

Rhinovax®

Vaccination of wildlife is important to control the many infectious diseases which could have both economic and public health implications. Important disease often seen in Namibia include a range of clostridium infections as well as anthrax.

The Rhinovax® vaccine was specifically formulated for the prevention of anthrax as well as a wide variety of these clostridium infections in species such as the white rhino, buffalo, nyala, sables, roans and lions.



Clostridium

Clostridia is a genus of gram-positive bacteria, which have bot a living (vegetative form) or occur as dormant spores. These bacteria normally occur in the soil and make up part of the normal intestinal flora in animals. They cause disease when optimal conditions are created, for example a wound being contaminated with *Cl. Tetani* resulting in tetanus, or where a “green flush” after the first rains causes an imbalance in intestinal bacteria with *Cl. Perfringens* type A, dominating and causing “rooi derm” (bacterial enterotoxaemia – severe fatal haemorrhagic diarrhoea). The various Clostridium species can cause several diseases, such as:

- 🐾 Bacillary haemoglobinuria – Red water disease; acute, infectious, toxaemic disease caused by *Clostridium haemolyticum*.
- 🐾 Big head (Dikkop); an acute, infectious disease, caused by *Clostridium novyi*, *Cl. sordellii*, and rarely *Cl. chauvoei*, often seen in young rams play fighting and head butting
- 🐾 Blackleg; an acute, febrile, highly fatal disease caused by *Clostridium chauvoei*.
- 🐾 Malignant oedema; an acute, generally fatal toxaemia¹ and is usually caused by *Clostridium septicum*. Additional clostridia implicated in wound infections include *Cl. chauvoei*, *Cl. perfringens*, *Cl. novyi*, and *Cl. sordellii*.
- 🐾 Infectious necrotic hepatitis; acute toxaemia caused by *Clostridium novyi* type B.
- 🐾 Botulism; this is not an infection but an intoxication and results from ingestion of the toxin. The toxin is produced in carcass remnants and is ingested when animals start chewing bones etc. *Clostridium botulinum* types A-G.
- 🐾 Cl. perfringens infection; *Cl. perfringens* produces potent exotoxins². Five types have been identified: A; B; C; D; E. Type A is most common.
- 🐾 Tetanus toxemia is caused by a specific neurotoxin produced by *Clostridium tetani* in necrotic tissue.

We will soon upload an article with more detailed information on clostridium infections in wildlife.

¹ presence of toxins in the blood

² toxins secreted by bacteria

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Anthrax

Anthrax is a usually per acutely fatal infectious disease caused by the bacteria *Bacillus anthracis*. It affects both humans and domestic as well as wild animals around the world. Ecologists consider anthrax to be a population regulator in large conservation areas, but the disease can be devastating on a game farm.

For more detailed information on anthrax, read '[Anthrax in Wildlife](#)' on our website.



Figure 1 White rhino that died of anthrax, showing the characteristic bloody discharges from the nostrils and the eyes. © U. Tubbesing



Rhinovax

Rhinovax® (Figure 2) is a relatively new vaccine, and prepared by Design Biologix in Pretoria, South Africa. It consists of a combination of inactivated:

- 🐾 *Clostridium perfringens* type A
- 🐾 *Clostridium botulinum* types C and D
- 🐾 *Clostridium novyi* types A and B
- 🐾 *Clostridium chauvoei*
- 🐾 *Clostridium septicum*
- 🐾 *Clostridium sordelli*
- 🐾 *Bacillus anthracis*

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Figure 2 Rhinovax®. © M. Bijsterbosch

Rhinovax® is still in an experimental phase, of development, however, both laboratory research results as well as clinical experiences are very positive. We have seen multiple anthrax related white rhino mortalities on a game farm in Namibia. These mortalities persisted in spite of multiple vaccinations with commercially available anthrax vaccines used in cattle, but stopped once we started vaccinating the rhinos with Rhinovax®. We now strongly recommend all rhinos to be annually vaccinated with this vaccine!

All rhinos with no known vaccination history should receive the Rhinovax® vaccine at the soonest opportunity. A booster vaccination should then be given three to four weeks later. After that, the animals should be vaccinated annually. It is advisable to vaccinate the animals in the dry season because they tend to converge around water points (making vaccination from a car feasible) and because a “green flush” following the first rains may alter the bacterial balance in the gut, predisposing the animals to some of the highly fatal clostridial diseases (rooi derm).

As is the case with all vaccines, it is essential that Rhinovax® is kept cold at all times (also the loaded darts!). Heat exposure will negatively affect the effectiveness of the vaccine. Before the vaccine is administered or placed into a dart, the bottle must first be shaken gently, to adequately mix the various components of the vaccine. The vaccine is then introduced into a new, clean dart at a dosage of 2 ml per animal (irrespective of body size) and administered intramuscular (IM).

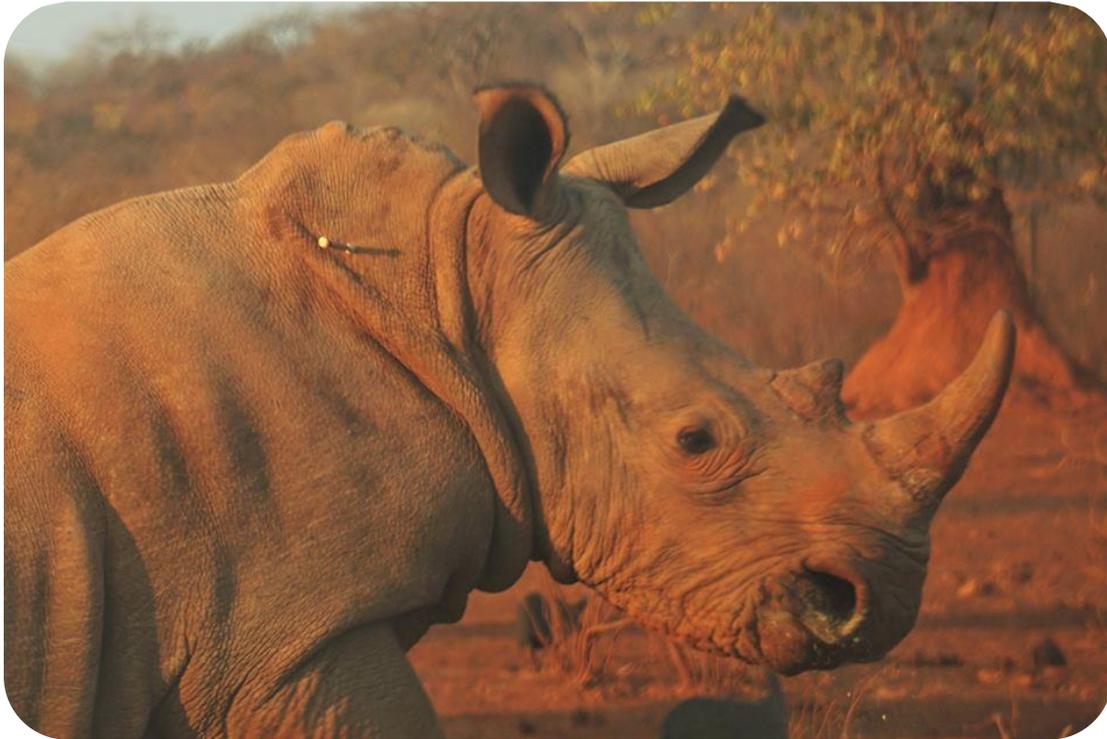
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Following vaccination some animal (esp. rhino) may develop a localised swelling or abscesses. This usually resolves spontaneously within a few weeks. If not, a veterinarian may have to be consulted.



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Figure 3 When we dart rhinos from the car, we prefer to dart in the hump area, as this is the body area with the softest and thinnest skin. When darting from a helicopter, we usually aim for the rump area. © M. Bijsterbosch

Please note that nowadays Rhinovax® must be ordered with a veterinary prescription (at least in Namibia). For more information feel free to contact us.

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