

# New Analysis Suggests COVID-19 Infection Doesn't Cause New Heart Failure

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In our recent study<sup>1</sup>, we found that 3,945 patients had new heart failure documented within 3 months after their COVID-19 admission. To determine whether this heart failure was new or pre-existing, we examined new documentation of heart failure for patients admitted with hip fracture or stroke to compare with our finding for COVID-19. We selected hip fracture as a comparison because there is no expected clinical, causal relationship between hip fracture and heart failure, and we selected stroke because it shares a similar risk profile as severe COVID-19.

We found that in hospitalized patients, 8.6% of patients with COVID-19, 9.4% of patients with hip fracture, and 12.4% of patients with stroke had new heart failure documented within 90 days of hospital admission. These findings suggest that the increase in new heart failure for COVID-19 is more likely documentation of pre-existing heart failure, rather than new onset of heart failure related to COVID-19 infection.

*Abstract: Increased heart failure diagnoses for COVID-19 admitted patients likely due to identification of a pre-existing condition.*

## New Heart Failure After Hospital Admission

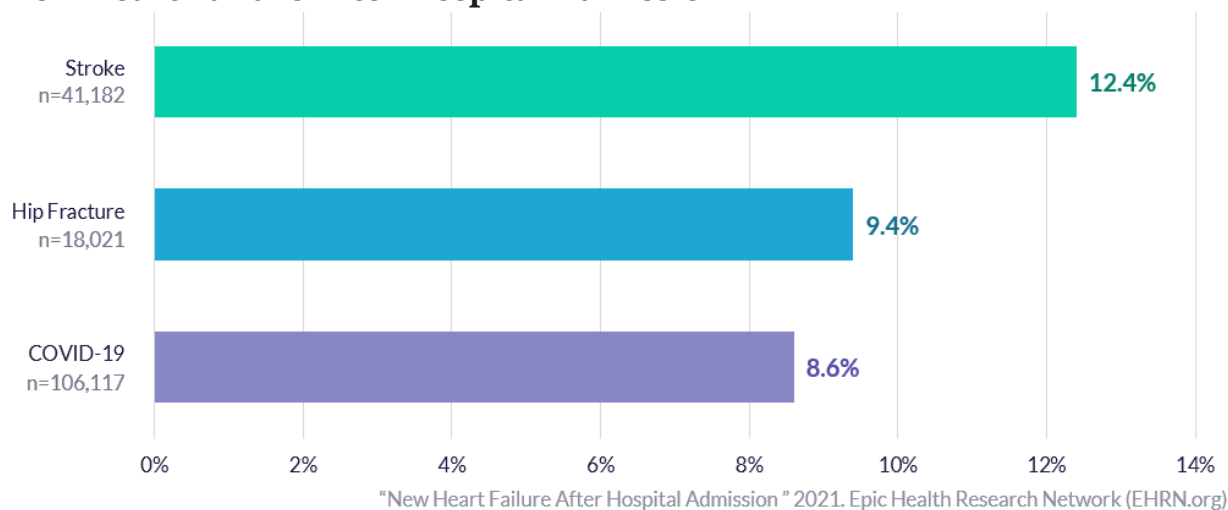


Figure 1. Admitted patients with stroke, hip fracture, or COVID-19 who had new heart failure documented within 90 days after hospital admission.

*These data come from Cosmos, a HIPAA Limited Data Set of more than 111 million patients from Epic customers. This study was completed by two teams, comprised of clinicians and data scientists, that independently acquired and analyzed data. Both teams were involved in the interpretation of results and drafting of this brief. Overall, the two teams came to similar conclusions. Data are pooled from 89 healthcare organizations representing 457 hospitals and more than 9 million patients with hospital admissions during the cohort formation period.*

## References

1. Epic Systems. Patterns of Heart Failure in COVID-19 Admitted Patients. EHRN.org. 1 April 2021. <https://ehrn.org/articles/patterns-of-heart-failure-in-covid-19-admitted-patients>

## Data Definitions

Term	Definition
<b>COVID-19</b>	Having a positive PCR-based SARS-CoV-2 test or diagnosis code U07.1 (ICD-10-CM) <b>Diagnosis setting:</b> Billing diagnosis, encounter diagnosis
<b>Hip fracture</b>	<b>Diagnosis codes:</b> S72.001A, S72.001B, S72.001C, S72.002A, S72.002B, S72.002C, S72.009A, S72.009B, S72.009C, S72.011A, S72.011B, S72.011C, S72.012A, S72.012B, S72.012C, S72.019A, S72.019B, S72.019C, S72.021A, S72.021B, S72.021C, S72.022A, S72.022B, S72.022C, S72.023A, S72.023B, S72.023C, S72.024A, S72.024B, S72.024C, S72.025A, S72.025B, S72.025C, S72.026A, S72.026B, S72.026C, S72.031A, S72.031B, S72.031C, S72.032A, S72.032B, S72.032C, S72.033A, S72.033B, S72.033C, S72.034A, S72.034B, S72.034C, S72.035A, S72.035B, S72.035C, S72.036A, S72.036B, S72.036C, S72.041A, S72.041B, S72.041C, S72.042A, S72.042B, S72.042C, S72.043A, S72.043B, S72.043C, S72.044A, S72.044B, S72.044C, S72.045A, S72.045B, S72.045C, S72.046A, S72.046B, S72.046C, S72.051A, S72.051B, S72.051C, S72.052A, S72.052B, S72.052C, S72.059A, S72.059B, S72.059C, S72.061A, S72.061B, S72.061C, S72.062A, S72.062B, S72.062C, S72.063A, S72.063B, S72.063C, S72.064A, S72.064B, S72.064C, S72.065A, S72.065B, S72.065C, S72.066A, S72.066B, S72.066C, S72.091A, S72.091B, S72.091C, S72.092A, S72.092B, S72.092C, S72.099A, S72.099B, S72.099C, S72.101A, S72.101B, S72.101C, S72.102A, S72.102B, S72.102C, S72.109A, S72.109B, S72.109C, S72.111A, S72.111B, S72.111C, S72.112A, S72.112B, S72.112C, S72.113A, S72.113B, S72.113C, S72.114A, S72.114B, S72.114C, S72.115A, S72.115B, S72.115C, S72.116A, S72.116B, S72.116C, S72.121A, S72.121B, S72.121C, S72.122A, S72.122B, S72.122C, S72.123A, S72.123B, S72.123C, S72.124A, S72.124B, S72.124C, S72.125A, S72.125B, S72.125C, S72.126A, S72.126B, S72.126C, S72.131A, S72.131B, S72.131C, S72.132A, S72.132B, S72.132C, S72.133A, S72.133B, S72.133C, S72.134A, S72.134B, S72.134C, S72.135A, S72.135B, S72.135C, S72.136A, S72.136B, S72.136C, S72.141A, S72.141B, S72.141C, S72.142A, S72.142B, S72.142C, S72.143A, S72.143B, S72.143C, S72.144A, S72.144B, S72.144C, S72.145A, S72.145B, S72.145C, S72.146A, S72.146B, S72.146C, S72.21XA, S72.21XB, S72.21XC, S72.22XA, S72.22XB, S72.22XC, S72.23XA, S72.23XB, S72.23XC, S72.24XA, S72.24XB, S72.24XC, S72.25XA, S72.25XB, S72.25XC, S72.26XA, S72.26XB, S72.26XC (ICD-10-CM)  <b>Diagnosis setting:</b> Billing diagnosis, encounter diagnosis

<b>Stroke</b>	<p><b>Diagnosis codes:</b> I61*, I63* (ICD-10-CM)</p> <p><b>Diagnosis setting:</b> Billing diagnosis, encounter diagnosis</p>
<b>Heart failure</b>	<p><b>Diagnosis codes:</b> I09.81, I11.0, I13.0, I50.1, I50.20, I50.21, I50.22, I50.23, I50.30, I50.31, I50.32, I50.33, I50.40, I50.41, I50.42, I50.43, I50.810, I50.811, I50.812, I50.813, I50.814, I50.82, I50.83, I50.84, I50.89, I50.9, (ICD-10-CM)</p> <p><b>Diagnosis setting:</b> Billing diagnosis, encounter diagnosis, problem list</p>
<b>Population</b>	<p>Patients ages 19 years and older who had hospital admissions for their cohort condition (COVID-19, hip fracture, or stroke) on or after January 20, 2020, with no diagnosis documentation in the previous three years of the cohort condition, the other cohort conditions, or heart failure</p>