PARENTERAL IMMUNIZATION

INOCULATION TECHNIQUES FOR DOGS

(Photos courtesy of KwaZulu-Natal Rabies Project)

This document provides a simple guideline of the correct methods of injecting a vaccine into a domestic dog.

Having the correct equipment and storing the vaccines properly are critical factors. The following basic requirements and practical hints are important:

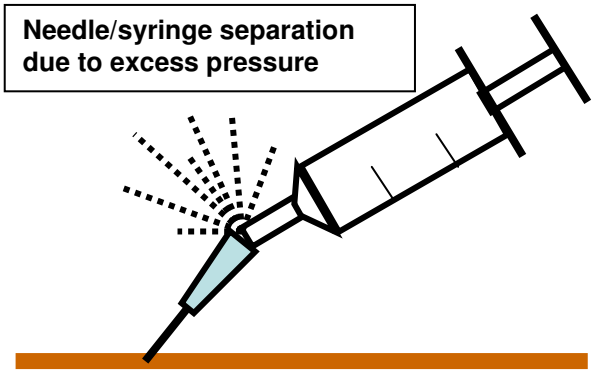
Syringes:

Multiple animals can be inoculated with the same syringe (approximately 20 doses could be administered using a single syringe) and only needles need changing between animals, which saves costs. However, it should be understood that loading 20 doses in a syringe and changing needles carry a low risk of blood-borne disease transmission.

1. A 2-3ml syringe is sufficient for the job. Practical tips are:
    a. The syringe must fit the hand comfortably.
    b. Good quality syringes should be used. Poor quality syringes tend to have a very limited life (hence cannot be used for many inoculations) and lose their markings quickly (hence accuracy is compromised). In addition, the vaccine can leak past the plunger.
2. Sterility is important and syringes whose packets are wet or broken should not be used.

Needles:

1. It is generally accepted that a 21 gauge needle is the correct size for a dog. This could however vary according to personal preference. 23 gauge needles may be used in younger dogs. Thinner needles increase the pressure and so time needed to expel the vaccine into the animal, which may compromise speed during mass vaccination campaigns.
2. A needle locking tip is useful and can prevent blow back, where pressure exerted on the plunger exceeds the speed at which the vaccine passes through the needle thus needle and syringe separate and you get a blow back or blow up and the vaccine sprays out (see picture below). There are several causes for this:
    a. Needle gauge too small.
    b. Intradermal placement of the needle instead of subcutaneous.
    c. Long needles that increase pressure.
    d. Needles that are not secured properly.



3. The best length of needle for vaccinating dogs under campaign situations is 16 mm. This length often removes many of the problems experienced by inexperienced vaccinators (i.e. blow back – see above).
4. One sterile needle should be used for each dog. Needles should be disposed of in approved sharp containers and incinerated. Replacing caps on needles should be avoided, but if necessary, it should be carried out in approved manner to avoid needle-stick injuries, e.g. by placing the cap on a firm surface and sliding needle into cap, and not by holding the cap loosely in the hand.

Storage and transportation of vaccine:
Heat, excessive cold, and exposure to sun light can render vaccines ineffective.

Vaccines should be stored in a refrigerator at + 2 to 7°C. Keep a thermometer in the refrigerator to ensure the correct temperature at all times. Make sure refrigerator doors close securely and keep them closed in case of a power failure, noting temperature when power is restored. Avoid the use of refrigerators with open freezer compartments.

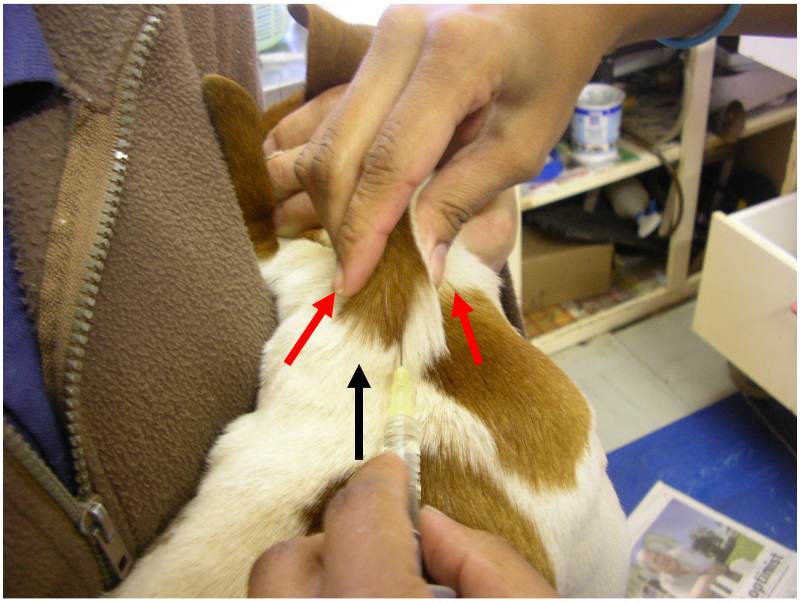
Vaccines must NEVER be frozen: excessive cold can alter the vaccine by uncoupling antigen-adjuvant complexes. Uncoupled adjuvant may collect at the bottom of a multi-dose vial, causing pain and local injection reaction and uncoupling of the antigen-adjuvant complex may reduce the efficacy of the vaccine.

During transportation to the vaccination station and during the vaccination day, vaccines should be stored in a cool box with ice packs. Good quality cooler boxes maintain temperatures better. Polystyrene or good quality foam fill plastic boxes are the best. Ensure that ice packs are packed at the top of the cool box (cool air sinks!), and place a layer of newspaper between ice packs and vials so that the vaccines do not freeze. During the vaccination day, avoid opening the cool box unnecessarily. When you need to remove the vaccines from the box, remember that a short period of exposure at ambient temperature is not problematic as long as the vaccine is not exposed to direct sunlight. It may be helpful to have one cool box for bulk storage and a smaller one for smaller vaccine quantities or for keeping a supply of frozen ice packs to supplement thawing packs during the day.

It should also be understood that vaccines taken out of cold storage and embarked in field operations should be used quickly and not repeatedly returned to the refrigerator. Reasons for this are that prolonged periods of vibration (e.g. transport for days on rough terrain) and temperature variations while the vaccine is stored in the cooler may result in gradual degradation of the vaccine (including antigen and adjuvant as well as viral integrity).

Recording vaccine doses used:
The number of doses taken to the vaccination station should be recorded in the registration book before departure and the remaining vials returned to the fridge at the end of the day should also be recorded.

Injection of vaccine:
The skin needs to be held in preparation for penetration of the needle, and although this will depend on the individual preferences of the vaccinator, the following might be helpful:



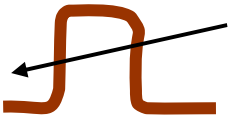
Correct Method

1. Lift skin on neck
2. Inject as shown parallel to the skin fold.

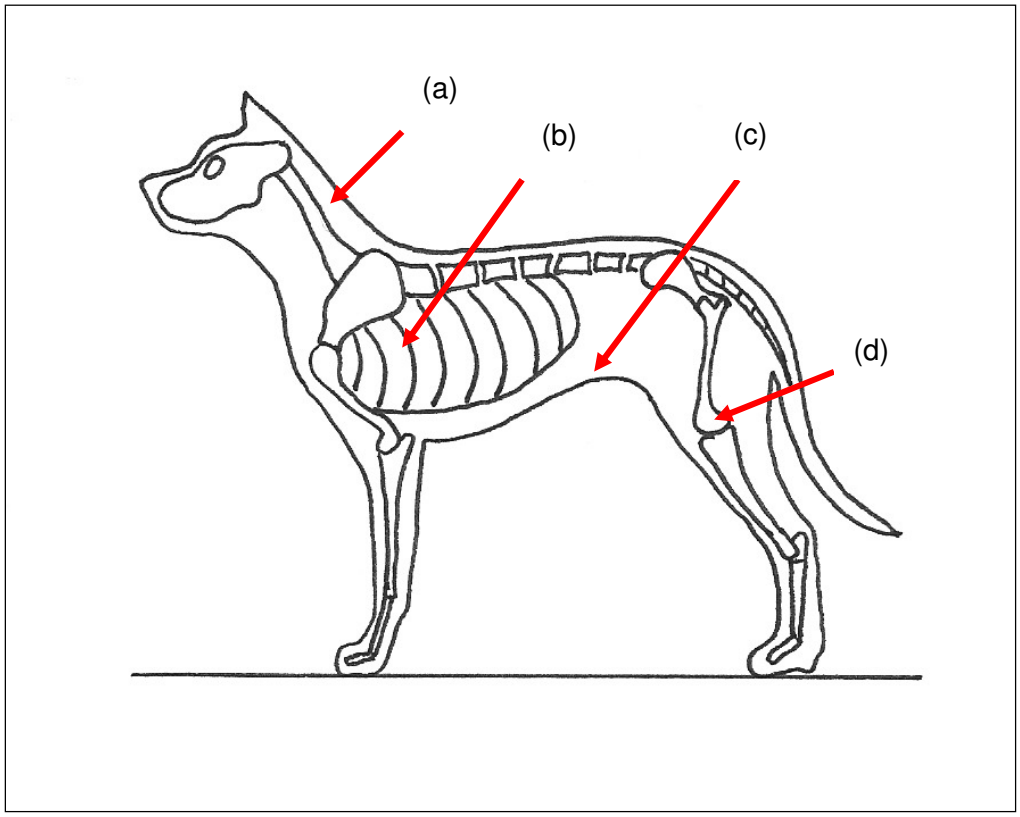
There are different opinions regarding the exact area where the vaccine must be placed on the neck, whether it should be along the midline above the vertebra or to the left or right. It is generally accepted doing it to either side of the mid line.

Incorrect Method

1. If the needle is inserted at right angles to the skin fold it is easy to push the needle through both sides.



Injection sites:



a) Neck – This area is the recommended site as the skin is loose and easy to lift. The site is well supplied by blood vessels and one should draw back on plunger to check that the vaccine is not introduced intravenously.
b) Ribs – This is often the most convenient and safest area in the campaign scenario.
c) Skin flap on the flank – This is an alternative site due to the loose skin.
d) Hind leg – Common site for an intra muscular injection. Commonly used as a “JAB” sight which can be very valuable for problem dogs. Dangers are the Ischiatic nerve, and leg bones which can be damaged during injection. Recommendations are the use of a short needle and by experienced injectors only.