Diseases

Following is a list of reported rhinoceros diseases; tuberculosis, gastrointestinal torsion and impaction, encephalomyocarditis infection, oral and skin ulcers, haemolytic anemia, fungal pneumonia, encephalomalacia, tissue accumulation of iron, creosote toxicosis, skin problems, mouth and nasal bleeding polyps, nail and foot problems, and leptospirosis.

Gastrointestinal torsion and impaction: gastrointestinal torsion and impaction have been reported in Black rhinos with signs similar to those of colic in the horse. Gastric ulcers are commonly seen in the post-mortem of old rhinos and in ill rhinos. Protective medication should be considered in chronically ill individuals.

Encephalomyocarditis infection: death following infection with encephalomyocarditis virus has been noted in two Black rhinos. Vaccination for the equine encephalitides is not routinely practiced.

Haemolytic anemia, idiopathic haemorrhagic vasculopathy syndrome (IHVS): the initial signs of haemolytic anemia or IHVS are usually limited to depression, sometimes lameness followed by hemoglobinuria and bleedings from nose and mouth. The progression of the cases is usually acute, death often occurring within 48 hours of the initial signs. Inducing this proposed multifactorial disease different factors as viral, bacterial, vitamin deficiency and stress are discussed. Current research indicates that the red blood cell (RBC) of the Black rhino is inherently energy deficient and thus unstable and susceptible to haemolysis. The diet of Black rhinos is suspected of attributing to the problem of haemolytic anemia.

Hemolysis: due to the predilection to hemolysis in the Black rhino, Dr Donald Paglia of the University of California at Los Angeles has suggested avoiding exposing them to drugs and compounds that are known to induce hemolysis in enzyme-deficient human populations. All of the following compounds should be avoided.

Pharmaceutical compounds: antimalarials, sulphonimides, sulfones, nitrofurans, acetanilide, chloramphenicol and some vitamin-K analogs

Chemical compounds: wood preservatives, rodent-control poisons and other pesticides, strong cleansers particularly those containing naphthalene

Food: favabeans

Other drugs have been associated with hemolysis but with an uncertain or doubtful role. These drugs include aspirin, phenacetin,
aminopyrine, acetaminophen, probenecid, vitamin C, dimereaprol, p-aminosalicylic acid and 1-DOPA. Any exposure to creosote should be avoided. In view of the hemolysis induced in horses by the consumption of certain oak and red maple leaves, as well as wild onions and members of the Brassica (kale) family in other domestic species, consumption of these species should be avoided. A long term treatment with chloramphenicol in Black rhinos had no impact on urine quality or a haemolysis. Continuous vitamin E and C supplementation is recommended as prophylaxis especially during the winter.

Salmonella: Salmonella has been reported to cause both enteritis and sepsis in Black rhinos. Treatment has been attempted in several cases with parenteral antibiotics and fluids but has not often been successful. Pseudomonas ssp. and E. coli have been reported as the cause of enteritis. Pseudomonas pyocyanea, Campylobacter coli and coliform infections have been reported in hand-reared rhinos. Yersinia pseudotuberculosis has also been reported in young, hand-reared rhinos to cause enteritis and mesenteric lymph node enlargement.

Leptospirosis: leptospirosis has been associated with some cases of primary hemolytic anemia. In at least one Black rhino leptospirosis caused renal compromise in addition to haemolytic anemia and responded to treatment with oral ampicillin (Fowler and Millar, 2003). The only vaccination routinely recommended is the biannual administering of Black rhinos with either a 5-way leptospiral bacterin (containing Leptospira interrogans serovar icterohaemorrhagiae, – grippotyphosa, – pomona, – canicola, – hardjo), or a 6 way bacterin containing a 5-way leptospiral bacterin and Leptospira interrogans serovar bratislava. It should be noted that injection site abscesses are relatively common (5 to 10%).

Clostridial disease: although there are only two reports of clostridial disease (one case of tetanus and one of Clostridium sordelli) vaccination for these diseases may be considered. There is debate over whether is recommended to vaccinate or not for clostridial disease.

Tuberculosis: infections with both Mycobacteria tuberculosis and Mycobacteria bovis have been reported in captive rhinos. The presentation of tuberculosis is emaciation, although coughing and dyspnœa may occur before death. At post mortem testing examination the respiratory system is most commonly affected with both focal and diffuse granulomes. Pre mortem testing may be attempted with intradermal tuberculin in the eyelid, tail fold, or the
skin at the base of the ear or pinna. Comparative testing in the tail fold, repeated ten days later in the neck if a suspect reaction occurs in the tail is recommended (Fowler and Millar, 2003). In a male Black rhino at Berlin zoo the ElephantTB STAT-PAK Assay (CHEMBIO Diagnostic Systems, Medford NY, USA) antibody test kit was used after collecting blood with the help of assassin bugs (Ochs, 2013 unpublished).

**Rabies:** it would be anticipated that all rhino species are susceptible to rabies. Although rabies has been reported in an Asian rhino in India the lack of subsequent reports suggests that this is not a common occurrence.

**Fungal pneumonia:** fungal pneumonia had been reported in at least nine Black rhinos. Nearly all the cases have involved infection with *Aspergillus sp.*, and at least five of these have followed corticosteroid therapy, sometimes even relatively low doses administered over short treatment periods. Fungal pneumonia should be considered in all Black rhinos with signs of respiratory illness.

**Encephalomalacia:** encephalomalacia has occurred in four young (two months to two years of age) female Black rhinos. In three cases, it presented as acute and profound stupor. Two of those calves died within four days of onset, but a third lived and became a “dummy” calf that was later euthanized. The fourth rhino, a two year old, became hyper excitable and then depressed. The histological lesions were those of profound leucoencephalomalacia, and the etiology remains unknown. These cases emphasize the importance of collecting brain and central nervous system tissue on all rhino necropsies.

**Tissue accumulation of iron:** adult Black rhinos appear to accumulate iron, particularly in their livers. These lesions are not those of a primary iron-storage disease, but similar to those of chronic iron exposure. Further studies may help determine whether the iron results from chronic sub clinical haemolysis or from dietary causes.