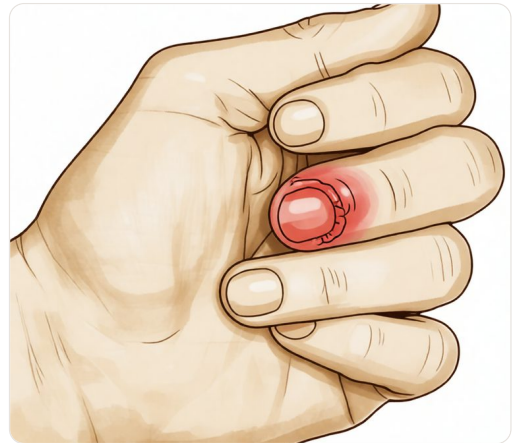


Hand Infections

A hand with cellulitis — a soft-tissue infection presenting with redness, swelling and warmth.

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What you're feeling

You may notice your hand feels hot, red, and swollen. The pain often starts suddenly and gets worse quickly. It can be sharp or throbbing. Simple tasks like holding a cup or turning a key become difficult because your grip weakens. You might find it hard to bend your fingers fully.

If the infection is in your fingertip, the pain can be intense and constant. It may throb, keeping you awake at night. Even a light touch from a bedsheet can feel painful. Your fingertip might look red or swollen, and you may see a small collection of pus. These symptoms can mimic common infections, so it is important to pay attention to any unusual changes in your finger.

Infections deeper in the hand, such as in the tendon sheath, cause specific discomfort. You will likely feel pain when you try to straighten your finger. Your finger may stay slightly bent because moving it hurts. The entire finger can become swollen and tender along the palm side. This type of infection often develops after a small cut or prick.

If you have had recent hand surgery, watch for signs of deep infection. This is uncommon but serious. You might notice increased pain, redness spreading from the wound, or discharge. Early identification is essential to achieve optimal outcomes. Delayed diagnosis can lead to severe complications, including loss of function or, in rare cases, amputation.

If you have a weakened immune system, your symptoms might be less obvious but still dangerous. Infections can progress rapidly in these cases. You may not feel as much pain initially, but the tissue damage can be significant. Prompt diagnosis and treatment are critical to prevent limb-threatening complications.

If you suspect a hand infection, seek medical advice immediately. Your surgeon will examine your hand and may use imaging or blood tests to confirm the diagnosis. Do not wait for symptoms to improve on their own. Hand infections are associated with a high rate of complications that are often difficult to manage if not treated early.

What's actually happening

When bacteria enter your hand, they can settle in the skin, tendons, or bone. Your body sends white blood cells to fight them, which causes swelling, heat, and pain. This is your immune system trying to contain the threat. However, the hand is a tight space with many moving parts. Swelling here can quickly press on nerves and restrict blood flow.

If the infection reaches the tendon sheath—the slippery tube that lets your tendons glide—it becomes pyogenic flexor tenosynovitis. Think of this sheath as a sealed sleeve. When it fills with pus, pressure builds up rapidly. This can cut off blood supply to the tendon and surrounding tissues. Without prompt treatment, the tissue can die, leading to permanent stiffness or loss of the finger.

Infections can also reach the bone, known as osteomyelitis. Bone is dense and has a slower blood supply than skin or muscle. This makes it harder for your body's defences and antibiotics to reach the bacteria effectively. The infection can weaken the bone structure over time. If left untreated, it may spread to nearby joints or soft tissues, causing severe damage.

Some infections are linked to specific events, such as animal bites or injuries from hand surgery. Bite wounds introduce unique bacteria deep into the tissue. Post-surgical infections are rare but serious. They often require careful cleaning of the area and targeted antibiotics to clear the germs.

Your surgeon will assess the severity of the infection to choose the right antibiotics. Treatment usually involves cleaning out the infected tissue and taking antibiotics for four to six weeks. In some cases, such as mycobacterial infections, long-term medication and surgery are needed to restore function.

Early action is critical. Delayed diagnosis can lead to amputation or, in rare cases, life-threatening complications. Prompt diagnosis and treatment help prevent hand stiffness, contractures, and permanent loss of function.

What we can do about it

Dr Kieran Hirpara, an upper-limb surgeon at Mater Private Hospital Rockhampton, starts with the least invasive options that suit your condition. Patients are generally referred to our clinic by their GP; if a physiotherapist has suggested you see us, you will still need a referral from your GP in order to be eligible for the Medicare rebate. A clinic assessment, including a history, examination, and imaging where needed, establishes the diagnosis. For degenerative or long-standing problems we usually try non-operative care – activity change, physiotherapy or hand therapy, splinting, and injections – and consider surgery when that has not given enough improvement. For structural or acute problems, surgery may be recommended straight away, without a preceding non-operative trial.

Early identification is key to stopping the infection from spreading. We use laboratory testing to find the specific germ causing the problem. This allows us to choose the right antibiotics for you. For common acute infections, we select antibiotics based on how severe your symptoms are, your overall health, and local resistance patterns. If you have a mycobacterial infection, treatment involves long-term antibiotics alongside

surgical cleaning. In some cases of diabetic hand infections, we can manage your care safely as an outpatient rather than admitting you to hospital.

Prompt treatment is essential to preserve hand function. We may use broad-spectrum intravenous antibiotics and perform surgical irrigation and debridement to wash out the infection. This is especially important for conditions like pyogenic flexor tenosynovitis, where the tendon sheath becomes infected. Even with early care, severe cases can still lead to impaired function or, in rare instances, amputation. We also monitor for MRSA and other virulent organisms, particularly if you are immunosuppressed, to prevent serious complications.

Surgery is considered when medical management alone cannot clear the infection or if there is significant damage to the hand structures. Our surgical approach focuses on eradicating the causative organism and removing any dead or infected tissue. This combined surgical and medical strategy aims to achieve the most favourable outcome for your hand's function and health.

What to expect

Hand infections are serious and require prompt attention. Without treatment, they can lead to permanent loss of function or even amputation. Early identification and treatment are essential to achieve the best possible outcome. Your surgeon will work quickly to stop the infection from spreading.

Most cases are managed with a combination of surgical cleaning and antibiotics. For common bacterial infections, antibiotic therapy typically lasts 4–6 weeks. The choice of medicine depends on the severity of your infection, your overall health, and local bacteria patterns. If you have a specific type of infection, such as mycobacterial disease, treatment involves long-term antibiotics and surgical debridement. Reconstructive procedures may be needed later to restore hand function lost to the disease.

In some cases, initial cleaning can be done at the bedside rather than in an operating room. This approach can reduce hospital days without increasing complications. However, severe infections like pyogenic flexor tenosynovitis carry a higher risk. Even with timely and thorough treatment, these can lead to impaired function or amputation of the affected digit.

Your outlook depends on several factors. Immunosuppressed patients require aggressive treatment to prevent limb and life-threatening complications. For patients with hand osteomyelitis and arterial calcification, early amputation may be appropriate to maximize disease-free survival.

Recovery is a process. You may experience swelling and stiffness as the infection clears. Adherence to your antibiotic course is critical. While most infections settle with proper care, delayed diagnosis remains a significant risk factor for poor outcomes. Your surgeon will monitor your progress closely to ensure the infection is fully eradicated.

When to see someone

Hand infections can spread quickly. You need same-day emergency care if you have severe pain, swelling, or fever, especially if you are immunosuppressed or have HIV. These conditions raise the risk of serious

complications. Finger infections are common in adults aged 40 to 59. If you notice persistent swelling or pain in a finger, see your GP promptly. Do not wait. Atypical infections may show vague symptoms that are hard to spot. Early assessment helps prevent long-term damage. If you suspect a deep infection, such as one affecting the tendon sheath or joint, urgent specialist review is essential. Your surgeon will examine you to determine the best next steps.

In more depth

This section goes further than you need for your own treatment decisions. Hand infections are worth the extra reading because the antibiotics most people are given first are, in this specific setting, the wrong ones – and because one hand infection is a surgical emergency that is regularly mistaken for a minor one.

THE COMMONEST ORGANISM RESISTS THE COMMONEST PRESCRIPTIONS

A ten-year longitudinal study of **815** urban hand infections found that although the annual incidence of MRSA has declined overall, it **remains the most common pathogen**, while resistance to clindamycin and levofloxacin **consistently increased**. The authors' conclusion is specific: empirical antibiotic therapy for hand infections should **avoid penicillin, beta-lactams, clindamycin and levofloxacin** [1].

That is a longer list of exclusions than most people expect, and it covers much of what is routinely prescribed for skin infection elsewhere on the body. The practical implication is that a hand infection not settling on a first-line antibiotic is a common and predictable event rather than an unusual one, and is a reason to seek review rather than to persist.

Local resistance patterns vary, so this is a principle rather than a prescription – but it explains why hand infections are often escalated faster than their size suggests.

FLEXOR SHEATH INFECTION: THE DETAILS THAT CHANGE THE OUTCOME

Pyogenic flexor tenosynovitis – infection inside the closed tunnel a flexor tendon runs through – is the one that behaves differently from other hand infections. The sheath is a confined space with a poor blood supply, so pus under pressure inside it can destroy the tendon's gliding surface within days.

Across **763** patients, two things improved range of motion: **using antibiotics as a component of therapy**, and **catheter irrigation rather than open washout**. The evidence supported both **early treatment** and systemic antibiotic use [2].

Note that the outcome measured is range of motion, not eradication of infection. The infection can be cured while the finger is left stiff, which is the real cost of delay here. The four classic findings – a uniformly swollen “sausage” finger, held slightly bent, tender along the whole tendon sheath, and severe pain on passively straightening it – are worth recognising, because that combination warrants same-day assessment rather than a course of tablets.

THE ONE THAT IS A TRUE EMERGENCY

Necrotising fasciitis originating in the hand is rare and rapidly destructive. The systematic review of **161** cases concludes that **early diagnosis is of paramount importance**, and that early, decisive surgical intervention should have a **low threshold**, particularly where risk factors are present [3].

“Low threshold” is deliberate wording. This is a diagnosis where waiting for certainty costs limbs. The features that separate it from ordinary cellulitis are pain out of proportion to the appearance, rapid progression over hours rather than days, and systemic illness – fever, confusion, feeling profoundly unwell – alongside what may look like a modest area of redness.

WHY A SMALL WOUND CAN BE MISLEADING

Two mechanisms produce infections much deeper than the visible wound suggests. A bite over a knuckle sustained by striking a mouth drives oral organisms through skin, extensor tendon and joint capsule in one movement, and the skin then closes over the contamination. A puncture into the palm can seed the flexor sheath through an entry point that seals within a day.

In both, the visible wound is a poor guide to the depth of the problem, and the pattern of pain – particularly pain on moving the finger, rather than pain at the wound itself – is more informative than the appearance of the skin.

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