

# Transplant infection

A plain-English guide for you and your family

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## WHAT IS HAPPENING

After an organ transplant, you take powerful medicines every day to stop your body from attacking the new organ. Those medicines are life-savers—they let the transplant work—but they also turn down your immune system, the body's defense team that normally kills germs. With the defense team weakened, infections can sneak in that a healthy person would never get. The timing is not random. In the first month after surgery, you are most at risk from hospital germs like resistant staph or yeast on catheters, because your skin and mucous barriers are healing and your white blood cells are sluggish. Between month 2 and month 6, hidden viruses (like CMV and EBV) that were sleeping in your body can wake up, and rare fungi or parasites (like *Pneumocystis*) can grow, because the T-cells that hunt them are shut down. After 6 months, you face two risks: everyday community bugs like the flu (because your immune system is still low) and slow, sneaky germs like late CMV or fungus that never fully cleared. Doctors give you preventive pills (prophylaxis) for the most common bugs and watch you closely with blood tests and check-ups. If you get a fever, new cough, or just feel off, call right away—early treatment can stop a small infection before it spreads. The symptoms you feel—fever, cough, fatigue—are your body trying to fight back, buying time for the antibiotics to work. With careful monitoring and quick action, most transplant infections can be caught and treated, so you and your new organ can thrive together.

## What you might feel

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- Fever (temperature above 100.4°F or 38°C)
- Pain, redness, warmth, or swelling at the surgical site or around the transplanted organ
- The transplanted organ stops working as well (like rising creatinine in a kidney transplant or rising liver enzymes in a liver transplant)
- Cough, trouble breathing, or low oxygen levels (in lung transplant or widespread infection)
- Chills and shaking (rigors)
- Feeling very tired, weak, or confused
- Diarrhea, belly pain, or nausea (especially with CMV or *C. difficile* infection)

- New or worsening fluid buildup (like swelling in the legs, belly, or around the lungs)

## **Call the doctor right away if...**

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- Sudden drop in blood pressure or fast heart rate (signs the infection may be in the bloodstream, called sepsis, which can quickly damage organs)
- Confusion, extreme sleepiness, or trouble waking up (the brain isn't getting enough oxygen or is being poisoned by infection toxins)
- Trouble breathing, very fast breathing, or oxygen levels dropping below 90% (the lungs or blood can't deliver enough oxygen to keep the body alive)
- Lab results show the transplanted organ is failing fast (like creatinine jumping in a kidney transplant or liver enzymes spiking in a liver transplant)
- Signs of rejection happening at the same time as infection (fever plus biopsy changes), because the two can look alike and treating one wrong can make the other worse

## **What the care team will do**

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- Obtain blood cultures, urine culture, and chest X-ray immediately when fever reaches 100.4°F (38°C) or higher, before giving any antibiotics
- Start broad-spectrum IV antibiotics within one hour of fever detection as ordered, covering gram-positive bacteria like Staph, gram-negative bacteria like E. coli and Pseudomonas, and atypical bacteria
- Measure and document vital signs every 2 hours, watching specifically for rising heart rate above 100, dropping blood pressure below 90/60, or oxygen saturation below 92 percent
- Check immunosuppression drug levels (tacrolimus trough or cyclosporine trough) and hold the next dose if levels are supratherapeutic until the transplant team gives instructions
- Enforce strict hand hygiene, mask use by anyone with respiratory symptoms, and no fresh flowers or plants in the patient room
- Monitor urine output hourly if the patient has a kidney transplant, and report output dropping below 30 mL per hour immediately
- Administer prevention (prophylaxis) medications (TMP-SMX and valganciclovir) on schedule even during acute illness unless the doctor specifically orders them held
- Assess and document pain level, mental status changes like confusion or drowsiness, and any new skin lesions or rashes every 4 hours

## Medicines you may be given — and why

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### Trimethoprim-sulfamethoxazole (TMP-SMX)

TMP-SMX stops a tiny germ called *\*Pneumocystis jirovecii\** (the PJP germ) from building the parts it needs to grow. This germ loves lungs and can cause deadly pneumonia in transplant patients whose immune system is turned down. The drug blocks two steps the germ uses to make folate (a vitamin-like molecule the germ must have to copy its DNA and multiply). Without folate, the germ cannot spread.

### Valganciclovir

Valganciclovir stops cytomegalovirus (CMV, a herpes-family virus) from copying its DNA. CMV hides in most people's bodies but explodes when the immune system is suppressed after transplant, attacking the gut, lungs, eyes, and the new organ itself. The drug is a fake building block that gets inserted into the virus's growing DNA chain, jamming the copy machine so the virus cannot multiply.

### Fluconazole or other azole antifungal (e.g., voriconazole, posaconazole)

Azole antifungals stop fungi (like *\*Candida\** and *\*Aspergillus\**) from building their cell membrane. Fungi use a fat-like molecule called ergosterol to keep their membrane strong—like the plastic wrap around the cell. Azoles block the enzyme that makes ergosterol. Without it, the fungal membrane leaks and the fungus dies or stops growing.

### Immunosuppressive agents (tacrolimus, mycophenolate, prednisone)

These drugs are not treating infection—they are preventing the transplanted organ from being rejected. But they are listed here because managing infection in transplant patients means carefully balancing these drugs. Too much suppression invites infection; too little risks losing the organ. Tacrolimus blocks T-cell activation (the immune cells that would attack the new organ). Mycophenolate stops lymphocytes from multiplying. Prednisone broadly dampens inflammation and immune response. During serious infection, doses are often reduced temporarily to let the immune system fight back, then raised again once infection is controlled.

## Where this information comes from

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- American Society of Transplantation (AST) Infectious Diseases Guidelines
- CDC guidelines on transplant-associated infections
- Infectious Diseases Society of America (IDSA)
- American Journal of Transplantation consensus statements

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