**Blastocystis**

**General description**
*Blastocystis* is a common anaerobic intestinal parasite that was first described in the early 1900’s. Despite this long history, there are large gaps in knowledge about the organism and the issue of pathogenicity remains a subject of some debate. *Blastocystis* identified in humans is referred to as *Blastocystis hominis* while *Blastocystis sp* is used for isolates from other animal hosts. However, recent molecular studies suggest that there is considerable antigenic and genetic heterogeneity within *B. hominis* and *Blastocystis sp*. *B. hominis* lives in the colon and has several morphological forms, including a fecal cyst that is believed to be the infective form.

**Human health effects**
*B. hominis* is probably the most common protozoan detected in human faecal samples worldwide. Infection occurs in both immunocompetent and immunocompromised individuals. Reported prevalence ranges from 2-50% with the highest rates reported for developing countries with poor environmental hygiene. Infection appears to be more common in adults than in children. However, one study showed that peak infection occurs at 10 years of age and then later in life. Pathogenicity of *B. hominis* is controversial because of the non-specific symptoms and prevalence of asymptomatic infections. Some case-control studies of individuals with and without symptoms show no difference in the prevalence of *B. hominis*. Symptoms attributed to *B. hominis* include watery or loose stools, diarrhea, abdominal pain, anal itching, weight loss and excess gas. Duration of infection is not well known, some infections can last for weeks, months or years. In some patients, the symptoms resolve even though *Blastocystis* can still be detected in stools. It has been suggested that *B. hominis* may be a commensal organism that becomes pathogenic when the host is immunosuppressed, malnourished or has other infections.

**Source and occurrence**
The source of human infectious *Blastocystis* is uncertain. *Blastocystis* occurs in many animals, including insects, reptiles, birds and mammals. Some evidence suggests that *Blastocystis* may not be host specific and that animal-to-human transmission is possible. A recent survey in Malaysia showed that animal handlers and abattoir workers were at greater risk of infection than a control group of high-rise city dwellers. *Blastocystis* is excreted as a cyst which could be environmentally persistent but there is no data on its survival in the environment. *Blastocystis* has been identified in sewage samples.

**Routes of exposure**
The routes of transmission have not been established but the faecal-oral route is considered to be the main mode of transmission. Studies of transmission between mice indicate infection after oral inoculation of fecal cysts. Water and foodborne transmission have been suggested but not confirmed.
Significance in drinking-water
The role of drinking-water transmission has not been established but identification in sewage samples suggests potential for this to occur. Within a WSP control measures focused on prevention of source water contamination by human and animal waste should reduce potential risks. There is no information on the removal and/or inactivation of Blastocystis by water and wastewater treatment processes. The fecal cyst form of the organism has been reported to be about 3 to 6 micrometers in diameter so it is likely to be removed by conventional granular media-based filtration methods in a similar manner to Cryptosporidium oocysts that are 4 to 6 micrometers in diameter. Sensitivity to disinfection is unknown but as for other protozoa the cyst form may be reasonably resistant. As a result E.coli (or, alternatively, thermotolerant coliforms) should not be relied upon as an index of the presence/absence of Blastocystis in drinking-water sources.

Selected bibliography