# Self-Amplified Glycolysis Underlies COVID-19 Deaths as interpreted from the Dynamics of Blood Variables

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## Abstract

**Background:** The question of why COVID-19 proves fatal for some individuals while others experience mild symptoms is an important area of clinical research. In contrast to existing studies, which have produced conflicting findings and typically assume a direct relationship between single-point measurements of blood variables and the likelihood of death, our research takes a new approach. We posit that COVID-19 deaths are influenced by dynamic processes that drive changes in blood variables during the disease course.
**Methods:** We used statistical methods to analyze the dynamic changes in the longitudinal measurements of blood variables in a cohort of 173 deteriorating patients with COVID-19 who were hospitalized in a tertiary medical center between March 2020 and August 2021.
**Results:** The highest mortality occurred shortly after patient deterioration, preceded by a sharp increase in the levels of glycolysis-associated variables in non-survivors. Statistical analysis shows highly significant differences and a good differentiation capacity between survivors and non-survivors in the dynamic features of lactate dehydrogenase (LDH), D-dimer, and platelet levels during the first two weeks following patient deterioration.
**Discussion:** Based on these results, we suggest a model for self-amplified glycolysis in COVID-19, iteratively augmenting viral replication and tissue damage under increasingly severe hypoxia. It is plausible that mutations favoring glycolytic metabolism could determine whether a patient succumbs to the detrimental effects of glycolysis or recovers.