### Epstein-Barr Virus (Human Herpesvirus 4), EBV-Related Lymphocryptoviruses

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<th>Animal Group(s) Affected</th>
<th>Transmission</th>
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<td>EBV affects primarily humans</td>
<td>Direct contact through saliva</td>
<td>EBV in man mostly asymptomatic, but can manifest as Infectious Mononucleosis, Burkitt’s lymphoma, nasopharyngeal carcinoma, hairy leukoplakia, immunodeficiency-associated lymphoproliferative disease. In other primates, lymphoproliferative disorders are presented. EBV-related viruses: usually asymptomatic, may cause lymphoproliferative disorders.</td>
<td>Fatal in cases of malignant tumors or lymphomas.</td>
<td>None reported.</td>
<td>Ubiquitous.</td>
<td>Yes, possible zoonanthroponotic disease.</td>
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<td>EBV-related viruses affect a wide range of NHP (Old World monkeys, apes, some New World species)</td>
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<td>Lymphocryptovirus has been associated with carcinomas of sea lions.</td>
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**Fact Sheet compiled by:** Sam Rivera; updated by Jan Ramer  
**Sheet completed on:** 1 June 2011; updated 23 July 2013  
**Fact Sheet Reviewed by:** Sam Rivera; Kevin Brunner

**Susceptible animal groups:**  
EBV: Pongidae  
EBV-related simian viruses: Old and New World NHP.

**Causative organism:** Epstein-Barr virus *(Human herpesvirus 4)*, EBV-related lymphocryptoviruses (LCV): *Papiine herpesvirus 1, Cercopithecine herpesvirus 14, Macacine herpesvirus 4, Panine herpesvirus 1, Pongine herpesvirus 2, Gorilline herpesvirus 1, Callitrichine herpesvirus 3.*

**Zoonotic potential:** Yes

**Distribution:**  
EBV in man Worldwide  
EBV-related LCV found in most old world NHP and some new world NHP.
**Incubation period:** Variable

**Clinical signs:** These diseases are presented mainly as asymptomatic infections. EBV in man can cause infectious mononucleosis, nasopharyngeal carcinomas, Burkitt’s lymphoma, non-Hodgkin’s lymphoma; in great apes can possibly cause malignant lymphomas; in macaques axillary/inguinal lymphadenopathy, similar to EBV induced infectious mononucleosis in humans without pharyngitis and splenomegaly, B-cell lymphoma, epithelial hyperkeratotic lesions on oral cavity, esophagus, chest, hands, and genitalia; in baboons malignant lymphoma; in orangutan leukemia; in gorilla B-cell lymphoma; in common marmoset B-cell lymphoma.

**Post mortem, gross, or histologic findings:** Lymphoproliferative disorders.

**Diagnosis:** Virus isolation, serology, PCR, Histopathology, Immunohistochemistry.

**Material required for laboratory analysis:** Serum, whole blood, lymph nodes, spleen, bone marrow.

**Relevant diagnostic laboratories:**
- Pathogen Detection Laboratory, California National Primate Research Center, Road 98 & Hutchison, University of California
  - Davis, California 95616
  - (530) 752-8242
  - Fax: (530) 752-4816
  - PDL@primate.ucdavis.edu
  - http://pdl.primate.ucdavis.edu
- BioReliance, Serology/PCR Laboratories
  - 14920 Broschart Rd.
  - Rockville, Maryland 20850
  - (301) 610-2227
  - (310) 610-2587
  - ahs@bioreliance.com
- Virus Reference Laboratories, Inc.
  - 7540 Louis Pasteur Road
  - San Antonio, Texas 78229
  - (887) 615-7275
  - Fax: (210) 615-7771
- Zoologix Inc.
  - 9811 Owensmouth Avenue, Suite 4
  - Chatsworth, California 91311-3800
  - 818-717-8880
  - Fax: 818-717-8881
  - info@zoologix.com

**Treatment:** None reported.

**Prevention and control:** Ubiquitous in captive collections.

**Suggested disinfectant for housing facilities:** Lipid solvents, soap, UV-light, heat.

**Notification:** None at this time.

**Measures required under the Animal Disease Surveillance Plan:** None at this time.

**Measures required for introducing animals to infected animal:** Ubiquitous in captive collections.
**Conditions for restoring disease-free status after an outbreak:** Latent infections preclude establishment precludes a disease-free status after an outbreak.

**Experts who may be consulted:**
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**References**