

## Ganciclovir

Ganciclovir is an antiviral medication used to treat CMV (cytomegalovirus) infections in the immunocompromised. It works as a guanosine analog, that is phosphorylated by a viral kinase to form a competitive inhibitor of nucleotide incorporation into DNA. Thus, it inhibits viral DNA polymerase. Ganciclovir has serious hematological effects, along with renal toxicity.



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### Indications

#### Cytomegalovirus (CMV)

[Side-toe-mega-virus](#)

Ganciclovir is used to treat CMV (cytomegalovirus) infections, especially in patients who are immunocompromised.

#### Immunocompromised

[Moon-compromised](#)

Ganciclovir is often used in immunocompromised patients with AIDS or HIV, as they are more susceptible to more rare CMV manifestations, such as CMV pneumonitis, retinitis or colitis.

### Mechanism

#### Guanosine Analog

[G-iguana On-a-log](#)

Ganciclovir is a synthetic analog of guanosine, which is phosphorylated by a viral kinase encoded by CMV during infection. This leads to the formation of ganciclovir triphosphate.

#### Disrupts DNA Synthesis

[Disrupted DNA](#)

Ganciclovir triphosphate, which is formed after processing by CMV, is a competitive inhibitor of nucleotide incorporation into DNA. This leads to disrupted DNA synthesis in the virus.

#### Inhibits Viral DNA Polymerase

[Inhibiting-chains on DNA Polly-mirror](#)

Ganciclovir triphosphate, which is formed by viral processing of ganciclovir, preferentially inhibits viral DNA polymerases, disrupting viral DNA synthesis.

### Side Effects

## **Hematologic Effects**

[He-man-blood](#)

Patients taking this medication can suffer from serious hematological side effects, such as anemia, thrombocytopenia, neutropenia and granulocytopenia.

## **Nephrotoxicity**

[Kidney with Toxic-green-glow](#)

This drug is prescribed judiciously, as it can lead to nephrotoxicity in patients, and is renally excreted.