

WHAT IS THE MEANING OF THE CT VALUE?

CT is the abbreviation for **Cycle Threshold** and is defined as the calculated cycle number at which the PCR product crosses a threshold of detection. This threshold line is either automatically set by the software algorithm of the real-time PCR instrument or can be manually adjusted.

The CT values are essential for quantitation since the standard curve is generated by plotting the CT values versus the logarithmic concentration.

A positive unknown sample will also be assigned a specific CT value and by comparison with the standard curve a particular concentration can be calculated.

Several studies, however, point to a telling link between this viral load marker and severity of disease.

One review published in July in Infectious Diseases and Therapy reported an association between lower Ct values and not only worsening disease but also progression to severe disease and complications. Examining data from 18 studies, the investigators found significant correlations between Ct values and severe disease or death, as well as Ct and the presence of biochemical and haematological markers.

Researchers found an association between higher viral load and factors such as **increased age**, smoking status, and recent chemotherapy. Higher viral load also independently correlated with higher risk of intubation and in-hospital mortality.

the ICMR DG wrote back to the state Health Secretary that ICMR has taken inputs from virology laboratories across the country to arrive at a single Ct value cut-off. All patients with a Ct value less than 35 may be considered as positive while those with a Ct value above 35 may be considered as negative, ICMR said.

The Ct value does not correlate with severity – only with infectivity. In the first report I do not really look at the Ct value, but for follow-up of patients in the hospital, I do consider the Ct value, as then I can decide whether to transfer the patient to the non-Covid building or not. From the infectivity point of view, it can matter, not severity.

SUMMARY

- It can be said that CT value depends on several aspects as, method of drawing sample (Proper nasal and pharyngeal swabs, age and basic immune status of the patient and transportation by maintaining proper cold chain to lab) but whether its value depends on severity of disease is still not clear.
- But one thing is revealed in several studies that a CT value of >35 indicates the patient is negative for PCR test.
- Ct between 30 -35 indicates that patient is almost non-infectious.
- But Ct around 30 indicates viral load is less and if the patient is asymptomatic after an average time of 14-21 days (mean 17 days) it's unlikely that the patient will worsen any further and be non-infectious to other family (non-infected) members.
- **But CT is not the hall mark to say as yet that the patient is cured and still a negative RT-PCR report stands gold standard (actually 2 reports) to say that the patient is free from Covid.**