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# Important Diseases of Rehabilitant Orangutans

## Clinical Aspects of Epidemiology, Diagnosis and Treatment

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Within the scope of orangutan medicine, there are many gaps in our knowledge regarding specific diseases of concern, including the risk factors, best diagnostic methods and treatment outcomes. Published literature on many of these diseases is sparse, and mostly in the form of individual case reports from zoos; diagnostic and treatment protocols often vary widely between reports, and it is difficult to assess risk factors, validate diagnostics or evaluate treatment methods from such case studies.

The Central Kalimantan Orangutan Reintroduction Project of the Borneo Orangutan Survival Foundation at Nyaru Menteng (henceforth BOS-NM) holds the largest population of captive orangutans in the world, and associated health and veterinary records over a number of years. Analysis of the data contained within the clinic records, along with some investigative procedures, could fill in a number of these knowledge-gaps, and contribute to the health and welfare of captive orangutans not only within BOS-NM, but across the world.

To this end, we are summarising retrospectively the incidence of orangutan diseases at BOS-NM and establish normal reference ranges for body-weight and blood results for the population, which can act as a baseline for analyses, as well as evaluate current diagnostic methods in more detail for the following important diseases:

### Section A: Common conditions of the gastro-intestinal tract

- *Salmonellosis:*  
Validation of TUBEX® as a diagnostic test for typhoid and evaluation of the subspecies of *Salmonella* spp. in the population; analysis of risk factors for typhoid based on TUBEX® diagnosis.
- *Strongyloidiasis:*  
Analysis of prevalence and risk factors; assessment of efficacy of anthelmintic medication and evidence of drug resistance; evaluation of repeated sampling to improve diagnostic sensitivity in a clinical setting.

### Section B: Common conditions of the respiratory tract

- *Non-specific respiratory disease:*  
Analysis of incidence and risk factors for pneumonia, bronchitis and upper respiratory tract infections; assessment of course of disease and response to treatment.
- *Air sacculitis:*  
Analysis of incidence and risk factors; evaluation of partial marsupialisation as a surgical technique; analysis of bacteria isolated from infected cases, antibiotic resistance and course of disease.

### Section C: Conditions with high potential mortality

- *Tuberculosis:*  
Evaluation of the comparative intradermal tuberculin test using Avian and Bovine tuberculin as a diagnostic test for non-clinical TB in orangutans.
- *Malaria:*  
Analysis of incidence, risk factors and at-risk groups; evaluation of course of disease; assessment of response to treatment.

This project is performed in cooperation with the veterinary team of the Borneo Orangutan Survival Foundation and with endorsement from the Orangutan Species Survival Plan. We are grateful to our sponsors for their support of this important work, and look forward to sharing our findings.

