available, spiral CT is now preferred, since it gives a faster diagnosis and is more accurate,

IVP should not be used on patients with kidney failure. There is also a risk for an allergic reaction to standard dyes, although newer, less allergenic ones are becoming available.



Magnetic Resonance Imaging. Magnetic resonance imaging (MRI) techniques are showing promise for diagnosing urinary tract obstruction but do not yet accurately reveal small stones, or ones that do not cause a blockage. Because no

radiation is involved with MRI, however, it may prove to be a good option for pregnant women. **URINE TESTS** Urine samples are required to evaluate features of the urine, including its acidity

and the presence of: Red or white blood cells

Infection

Crystals * High or low levels of chemicals that inhibit or promote stone formation

performing this test.

* Discard the first urination on the day of the test.

- Clean-Catch Urine Sample for Culturing. After determining that a kidney stone is present, the health care provider usually gives the patient a collection kit, including filters, to try to catch the stone or gravel as it passes out. The urine

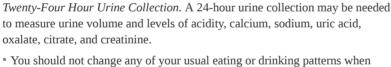
may also be tested (cultured) for the presence of infection-causing organisms. A

clean-catch urine sample is almost always required for culturing. To provide a clean catch, do the following: * First, wash your hands thoroughly, and then wash the penis or vulva and surrounding area four times with downward strokes, using a new soapy sponge each time. * Begin urinating into the toilet and stop after an ounce or two.

- Position the container to catch the middle portion of the urine stream " Urinate the remainder into the toilet.
- " Tighten the cap on the container securely, being careful not to touch the inside

① Click the icon to see an image of a calcium urine test.

① Click the icon to see an image of a uric acid urine test.



- Afterward, collect all urine passed over the next 24 hours, including the first urination on the morning of the second day. A second 24-hour urine collection may be needed to determine whether
- treatment is working, or it may be done if the first analysis was not conclusive and the doctor suspects a less common stone, such as a cystine or xanthine
- Urine tests that are used to determine the specific chemical and biological factors causing the stone should be performed about 6 weeks after the attack, since the

attack itself may change the levels of such substances, including calcium, phosphate, and citrate. Note that calcium levels in the urine may be abnormal even in many people who

do not have stones. In addition, high urinary concentrations of calcium may pose

The kidney stones obtained from the urine sample are examined under a

microscope. The crystal formations are often specific enough so that the doctor is able to identify the substance causing the stone. **TESTING THE ACIDITY OF URINE**

MICROSCOPIC EXAMINATION

a greater or lesser risk, depending on a person's age.

stone. The levels of acidity or alkalinity in any solution, including urine, are indicated by the *pH scale*: * A pH value of 7.0 is neutral. * A solution with a low pH (below 7.0) is acidic. (A low pH favors uric acid and

Testing whether urine is acidic or alkaline helps to identify the specific type of

* A solution with a high pH is alkaline. (A high pH favors calcium phosphate and struvite stones.)

TESTING FOR BLOOD IN THE URINE

AA dipstick test for blood in the urine (called hematuria) is typically performed when patients appear in the emergency room with flank pain (the primary symptom of kidney stones). About a third of kidney stone patients, however, do

following:

BLOOD TESTS Blood Tests for Stone Factors. Blood and urine tests help determine what substances formed the crystals. This allows the doctor to determine the

not show blood in the urine, so other tests may be needed.

appropriate treatment and preventive measures.

Blood tests may help determine blood levels of urea nitrogen, creatinine, calcium, phosphate, and uric acid for patients with known or suspected calcium oxalate stones. Doctors will usually schedule these tests about 6 weeks after the attack, in order to measure these substances when the stone has been passed and the patient has been stabilized. This is particularly true in patients with recurrent

Parathyroid Tests. Tests to detect parathyroid hormone levels are given if the doctor suspects hyperparathyroidism, based on other signs and symptoms. Tests for Infection. A test result that shows a high white blood cell count might

indicate infection. Such results, however, could be misleading, since the number

of white blood cells could also increase in response to the extreme physical stress of a kidney stone attack. *Tests for Metabolic Problems.* About half of children with stones have an identifiable metabolic disorder, which increases their risk of stone recurrence five-fold. Experts argue whether tests for metabolic disorders are routinely

People with recurrent calcium stones have a wide range of irregular blood or urine test results, indicating a variety of possible metabolic disorders. For example, calcium stones in middle-aged women may be due to parathyroid

needed once the stone composition has been determined. Studies suggest the

- abnormalities. Calcium phosphate stones most likely result from renal tubular acidosis.
- Determining the stone composition may be sufficient for treatment, and may help avoid unnecessary metabolic tests.

People with non-calcium stones generally have identifiable metabolic

MORE INFORMATION ON THIS TOPIC Background | Causes | Risk Factors | Symptoms | Diagnosis | Treatment | Medications Other Treatments Complications Prevention References News & Features Reporter's File | Expert Q & A | Questions for Your

Doctor | Clinical Trials | 5 Things to Know |

View & Print In-Depth Report » Review Date: 7/27/2009 Reviewed By: Reviewed by: Harvey Simon, MD, Editor-in-Chief, Associate

Professor of Medicine, Harvard Medical School; Physician, Massachusetts General Hospital. Also reviewed by David Zieve, MD, MHA, Medical Director, A.D.A.M., Inc. A.D.A.M., Inc. is accredited by URAC, also known as the American Accreditation HealthCare Commission (www.urac.org). URAC's accreditation program is an independent audit to verify that A.D.A.M. follows rigorous standards of quality and accountability. A.D.A.M. is among the first to achieve

this important distinction for online health information and services. Learn more about A.D.A.M.'s editorial policy, editorial process and privacy policy. A.D.A.M. is also a founding member of Hi-Ethics and subscribes to the principles of the Health on the Net Foundation (www.hon.ch). A.D.A.M. Copyright The information provided herein should not be used during any medical emergency or for the diagnosis or treatment of any medical condition. A licensed medical professional should be consulted for diagnosis and treatment

of any and all medical conditions. Call 911 for all medical emergencies. Links to

endorsements of those other sites. © 1997- 2008 A.D.A.M., Inc. Any duplication

other sites are provided for information only -- they do not constitute

or distribution of the information contained herein is strictly prohibited.

Does Medicine Discourage Gay Doctors?

April 26, 2012

More Blog Headlines »

Health & Fitness Tools

What's your score? »

BMI Calculator

MOST POPULAR - HEALTH E-MAILED BLOGGED

Cannot GET /regilite

- 1. Well: Should Your Dog Be Watching TV?
- 2. Well: Daily Activity Tied to Lower Alzheimer's Risk
- 3. Well: For Back Pain, Steroid Shots No More Effective Than Placebo 4. Well: Does Medicine Discourage Gay Doctors?

Go to Complete List »

- 5. Well: Four Bowls of Pho
- **6.** Well: A Surprising Risk for Toddlers on Playground Slides 7. Recipes for Health: Noodle Soups From the Garden: Simple Vegetarian Pho Broth
- 8. Well: The Evolution of the Runner's High
- 9. Recipes for Health: Pho With Broccoli and Quinoa 10. Recipes for Health: Pho With Carrots, Turnips, Broccoli and Tofu

Did Blankfein snub Paulson? ALSO IN BUSINESS »

Danger of investing in China The preschool race is no joke

Powered by BlogRunner

Business nytimes.com

Health Around the Web

Home World U.S. N.Y. / Region Business Technology Science Health Sports Opinion Arts Style Travel Jobs Real Estate Autos Site Map