

## PNEUMOCYSTOSIS

<b>ANIMAL GROUP AFFECTED</b>	<b>TRANSMISSION</b>	<b>CLINICAL SIGNS</b>	<b>FATAL DISEASE ?</b>	<b>TREATMENT</b>	<b>PREVENTION &amp; CONTROL</b>
All nonhuman primate genera	Aerogenously	Asymptomatic or dyspnea, anorexia, weight loss	Yes (in association with SIV-infections)	Trimethoprim	<i>In houses</i>  <i>in zoos</i>

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<b>Susceptible animal groups</b> All nonhuman primate genera.	
<b>Causative organism</b> <i>Pneumocystis carinii</i> . (Unculturable fungus between ascomycetes and basidiomycetes).	
<b>Zoonotic potential</b> Yes.	
<b>Distribution</b> World-wide.	
<b>Transmission</b> Aerogenously.	
<b>Incubation period</b> In experimentally infected nude rats > 8 weeks.	
<b>Clinical symptoms</b> Often asymptomatic, in severely infected monkeys dyspnea, anorexia, weight loss.	
<b>Post mortem findings</b> Petechial and ecchymotic pulmonary haemorrhages, extensive mononuclear or plasma cellular interstitial pneumonia.	
<b>Diagnosis</b> Histopathology (Methenamine-silver-staining (Grocott), Immunohistochemistry, PCR.	
<b>Material required for laboratory analysis</b> Pulmonary tissues.	
<b>Relevant diagnostic laboratories</b>	
<b>Treatment</b> Co-trimoxazole (trimethoprim ): 15 mg / kg / day; dapsone.	
<b>Prevention and control in zoos</b>	
<b>Suggested disinfectant for housing facilities</b>	
<b>Notification</b>	
<b>Guarantees required under EU Legislation</b>	
<b>Guarantees required by EAZA Zoos</b>	
<b>Measures required under the Animal Disease Surveillance Plan</b>	
<b>Measures required for introducing animals from non-approved sources</b>	
<b>Measures to be taken in case of disease outbreak or positive laboratory findings</b>	

**Conditions for restoring disease-free status after an outbreak****Experts who may be consulted****References**

1. Baskerville, A., A. B. Dowsett, R. W. Cook, M. J. Dennis, M. P. Cranage, and P. J. Greenaway. 1991. *Pneumocystis carinii* pneumonia in simian immunodeficiency virus infection: immunohistological and scanning and transmission electron microscopical studies. *J. Pathol.* 164: 175-184.
2. Brack, M. 1987. *Agents Transmissible from Simians to Man*. Springer, Berlin, Germany.
3. Hughes, W. T. 1989. Animal models for *Pneumocystis carinii* pneumonia. *J. Protozool.* 36: 41-45.
4. Kobayashi, R., I. Sakakibara, T. Furuta, T. Kikuchi, and Y. Yoshikawa. 1999. Opportunistic *Pneumocystis carinii* infection in red-bellied tamarins (*Saguinus labiatus*). *Exp. Anim.* 48: 55-57.
5. Laakkonen, J. 1998. *Pneumocystis carinii* in wildlife. *Int. J. Parasitol.* 28: 241-252.
6. Malin, A. S., L. K. Z. Gwanzura, S. Klein, V. J. Robertson, P. Musvaire, and P. R. Mason. 1995. *Pneumocystis carinii* pneumonia in Zimbabwe. *Lancet* 346: 1258-1261.
7. Matsumoto, Y., M. Yamada, T. Tegoshi, Y. Yoshida, S. Gotoh, J. Suzuki, and K. Matsubayashi. *Pneumocystis* infection in macaque monkeys: *Macaca fuscata fuscata* and *Macaca fascicularis*. *Parasitol. Res.* 73: 324-327.
8. Pohlmeier, G., and F. Deerberg. 1993. Nude rats as a model of natural *Pneumocystis carinii* pneumonia: Sequential morphological study of lung lesions. *J. Comp. Pathol.* 109: 217-230.
9. Stringer, J. R. 1993. The identity of *Pneumocystis carinii*: Not a single protozoan, but a diverse group of exotic fungi. *Infect. Agents Dis.* 2: 109-117.
10. Vogel, P., C. J. Miller, L. J. Lowenstine, and A. A. Lackner. 1993. Evidence of horizontal transmission of *Pneumocystis carinii* pneumonia in simian immunodeficiency virus-infected rhesus macaques. *J. Infect. Dis.* 168: 836-843.