CONDITION

Bladder infections in children

Learn how bladder infections affect children, including symptoms, urine testing, treatment, warning signs, and ways to reduce repeat infections.

WHAT IT IS
Infection of the lower urinary tract

BODY SYSTEM
Urinary system

MAIN SYMPTOMS
Burning urination, frequent urination, lower abdominal discomfort, fever

WHAT CAUSES IT
Bacteria from the skin or bowel

HOW IT IS DIAGNOSED
Properly collected urine sample and urine culture

MAIN TREATMENT
Antibiotics

CAN IT BE CURED?
Yes, antibiotics usually clear the infection

IS IT AN EMERGENCY?
Sometimes, if the child appears severely ill

LONG-TERM OUTLOOK
Most children recover without lasting problems

Overview

A bladder infection is an infection in the lower urinary tract. It is also called cystitis or a lower urinary tract infection, often shortened to UTI. Most bladder infections happen when bacteria from the skin or bowel enter the urethra, the tube that carries urine out of the body, and travel into the bladder.

Bladder infections can occur at any age. Older children may report burning with urination or needing to urinate often. Babies and young children may have less specific signs, such as fever, vomiting, poor feeding, or unusual irritability.

A bladder infection matters because bacteria can sometimes travel from the bladder to one or both kidneys. A kidney infection, called pyelonephritis, is more likely to cause fever, back or side pain, vomiting, and a generally ill appearance. Prompt assessment and appropriate

treatment help relieve symptoms and reduce the chance of complications.

Symptoms alone cannot confirm a bladder infection. Irritation around the genitals, constipation, problems with bladder control, and other conditions can cause similar symptoms. A properly collected urine sample is usually needed.

Symptoms

Children who can describe their symptoms may report:

Urine odor or appearance by itself does not prove that a child has an infection. Concentrated urine, foods, medicines, and dehydration can change how urine looks or smells.

Babies and toddlers may not have clear urinary symptoms. Possible signs include an unexplained fever, poor feeding, vomiting, irritability, low energy, or slower-than-expected weight gain. Fever may be the only noticeable sign in an infant.

Fever, chills, pain in the back or side below the ribs, or repeated vomiting can suggest that an infection involves the kidneys rather than only the bladder.

Arrange prompt medical assessment for a child with urinary symptoms, especially when symptoms are new or persistent. Contact a clinician urgently for:

Seek emergency care if a child is very difficult to wake, has trouble breathing, has a seizure, develops blue or markedly mottled skin, or appears severely ill.

- Pain, burning, or stinging while urinating
- A sudden or frequent need to urinate
- Passing only a small amount of urine at a time
- Lower abdominal discomfort
- New daytime accidents or bed-wetting after being dry
- Cloudy, strong-smelling, or blood-tinged urine
- Any fever in a baby younger than 3 months
- Fever with back or side pain
- Repeated vomiting or inability to keep fluids down
- Much less urination, a very dry mouth, or other signs of dehydration
- A child who appears unusually weak, drowsy, or unwell
- Urinary symptoms in a child with known kidney or urinary tract problems

Causes and risk factors

Most childhood bladder infections are caused by bacteria that normally live in the bowel. Escherichia coli , often called E. coli , is the most common cause. These bacteria can move from the area around the anus to the urethra and then enter the bladder.

Girls are more likely to develop bladder infections after infancy because their urethra is shorter and closer to the anus. During early infancy, UTIs are also seen in boys, particularly those who are uncircumcised. Circumcision status is only one factor and does not determine whether an individual child will develop an infection.

Not emptying the bladder regularly can allow bacteria more time to grow. Children may hold urine because they are busy, dislike a school bathroom, or have pain or difficulty using the toilet.

Constipation can interfere with normal bladder emptying. A bowel full of stool may press on the bladder and affect the nerves and muscles used for urination. Some children have bladder and bowel dysfunction, a pattern that may include constipation, urine holding, urgency, accidents, or incomplete emptying.

Other factors that may increase risk include:

Poor hygiene is not always the cause of a bladder infection, and an infection should not be treated as a sign that a child is unclean. Gentle wiping from front to back may help limit movement of bowel bacteria toward the urethra. Scented soaps, bubble baths, and other products can irritate sensitive skin and cause burning that may resemble a UTI.

- Vesicoureteral reflux, in which urine flows backward from the bladder toward the kidneys
- Structural differences in the kidneys, ureters, bladder, or urethra
- Problems with the nerves that control the bladder
- Urinary catheters or recent urinary procedures
- Kidney stones or another blockage to urine flow
- Previous UTIs

Diagnosis

A clinician will ask about the child's symptoms, fever, drinking and urination, bowel habits, previous infections, and known urinary tract conditions. The examination may include checking temperature, hydration, the abdomen, the back near the kidneys, and the skin around the

genitals.

Diagnosis usually requires a urine sample. A urinalysis looks for signs such as white blood cells, nitrites, and an enzyme released by white blood cells. These findings can support the diagnosis but are not always conclusive.

A urine culture checks whether bacteria grow from the sample. It can identify the organism and help show which antibiotics like amoxicillin or doxycycline are likely to work. Culture results commonly take longer than the initial urinalysis.

How the sample is collected matters. A toilet-trained child is usually asked to provide a clean-catch sample after cleaning the genital area. The child begins urinating and then collects urine in a sterile cup.

For babies and children who cannot provide a clean-catch sample, clinicians may use a small catheter passed through the urethra into the bladder. In selected cases, urine may be collected by inserting a needle through the lower abdomen into the bladder, called suprapubic aspiration. Urine collection bags placed on the skin are easily contaminated, so a positive bag culture generally should not be the only basis for diagnosing a UTI.

Whenever practical, urine is collected before antibiotics are started. Treatment should not be delayed when a young child is seriously unwell.

Other causes may need consideration if testing does not support a UTI. These include skin irritation, vulvovaginitis, constipation, kidney stones, diabetes, or, in some adolescents, a sexually transmitted infection.

Imaging is not needed after every simple bladder infection. A kidney and bladder ultrasound may be considered after certain febrile, unusual, or repeated infections, or when there are concerns about urinary tract structure. A voiding cystourethrogram uses contrast material and X-rays to look for backward urine flow. It is generally reserved for selected children, such as those with recurrent febrile infections or certain ultrasound findings. Imaging decisions depend on the child's age, history, and clinical findings.

Treatment and management

Bacterial bladder infections are treated with antibiotics. Many children can take an oral antibiotic at home. The choice depends on the child's age, allergy history, likely bacteria, local antibiotic resistance patterns, previous culture results, and whether kidney involvement is suspected.

A clinician may begin treatment while the culture is pending and then change or stop the antibiotic when results are available. Parents and caregivers should give the medicine exactly

as directed and complete the prescribed course unless the treating clinician advises otherwise. Leftover antibiotics should not be saved or shared.

Children who are very young, appear significantly unwell, are dehydrated, cannot keep medicine down, or may have a kidney infection sometimes need treatment in a hospital. Antibiotics may initially be given through a vein.

Encourage normal fluid intake unless a clinician has recommended a fluid restriction for another medical condition. Regular bathroom trips can help the bladder empty. A child should not be pressured to hold urine for long periods.

Pain or fever medicine may improve comfort, but the appropriate product and amount depend on age, weight, medical history, and other medicines. A parent or caregiver can ask a clinician or pharmacist what is suitable. Aspirin should not be given to children unless specifically prescribed for a medical reason.

Constipation and bladder habits are important when infections repeat. Management may include regular toilet sitting, enough dietary fiber and fluids, and a clinician-directed constipation plan. Some children benefit from scheduled urination every few hours and relaxed toilet posture with foot support.

Long-term preventive antibiotics are not routinely needed for every child with recurrent infections or vesicoureteral reflux. Specialists consider potential benefits and harms based on the child's infection history and urinary tract findings.

Complications

Most children recover without lasting problems when a bladder infection is recognized and treated appropriately.

An untreated infection can spread to the kidneys. Kidney infections may cause high fever, side or back pain, vomiting, and more severe illness. Bacteria can rarely enter the bloodstream, a complication that is more concerning in young infants or children with urinary tract abnormalities.

Kidney scarring can occur after some febrile UTIs, particularly when infections are repeated or a child has significant urinary tract problems. Extensive scarring may contribute to high blood pressure or reduced kidney function later, but these outcomes are not expected after most uncomplicated bladder infections.

Antibiotics can cause diarrhea, nausea, or rash. A child who develops hives, facial swelling, breathing difficulty, or another possible severe allergic reaction needs immediate medical care.

Repeated urinary symptoms can also affect school attendance, sleep, and confidence, especially when accidents occur. Calm, supportive care is helpful. Accidents related to illness or bladder dysfunction are not intentional.

Follow up

Symptoms often begin to improve after effective treatment starts. Contact the treating clinician if symptoms are not improving as expected, fever continues, the child becomes more unwell, or vomiting prevents medicine from staying down.

The clinician may contact the family when the culture is complete. The result may confirm the infection, show that a different antibiotic is needed, or suggest that the sample was contaminated. Do not change treatment without discussing the result with the treating clinician.

A repeat urine culture is not always needed after a child has recovered from an uncomplicated infection. It may be appropriate when symptoms continue, the infection returns, or there are other clinical concerns.

Routine follow-up is especially useful for children with repeated UTIs, abnormal imaging, constipation, urine holding, weak urine flow, or ongoing wetting. A pediatric urologist or kidney specialist may be involved when infections are recurrent or the urinary tract may not be working normally.

Seek prompt reassessment if urinary symptoms return. Keeping a record of fever, symptoms, urine culture results, antibiotics, and imaging can help clinicians recognize patterns.

Sources

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