

# ANTHRAX IN ACTION

Physicians classify anthrax according to the tissues that are initially infected. The disease turns deadly when the causative bacterium, *Bacillus anthracis*, reaches the bloodstream and proliferates there, producing large amounts of a dangerous toxin. Much research is now focused on neutralizing the toxin.

## THREE TYPES

### INHALATION ANTHRAX

Spores are breathed in

### GASTROINTESTINAL ANTHRAX

Spores are ingested by eating contaminated meat

### CUTANEOUS ANTHRAX

Spores penetrate the skin through a break

## HOW INHALATION ANTHRAX ARISES

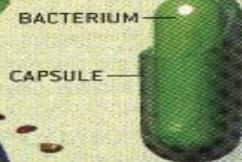
Inhalation anthrax is the most dangerous form, probably because bacteria that land in the lungs are more likely to reach the bloodstream and thus disseminate their toxin through the body.

**1** Immune system cells called macrophages ingest *B. anthracis* spores and carry them to lymph nodes in the chest. En route, or in the macrophages, the spores transform into actively dividing cells

**2** Proliferating *B. anthracis* cells erupt from macrophages and infiltrate the blood readily

**3** In the blood, the active bacteria evade destruction by macrophages and other cells of the immune system by producing a capsule (detail) that blocks the immune cells from ingesting them and by producing a toxin that enters immune cells and impairs their functioning

**4** Protected from immune destruction, the bacteria multiply freely and spread through the body



BACTERIA IN BLOOD

MACROPHAGE FILLED WITH TOXIN

TOXIN MOLECULES