



The association between SARS-CoV-2 RT-PCR cycle threshold and mortality in a community cohort

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Ct values from RT-PCR tests are associated with risk of mortality in SARS-CoV-2 infection. Hazards of Ct values <20 compared to >30 were 2.20 (95% CI 1.28–3.76) in a model adjusted for age, sex, comorbidities and hospitalisation. <https://bit.ly/3gjuqdU>

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To the Editor:

A coronavirus disease 2019 (COVID-19) diagnosis is widely made by the use of reverse transcription polymerase chain reaction (RT-PCR) testing for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). When using RT-PCR, the infectivity of SARS-CoV-2 can be inferred from the threshold cycle (Ct) value [1]. It is best practice to confirm the validity of the standard curve using reference materials or in-house plasmid controls with known viral copy numbers [2]. As the Ct value represents the cycle number at which the signal breaches the threshold for positivity, a lower Ct value is indicative of a higher viral load. Although some studies suggest that viral load is associated with mortality and infectiousness [3, 4], a systematic review has identified little difference in viral load between pre-symptomatic, asymptomatic and symptomatic patients [5]. As a result, the clinical relevance of viral load remains controversial, and it is not used in clinical practice [6]. Here, we report the relationship between the Ct value and all-cause mortality for people who tested positive for SARS-CoV-2 on a combined nasal and pharyngeal swab in the Tayside region of Scotland, UK. This is a community cohort study and includes the local population of the region, as well as symptomatic health and social care workers tested as part of a screening programme [7]. In order to obtain clinical characteristics and outcomes for those who tested positive, anonymised record linkage was conducted between routine healthcare datasets as described previously [8]. All positive PCR tests from 12 March until 1 May, 2020 were included, and all deaths recorded by National Records Scotland until 20 May, 2020. Approval for anonymised data linkage was granted by the local Data Protection Officer (Caldicott Guardian).

