## COWPOX VIRUS

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<th>ANIMAL GROUP AFFECTED</th>
<th>TRANSMISSION</th>
<th>CLINICAL SIGNS</th>
<th>FATAL DISEASE ?</th>
<th>TREATMENT</th>
<th>PREVENTION &amp; CONTROL</th>
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<tr>
<td>Macaques Marmosets</td>
<td>Direct contact</td>
<td>In nonhuman primates: vesicopapules, scabs, facial swellings, gingivitis</td>
<td>Rare in humans and non-human primates</td>
<td>Normally self-limiting disease. Treat secondary (bacterial) infection</td>
<td>Eradicate wild rodents, especially rats</td>
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<tr>
<td>Elephants Rhinoceroses Zebras Okapis Llamas Alpacas (Cats)</td>
<td></td>
<td>In exotic herbivores: pustules and swellings in skin and gingiva, pox lesions on vulva, penis, trunk, anal mucosa, gingiva and tongue, detached sole horn, stillbirth</td>
<td>Depends on severity of disease and secondary infections Can be severe in young animals</td>
<td>Antibiotics (secondary bacterial infection), supportive measures</td>
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<td>Hosts: wild rats, voles and mice</td>
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Fact sheet compiled by Marno Wolters, Artis Zoo Amsterdam & Hester van Bolhuis, AAP Sanctuary for Exotic Animals, Almere the Netherlands

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Fact sheet reviewed by Manfred Brack, Byron Martina

**Susceptible animal groups**
Non-human primates, cats, cows, exotic herbivores (giraffes, okapis, elephants, rhinos, llamas, alpacas, edentates) and wild/exotic cats
Endemic amongst rats, voles and mice

**Causative organism**
Cowpox virus (genus Orthopox)

**Zoonotic potential**
Can spread from rats, mice and other infected animals to humans

**Distribution**
Presumed to be widely spread amongst wild rodents in Western Europe

**Transmission**
Direct contact, biting

**Incubation period**
NHP: 1 week  Herbivores (elephants): 15-22 days

**Clinical symptoms**
NHP: facial swellings, gingivitis, vesicopapules, scabs, secondary infections (gangrenous inflammation of the subcutis, haemorrhagic enteritis).
Herbivores: pustules and swellings in skin and gingiva, pox lesions on penis, vulva, trunk, anal mucosa, eyelids, lips, tongue, gingiva; stillbirth, fever, arthritis. Secondary infections.

**Post-mortem findings**
Intracytoplasmatic inclusion bodies in epithelium cells of the skin and affected tissues

**Diagnosis**
Histology, serology (EIA, Int. EIA, FACS, Int. FACS), PCR, TEM

**Material required for laboratory analysis**
Tissue samples, serum, nose swabs, swabs of mucous membrane of the cheek (NHP)
### Relevant diagnostic laboratories
Institute of Virology, Erasmus Medical Centre, Rotterdam, the Netherlands
German Primate Center, Göttingen, Germany, dep. Infektionspathologie

### Treatment
In humans and non-human primates: self-limiting. Use antibiotics and NSAIDs to treat secondary infections.
In herbivores: can be life-threatening due to massive cycles of virus development. Use antibiotics, NSAIDs, and other supportive measures.

### Prevention and control in zoos
Control wild rodents (pest control). Separate infected animals to stop the disease spreading.

### Suggested disinfectant for housing facilities

### Notification
Health authorities should be informed.

### Guarantees required under EU Legislation

### Guarantees required by EAZA Zoos

### Measures required under the Animal Disease Surveillance Plan

### Measures required for introducing animals from non-approved sources

### Measures to be taken in case of disease outbreak or positive laboratory findings

### Conditions for restoring disease-free status after an outbreak
No new cases 4 weeks after the last infection.

### Contacts for further information
Prof. dr. A.D.M.E. Osterhaus, Prof. dr. G. M. Dorrestein, Dr. B. Martina

### References