

Genital chlamydia infection causes complications such as pelvic inflammatory disease and tubal factor infertility, with some women being more susceptible to these conditions than others. However, the effect of circadian rhythms on chlamydia pathogenesis is not known. Using a genital chlamydia mouse model, we had previously shown that the time of day of chlamydia infection was important in determining the extent of chlamydial infectivity and pathogenesis. There is a need to verify if these differences in disease outcome is under circadian or diurnal control. To that end, we placed mice under constant dark conditions (24 hours dark), which is normally used in proving that changes associated with night or day are indeed truly circadian. In addition, we had a control group that included mice placed under normal 12/12 light and dark cycle. Mice were then infected intravaginally with *Chlamydia muridarum* either at 10:00 am and 10:00 pm. Infectivity was monitored by periodic vaginal swabbing, and blood/vaginal washes were collected for host immunologic response assessments. The reproductive tracts of the mice were examined for pathological changes. Results showed that in mice that were kept in constant darkness, mice infected during the day, shed significantly more chlamydia and had more pathology compared with mice infected at night. This result agrees with our previous study and in addition, the results from the control group also verified our previous results. These results suggest that the effect of time of day of chlamydial infection and its associated pathologies are under circadian and not diurnal control. This confirms a possible association between chlamydia infection and its complications with the host circadian rhythm. We are in the process of confirming this results using mice with their circadian gene (*Bmal1* in this case) knocked out.