

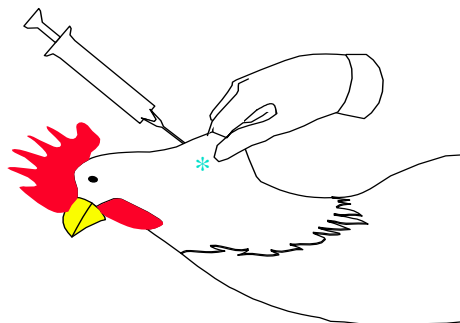
## SUBCUTANEOUS, NECK INJECTION TECHNIQUE

The subcutaneous (SQ) neck injection is a popular vaccination method for inactivated, oil emulsion vaccines. The SQ space, or the free space between the skin and neck muscle, is an area of loose tissue that can accommodate the reaction associated with oil emulsion vaccines. The bird's immune system responds to vaccination with oil emulsions by producing inflammation (swelling). The swelling is caused by immune cells migrating into the area to mount an immune response. When properly vaccinated, the swelling is not noticeable unless the area is examined by palpation. A firm, free moving mass may be felt under the skin in some birds. The swelling will usually form seven days after vaccination. Normally, less than 25% of the birds will develop this mass. This is a normal occurrence and is due to individual bird immune response variations. The swelling will resolve over time. However, serious complications can occur when the SQ injection is not done properly. The following will help describe proper SQ neck injection technique and possible complications from improper injection.

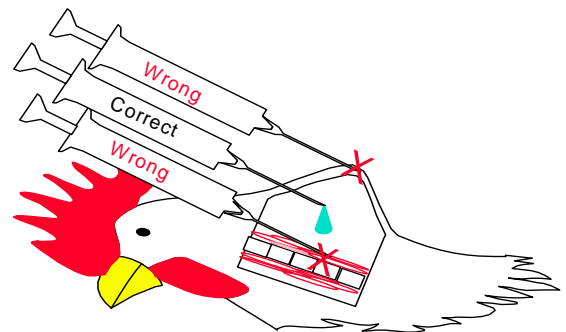
### Injection Technique:

An 18 gauge, 1/2 inch needle should be used for this injection. The injection is performed in the mid neck region. There is much free SQ space in this region, making injection of vaccine into the correct place easier. Grasp the skin on the backside of the neck using your thumb and forefinger midway down the neck. Lifting the skin upward will create a pocket beneath the skin. The vaccine is injected into this pocket of free space. The needle should be inserted through the skin on the mid line (Figure 1). Avoid inserting the needle through the side. A slight resistance should be felt as the needle penetrates the skin, followed by the needle easily sliding through the skin into the pocket. If a difference in resistance is not felt, the end of the needle may be in the layer of skin. If resistance is felt after easily sliding into the pocket, the needle may be in the neck muscles. Once the needle is in the SQ space, a full dose of vaccine is injected before retraction (Figure 2). Early retraction of the needle will result in birds receiving a partial dose.

**Figure 1.**



**Figure 2.**



### Side Effects of Improper Injection:

SQ neck injection is a safe method of vaccination; however, improper technique can cause harm to the birds. If the vaccine is injected into the layer of skin rather than under the skin, a swelling in the skin will be noticed. The appearance looks similar to a burn blister with white liquid inside. The area will have a noticeable small mass associated with the skin when palpated. With proper injection there will be no palpable mass. When vaccine is placed in the skin layer, over time the area will develop into a hard lump and/or scab that may rupture. Birds will peck at the lesion causing bleeding and possible mortality. Since the lesion ruptures and releases the vaccine, a high level of immunity to the vaccine does not develop in these birds.

Another complication occurs when vaccine is injected into the neck muscle. Since there is very little free space for inflammation, pressure will develop as the immune system responds to the vaccine causing damage to the muscle. The damaged muscle heals by forming scar tissue. This scar tissue can lead to birds with twisted necks, resulting in poor performance. If the needle is inserted deep enough, the needle will pass through the muscle layer and vaccine can be injected into the spinal cord. Birds usually die within a few minutes after injection into the spine.

The SQ injection site is in the mid neck region. This area has a lot of free, SQ space to accommodate swelling. If the vaccine is injected too close to the head or the body, the swelling is more noticeable since these areas can not accommodate the swelling from the immune response. Birds injected too close to the head will develop swollen heads which will impair feed consumption and vision. Injecting too low results in swelling over the back. With both, the bird will experience discomfort. Furthermore, pen mates may peck at these noticeable swellings causing more problems.

Finally, when the needle is inserted through the side, off mid line, large vessels and soft tissues may be damaged. The needle can damage vessels causing SQ hemorrhage. Furthermore, the thymus gland lies below the skin on both sides of the neck. Vaccine injected into the thymus leads to swelling and discomfort to the bird. A mass may form, with resulting pecking similar to vaccinating into the skin. Also, inserting the needle through the side can cause the needle to pass through both layers of skin. Vaccine ends up wetting the feathers on the opposite side of the neck and the bird does not develop immunity.

*If you have further questions or concerns with the subcutaneous neck injection technique, please contact Lohmann Animal Health International*