

中文題目：COVID-19 死亡率於癌症與糖尿病病人之相關因素分層分析

英文題目：Stratified analysis of factors associated with mortality in patients with COVID-19 based on cancer and diabetes

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### **Background:**

Cancer and diabetes were independent risk factors for COVID-19 mortality rate. Remdesivir was used in hospitalized patients to reduce the time to clinical recovery. Dexamethasone was used to improve clinical outcomes and reduce mortality. A booster vaccination had a lower COVID-19 mortality rate. We aim to evaluate factors associated with mortality in COVID-19 patients based on cancer and diabetes, emphasizing on treatment timing and vaccinations.

### **Method:**

This retrospective, observational cohort study enrolled moderate, severe and critical illness of COVID-19 patients admitted to isolation rooms from April 1 to June 30, 2022 at Taichung Veterans General Hospital. Patients aged <18 and pregnant women were excluded. The index day (day 0) of this cohort study was the day of SARS-CoV-2 RT-PCR confirmed positive and patients were followed until death in hospital or hospital discharge, whichever occurred first. Patients' preexisting comorbidities, COVID-19 vaccine history, modes of respiratory support, COVID-19 treatment were reviewed. Two-way ANOVA was used to examine the interaction between the independent risk factors for hospital mortality.

### **Results:**

A total of 838 COVID-19 patients were admitted during the study period, and 205 patients were included in the final analysis. Among those, 145 were survivors and 60 were non-survivors. The mortality was 29.5%. The cumulative survival rate was significant lower in patients with CCI score > 6, and for patients with cancer, and diabetes. In multivariate analysis, critical illness of COVID-19 (OR=6.55; 95% CI, 2.61–16.43), underline comorbidities of cancer (OR=2.35; 95% CI, 1.47–3.76), diabetes (OR=2.32; 95% CI, 1.23–4.37), and chronic liver disease (OR=3.22; 95% CI, 1.01–10.29), Charlson comorbidity index (CCI) score  $\geq 6$  (OR=7.77; 95% CI, 2.70–22.35), patients who never receive any vaccination (OR=3.22; 95% CI, 1.07–9.66), onset of remdesivir use time  $\geq 2$  days (OR=6.04; 95% CI, 2.81–12.99), and onset of dexamethasone use time  $\geq 2$  days (OR=4.30; 95% CI, 1.88–9.83) were independent risk factors for mortality. The onset of remdesivir use time was associated with mortality rate, and the impact was more significant among patients with cancer/diabetes, compared to those without cancer/diabetes (p for interaction =0.046/0.049). The onset of dexamethasone use time was associated with mortality rate, and the impact was more significant among patients with diabetes, compared to those without diabetes (p for interaction

=0.042). Patients who received <3 doses of COVID-19 vaccinations were associated with higher mortality rate, and the impact was more significant among patients with cancer/diabetes, compared to those without cancer/diabetes (p for interaction =0.038/0.048).

**Conclusion:**

Cancer, diabetes, chronic liver disease, and CCI score  $\geq 6$  were independent risk factors for mortality. COVID-19 vaccinated  $\geq 3$  doses, the onset of remdesivir, and dexamethasone < 2 days were protective factors for mortality. The protective effect of vaccinations  $\geq 3$  doses, early administration of remdesivir and dexamethasone can greater reduce mortality rate, especially in patients with cancer or diabetes.