



Keep vaccines working

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Vaccines are nothing more than a management tool for use by the veterinarian and animal owner to improve health and prevent disease; they work together with all the other established management practices in an operation to ensure healthy and productive animals.

Occasionally, animals that have been vaccinated are observed with disease. When this occurs, it is often thought that the animal was not protected because the vaccine was defective in some respect and thus did not induce adequate levels of immunity. In reality, there is only a very small chance that the vaccine was ineffective when it was shipped from the manufacturer.

Vaccines must at all times be properly managed if they are to perform as expected in animals. The various aspects of vaccine management should be reviewed from time to time and improvements should be made where necessary.

Use it right

It is very important to read the instructions provided by vaccine manufacturers. The product label includes important information about dosage, route of administration, mixing instructions (if applicable), storage requirements and the need for booster doses. Specific requirements and/or restrictions regarding use of the vaccine are also provided. People rarely read this material and this often leads to vaccination errors.

Typical mistakes include:

- Partial dosing is often intentionally done with cattle vaccines. This practice may be implemented to cut costs, because the user believes the recommended dose is too high for the size and age of the animal or because the vaccine instruction sheet was not read. The dose level generally is not size dependent. Partial dosing not only decreases the immune response, but also increases the risk of future anaphylactic reactions.
- Vaccines are administered by a route not indicated on the label. This vaccination error can occur as a result of faulty injection techniques or by administering vaccine at the wrong site. Many vaccines are effective only when given by way of the label-recommended route of administration.
- Antibiotics are occasionally administered at the same time as vaccines, when antibiotic use is contraindicated. This situation can be avoided altogether by simply checking the vaccine label. Most often, simultaneous use of antibiotics and vaccines, including modified live virus vaccines, poses no problem. The most likely exception is simultaneous use of antibiotics and modified live bacterial vaccines.
- Frequently, the second dose of a two-dose regimen is not administered. This practice undermines product effectiveness, because any vaccine requires a booster dose to achieve peak levels of immunity. For the vaccine to work properly, two doses must be administered as prescribed.



Handle vaccines according to instructions.

- Sometimes a vaccine is administered to animals of a species, age or sex that is out of compliance with label specifications. Some pathogens and virulence factors are species specific and thus using a vaccine in an inappropriate species may not give the desired protection. Age restrictions in vaccine instruction sheets provide insights about the age of animals enrolled in vaccine research and about the possibility of maternal antibody interference.

Handle it right

In large measure, vaccine effectiveness depends on the use of proper handling procedures before vaccine administration. Unfortunately, few areas of the vaccination process are as widely overlooked or as widely abused, and for these reasons, periodic reviews of handling procedures may be in order:

- Regular rotation of vaccine inventory provides assurances against the possibility of vaccines becoming outdated. If a vaccine is outdated, it should not be used.
- Sensitive to sunlight and heat, modified live vaccines must be protected from direct exposure and should be kept cool. Modified live vaccines should be used as soon as possible after mixing and must not be stored for future use. All contact of modified live vaccines with disinfectants must be avoided.
- Vaccines must be stored according to label directions and should not be used if they become frozen or are exposed to high temperatures.
- Neither the thawing of frozen vaccines nor the re-cooling of overheated vaccines ensures that vaccine integrity will be restored and so both actions should be avoided. When there is any doubt about proper vaccine storage, the vaccine should not be used.

Mix it right

Many mistakes in vaccine handling occur when the vaccine is used. Mistakes at this time can not only decrease vaccine effectiveness, but also may lead to unwanted reactions and injection site problems.

Summary

Multiple factors are involved in the generation of a protective immune response in vaccinated animals. Whenever a disease outbreak occurs in vaccinated animals, careful consideration should be given to all of the issues discussed in this document. Training and communication regarding proper vaccine handling can eliminate potential areas of perceived vaccine failure. Commitment to such a programme not only leads to understanding the current problem, but also to prevent similar problems from occurring in the future. Ask your herd veterinarian for more details on the proper handling and administration of vaccines. [UM](#)