

Flesh Eating Bacterial Infection (NF)

What are flesh eating bacterial infections?

Flesh eating bacteria cause a disease called Necrotizing fasciitis (NF). NF is a rare infection of the deeper layers of skin and the soft tissues under the skin. The infection spreads easily across the body part where it starts. At first it spreads on top of the muscles, but as it progresses, it may even destroy the muscle tissue.

Who is at risk for NF?

Anyone may get NF, but the people at higher risk are those with lower immune defenses such as: cancer patients treated with chemotherapy or radiations; transplant recipients; severe diabetes; or chronic articular diseases that are treated with immunosuppressing medications.

How does the disease progress?

The infection often begins at a site of a local injury: surgical incisions or penetrating injuries or minor injuries, such as cuts and burns, or non-penetrating injuries, such as blunt trauma and muscle strain. Some start as a streptococcal bacteremia (commonly called blood poisoning) after a strep throat infection.

The time elapsed between onset of symptoms and initial visit has ranged from a few hours to 7 days.

The major complaints are:

- Localized pain with swelling, tenderness, or redness (87%)
- Gastro-intestinal complaints (nausea, vomiting and diarrhea) (53%)
- Influenza-like symptoms of aches, chills and fever (47%)

These findings led to diagnoses of musculoskeletal strain, viral gastroenteritis and influenza.

NF progresses rapidly to the destruction of local tissue. When this happens it is urgent to treat with surgical debridement (cleaning up the wound), and high doses of intravenous antibiotics. Any delay in surgical treatment is associated with higher mortality.

Which bacteria cause NF?

Many types of bacteria can cause NF: Group A streptococcus (*Streptococcus pyogenes*), *Staphylococcus aureus*, *Clostridium perfringens*, *Bacteroides fragilis*, *Aeromonas hydrophila*, *Vibrio vulnificus*... and others.

Most NF (55% to 75%) are caused by a group of bacteria causing a mixed infection, others (25% to 45%) are due to a single species of bacteria.

Cases caused by a single infection are often due to group A streptococcus (the bacteria responsible for strep throat) and staphylococci (the bacteria responsible for boils, furuncles and carbuncles).

Is NF contagious?

Some of the bacteria that cause NF (staphylococci, streptococci are contagious), but they do not usually cause NF among those

that are infected. Staphylococci would cause skin infections such as furuncles, carbuncles and boils, Streptococci would cause sore throat and other localized infections. Small clusters could happen in a group of patients with immune system deficiencies.

What about the bacteria?

Strep Group A causes the worst infections. NF caused by group A streptococci is the most rapidly progressive and devastating form of the disease. Approximately 50% of adult cases are associated with toxic shock and multi-organ failure and the mortality rate ranges from 30% to 70%. NF that is caused by group A streptococci is the most difficult to diagnose.

Staphylococcus aureus is extremely common, colonizing about 30% of people's noses. Its multi-resistant strains (MRSA) colonize about 2% of the population.

Clostridium perfringens is found throughout the natural environment, commonly encountered in soils, foods, dust and intestinal tracts of humans (10% to 30% of adults), and domestic animals (40% to 80% in beef, pork, or poultry).

Bacteroides fragilis is a normal inhabitant of the intestinal tract. Infections caused by *B. fragilis* usually start with abdominal contamination such as peri-rectal abscesses and decubitus ulcers.

Aeromonas hydrophila is a common freshwater bacteria and a common pathogen of cold-blooded animals (snakes and frogs). *Aeromonas* is also found from estuaries and coastal waters, shellfish, farm animals and vegetables at market. It rarely causes urinary tract or biliary tract infections and otitis. Exposure to ponds and lakes are a risk factor for cellulitis and extra intestinal infections.

Vibrio vulnificus is a common sea water bacteria found throughout the world. It can cause disease in those who eat colonized seafood, or have an open wound that is exposed to seawater. Among healthy people, ingestion of *V. vulnificus* can cause vomiting, diarrhea, and abdominal pain.

Prevention

Avoiding exposure to these extremely common bacteria in humans or the environment is impossible.

The best prevention is to warn **people who are immunodepressed** about their increased susceptibility to severe infections and not to hesitate to obtain medical attention for any sudden change in their health status.

Although much less common NF also may occur among people who are not immuno-suppressed.

The best prevention is to be extremely careful in taking care of minor injuries and obtain medical consultation as soon as signs and symptoms of generalized infection appear (fever, chills, malaise, localized pain, swelling, tenderness, or redness).