

# SWINE FLU HITS THE BODY

Swine flu, a strain of influenza that is common in pigs, mutates into a form that is more easily transmitted to humans. When a person comes in contact with a pig or another person who has the virus, it enters the body by coming in contact with the respiratory epithelial tissue, which lines the nose and other cavities.

The virus enters the epithelial tissue and moves on to macrophages — white blood cells that stimulate T-cells and other cells to fight pathogens at the site of infection. A macrophage ingests the virus and replicates itself throughout the body, and also infects cells critical to countering the virus, such as the connection between a viral protein and immunoreceptor.

Infected T-cells and macrophages produce proinflammatory cytokines, which are typically secreted by immune cells that have encountered an antigen, thereby activating other immune cells to respond to it. In the case of swine flu and avian flu, these cytokines promote systemic inflammation. Infected macrophages also release chemoattractants that help draw other immune cells into a cluster, eventually leading to a cytokine storm.

In the case of swine flu and avian flu, a cytokine storm can block the lungs like a respiratory distress syndrome. Fluids and immune cells flood the lungs, eventually block off the airways, leading to hypoxia, multiple organ failure, and death. The paradoxical twist is that the stronger the immune system, the more severe the infection, the greater the risk of dying from a cytokine storm. This reaction is one theory as to why the 1918 Spanish flu pandemic was so deadly, with about 25 to 50 million people dying at a much greater rate than other patients. The same pattern emerged during the 1968 Hong Kong flu epidemic, which killed about 50 million people.

