

# Changing the biological clock makes people more susceptible to infection

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Recent research shows that: " *We are more susceptible to infections at certain times of the day because the body's biological clock affects the ability to replicate and transmit viruses between cells. Article This explains why night shift workers often have health problems .* "



Mice are more susceptible to infections at certain times of the day. So are people like that?

A new study from the University of Cambridge shows that: " *We are more likely to get infections at certain times of the day because our biological clock affects the likelihood of viruses replicating and spreading. transfer between cells* ". These findings were taken to the US National Academy of Sciences to explain that: " *Why shift workers - who often break the biological clock of the body - are vulnerable to health problems such as infections and chronic diseases* ".

When viruses enter our bodies, they attack motor and resource devices in human cells to replicate and spread throughout the body. However, the resources that occur change throughout the day, in part to meet our day-to-day circadian rhythms - in fact a biological companion for the body. Day-to-day circadian rhythms control our physiological and body functions - from sleep to body temperature and from the immune system to hormone production. These cycles are controlled by a large number of genes including *Bmal1* and *Clock* ( *Bmal1 is a combination of nucleosomes and chromosomal changes* ).

To check whether our circadian rhythms are susceptible to or easily develop infection, researchers at the Wellcome Trust-MRC *Research Institute for Science Transformation ( Wellcome Trust-Medical Research Council Institute of Metabolic Science )* at the University of Cambridge compared the normal " wild " mouse infected with herpes virus at different times of day, measuring the level of infection and the spread of the virus. The mouse lives in a controlled environment for a day: 12 hours in the daylight and 12 hours in the dark.

The researchers found that: " *The spread of the virus of mice infected at the beginning of the day - is equivalent to when the sun rises, when the nocturnal animals begin to rest - big 10 times more than infected mice for 10 hours during the day, when they switched to active phase. When the researchers remade the experiment with a Bmall-deficient mouse - they found that the replication level The virus's rise is not dependent on the time of infection " .*

Professor Akhilesh Reddy, the lead author of the study, explains: " *The time of infection during the day can greatly affect how easily we are susceptible to disease or how the molecules replicate at least, ie Wrong infections during the day can cause more acute acute infections, which coincides with recent studies - studies that have shown, the time of day that flu vaccines are preserved. How can it affect its effect? "*

In addition, the researchers found that changing the time of day is similar to viral replication in the number of individual cells grown without being affected by our immune system. The elimination of the cell's circadian rhythms increases both broad acne and influenza A infection - another virus - known as the RNA virus - causes infection and regeneration in different ways to cause herpes.

The first author, Rachel Edgar, added: " *Each cell in the body has a biological clock that allows them to track time and predict daily changes in our environment. The results show that the clock in each cell determines whether a virus replicates successfully. When we break down the biological clock in cells or in mice, we will see the time of infection. The infection is no longer important - cell replication is still high " . This indicates: "People who work in shifts - often do night shifts and take a few nights off will break their body biological clock - and are susceptible to virus infection. After that, they may be the applicants. First tablet to receive annual flu vaccine " .*

Like a daily activity cycle, Bmall also changes with season - poor performance in winter and rapid increase in summer. Researchers speculate: " *This may explain why diseases like influenza are likely to spread quickly in the winter.*"

By using cell cultures, the researchers found that the herpes virus controls molecular " *activity devices* " to control the body's circadian rhythms, helping the virus grow. This is not the first time that pathogens are considered a biological clock " *game* ". For example, malaria parasites are known to synchronize the body's circadian rhythm replication cycle, creating a more successful chromosome.

Professor Reddy added: " *The biological clock appears to play a role in protecting us from the invasion of pathogens, molecular devices that can produce a new prescription to fight infection. coincide .*

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