

How a Tick Feeds

The term tick bite may be misleading as ticks do not bite and depart or feed rapidly like a mosquito. Ticks attach and feed gradually over a period of several to many days. Once a tick has found a suitable place to feed, it grasps the skin, tilts the body at a 45-60° angle, and begins to cut into the skin with the paired chelicerae. The palps lay outwards on the skin surface. After the chelicerae and hypostome penetrate the skin, they become encased in "cement" secreted by the tick. The cement serves to hold the mouthparts in place while the tick feeds. Mouthparts on larval and nymphal ticks are small with less penetration and produce a smaller host reaction. Adult *Ixodes* and *Amblyomma* ticks have long mouthparts that can reach the subdermal layer of skin, produce a larger reaction, and make the tick harder to remove. Insertion of the mouthparts often takes around 10-30 minutes, but can take longer (1-2 hours). The reaction to a feeding tick may make the tick appear imbedded, but only the slender mouth parts actually penetrate the skin.

Physical and enzymatic rupture of tissue creates a lesion or cavity under the skin from which blood is imbibed. A variety of pharmacologically active compounds that aid the feeding process and possibly increase pathogen transmission are introduced in the tick's saliva (e.g., blood platelet aggregation inhibitors, anticoagulants, anti-inflammatory and immunosuppressive agents, enzymes, and vasodilators to increase blood flow). Feeding is not continuous and most of the blood meal is taken up during the last 12-24 hours of feeding. The body weight of a feeding female tick can increase 80-120 times. Male ticks are intermittent feeders, take smaller amounts of blood, and do not change appreciably in size (male *I. scapularis* do not need to feed and are rarely found attached).

Ticks may attach and feed anywhere on the body, but there are differences depending upon exposure and species of tick. The distribution of the blacklegged tick is relatively uniform. However, over a third of *I. scapularis* were from the legs and arms and another third were from the back up through the shoulders, neck and head. By contrast, most American dog ticks are removed from the head and neck region.