VII Veterinary Care

Veterinary Care
The following is a detailed chapter describing some of the major clinical diseases found in cotton-top tamarins. Much of this information has been derived from studies of tamarins in research laboratories and is a valuable reference for managing cotton-top tamarins in zoos.

Vaccinations (measles and rabies; based on the specific risk factors at each institution)

Tuberculosis
This disease is very uncommon in callitrichids and New World monkeys are relatively resistant. *Mycobacterium tuberculosis* may cause a slowly progressive respiratory disease. All nonhuman primates should be tested systematically on an annual basis and more frequently if warranted by the
risk of exposure. On occasion, radiographs may aid in the diagnosis of well-developed cases by the identification of lesions. Euthanasia is generally the recommended procedure for positive individuals except in the case of extremely rare or valuable animals and clinicians should use appropriate judgment in determining mode of action. Regulations may vary and state or federal institutions should be consulted. Isoniazid is the common form of treatment for tuberculosis in humans and multiple agent therapy may be advised.

Viral
The Regional Reference Center for Simian Viruses of the Southwest Foundation for Research and Education located in San Antonio, Texas has been established for the investigation of nonhuman primate viruses and may be a useful resource for the identification of viral agents.

Morbillivirus
Measles (rubeola) is a highly contagious virus which is spread through aerosolization, entering the host through respiratory or conjunctival mucosa. Fatal infection and clinical disease associated with high morbidity has been reported in _S. oedipus_ (Levy and Mirkovic, 1971). This outbreak in a callitrichid colony resulted in 326 deaths. Clinical signs included
lethargy, swollen eyelids, mucous nasal discharge, rhinorrhea, facial edema and maculopapular exanthema on the lips and skin. Death occurred within 8-18 hours following initial signs of disease. Yule clinical signs and histopathology can aid in the diagnosis of rubeola, isolation of the virus, serology or immunocytochemistry are necessary for ruling out other paramyxoviruses and making a definitive diagnosis (Potkay, 1992; Lowenstine, 1993). There were not any significant gross post mortem findings. The main histopathological finding observed at necropsy was interstitial pneumonia. Giant cells containing eosinophilic intranuclear inclusion bodies were observed. Large monocytes were seen in the lung parenchyma, some containing intranuclear inclusion bodies. Warthin-Finkeldey (W-K) type giant cells were present in the mesenteric lymph nodes, spleen, lungs and colonic lymphoid tissue. Animals surviving the infection were shown to have significant levels of hemagglutination inhibition antibody (HIA) against measles. Tamarins that were not exposed to the virus were negative for viral antibodies. See Lowenstine (1993) for an in depth discussion of measles virus infection in nonhuman primates. Both human measles vaccine and human gamma globulin, which is generally high in rubeola antibodies, can be used prophylactically. Richter (1984) states that the use of inactivated
vaccine and human IgG are recommended for use in callitrichid colonies. Vaccinating for measles does not appear to be standard protocol at zoological parks. However, clinicians in many laboratory institutions choose to vaccinate callitrichid colonies based on risk of exposure (D. Lee-Parritz, pers. comm.).

Clinicians should make an educated decision of whether or not to vaccinate tamarins for measles based on the conditions at each individual institution. Effective protection is conferred by both killed and modified live vaccines (Lorenz & Albrecht, 1980). Ott (1980), states that vaccination of marmosets with live vaccines is not recommended.

**Lyssavirus (Rabies)**

*S. oedipus* is susceptible to rabies and there is evidence to suggest that they may contract the disease from modified live vaccines (Potkay, 1992). The form seen in monkeys is usually of the paralytic type so they generally bite only if they are agitated and transmission between monkeys and humans is very rare (Ott, 1980). The efficacy of killed vaccines are not known and human vaccines are not effective in nonhuman primates (Ott, 1980). However, INIRAB vaccine has been used successfully in a wide variety of species which suggests that it would probably be effective in nonhuman primates. Vaccination with
killed vaccine is recommended for monkeys with high risk of exposure. Clinicians must evaluate the situation at individual institutions where tamarins are housed. Animals housed in open cages outdoors have more risk of being exposed. Possibly the greatest potential for transmission is from bats which are small enough to access open-bar cages. The prevalence of rabies in small rodents is extremely low so they most likely do not pose a risk.