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“Age is an issue of Mind over Matter; if  
you don’t mind, it doesn’t matter”

Mark Twain

**Dr. David Mulcahy**

Consultant Cardiologist, Tallaght Hospital,  
Dublin, Ireland

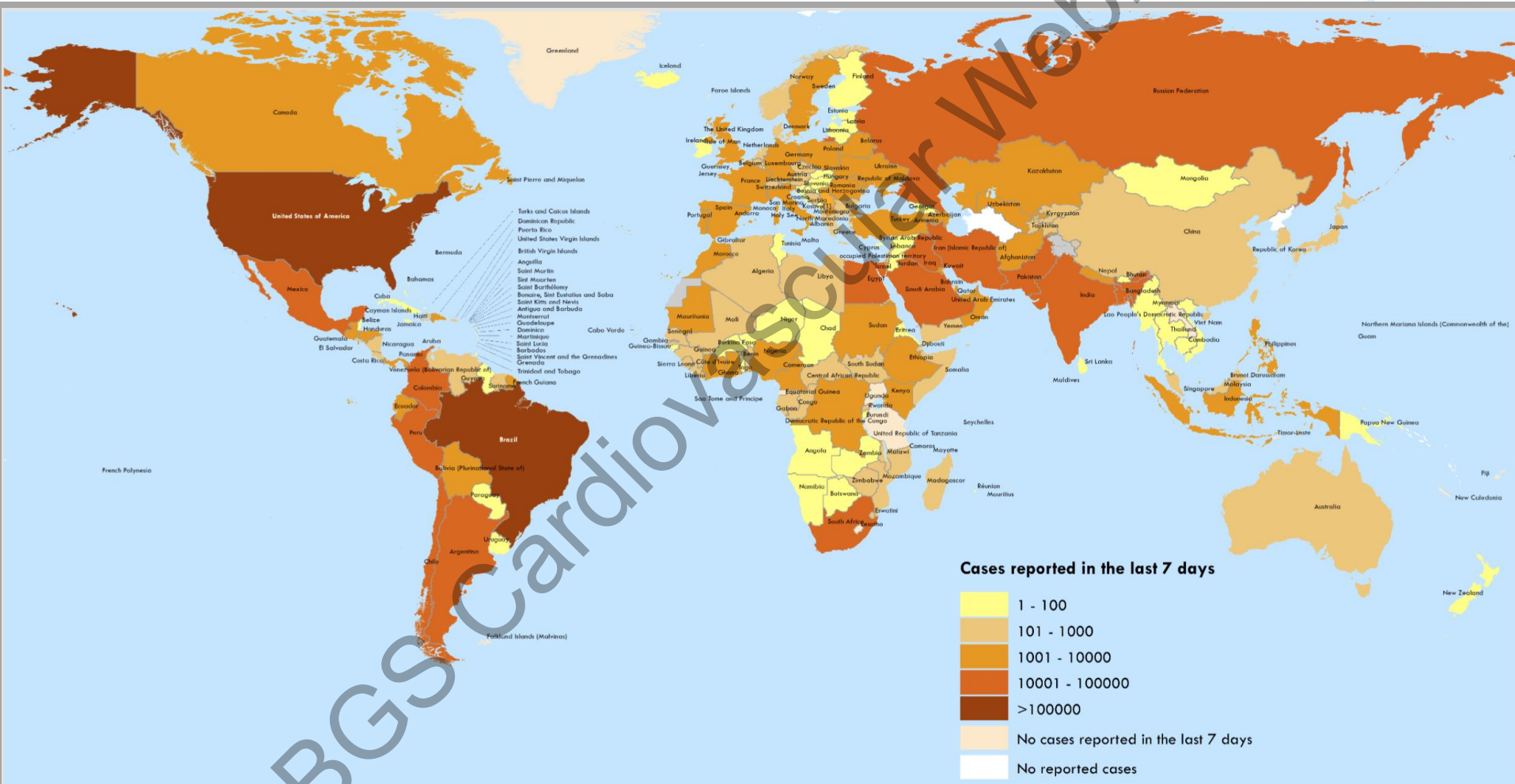
**Dr. Cormac O’Connor**

Cardiology ST8, Tallaght Hospital,  
Dublin, Ireland

# The Story so far...

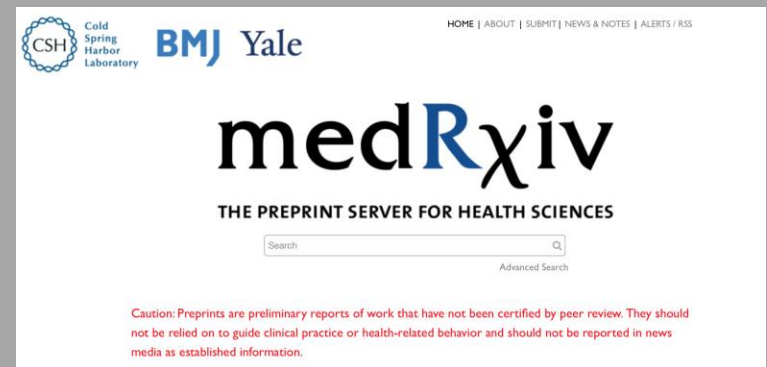


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# COVID-19 and a new age of Information

- Hydroxychloroquine
- Azithromycin
- medRxiv





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The British Journal  
of Cardiology

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This website is intended for UK healthcare professionals only

## COVID-19: the heart and other issues

June 2020 Br J Cardiol 2020;27:53-7 doi:10.5837/bjc.2020.018 [Leave a comment](#)

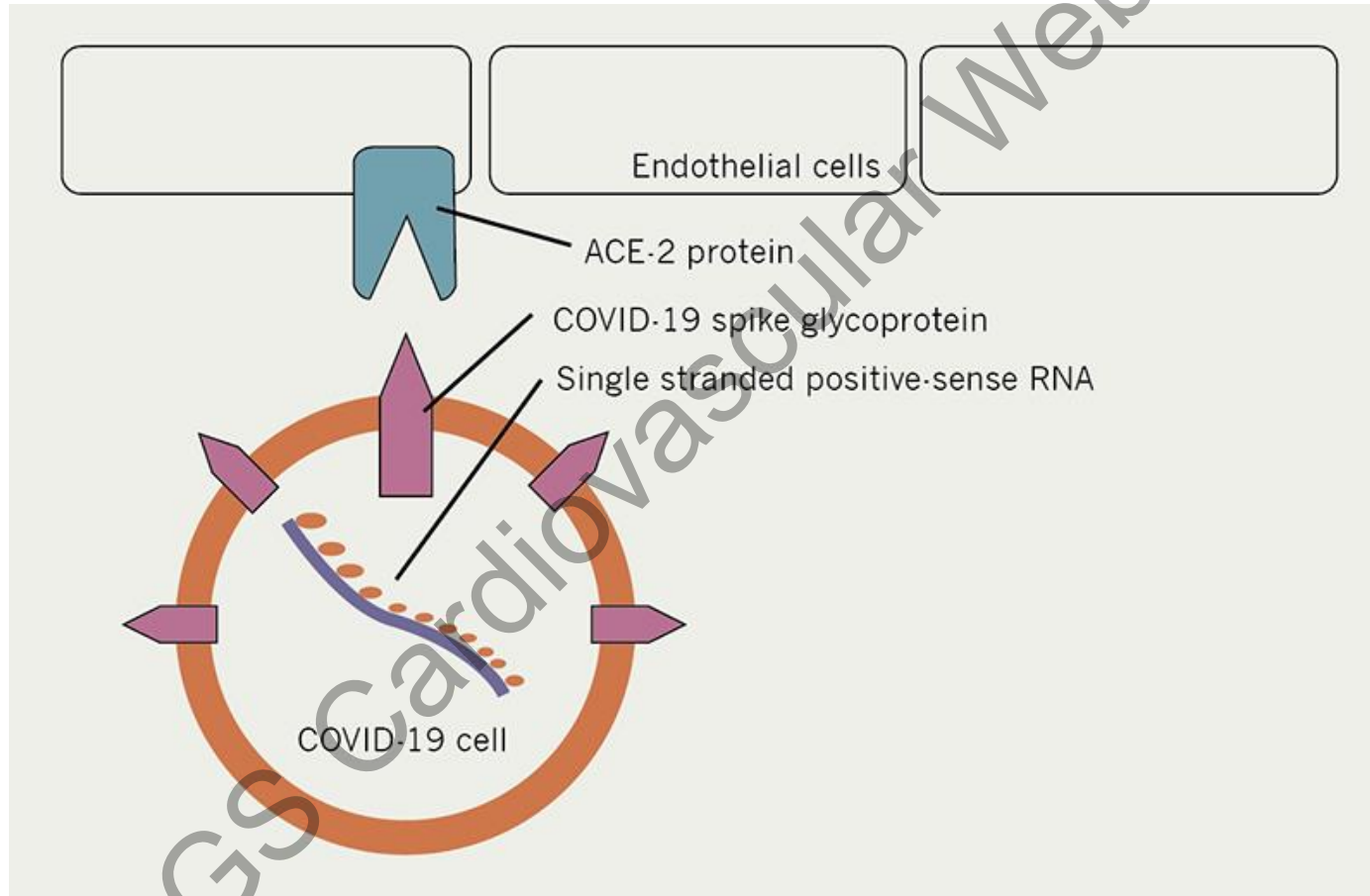
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# Mechanics of COVID-19



# COVID-19 and the Heart

**ACE-2 Protein is the entry-point of COVID to the cell**

**ACE-2 is extensively expressed in myocardial tissue**

**Autopsy series in original SARS virus identified a myocardial infiltration rate of 35%.**

**Presence of SARS in the heart was associated with earlier death (3.9 days vs 43.2 days,  $p < 0.05$ ).**

Oudit GY, et al  
SARS-coronavirus modulation of myocardial ACE2 expression and inflammation  
in patients with SARS  
Eur J Clin Invest. 2009 Jul; 39(7): 618–625.



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# COVID-19 and the Heart

Acute cardiac injury occurs in 17% of patients (in 59% of non-survivors and 1% of survivors ( $p < 0.0001$ ))

Heart failure occurred in 23% of patients (52% in non-survivors and 12% of survivors ( $p < 0.0001$ )).

Higher troponin was correlated with both a higher NT-pro-BNP ( $R^2 = 0.376$ ,  $p < 0.001$ ) and hs-CRP ( $R^2 = 0.281$ ,  $P < 0.001$ ).

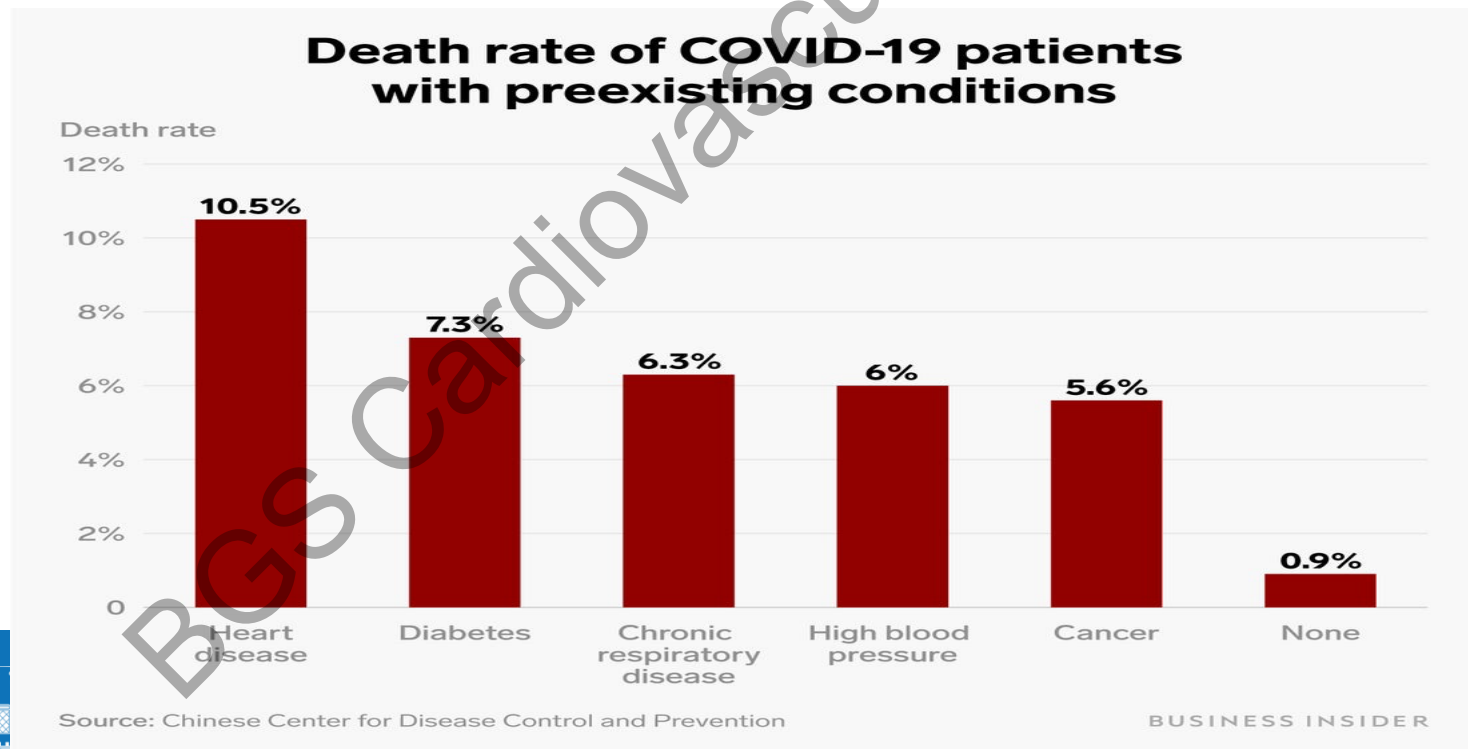
Vasculitis and arterial and venous thrombosis



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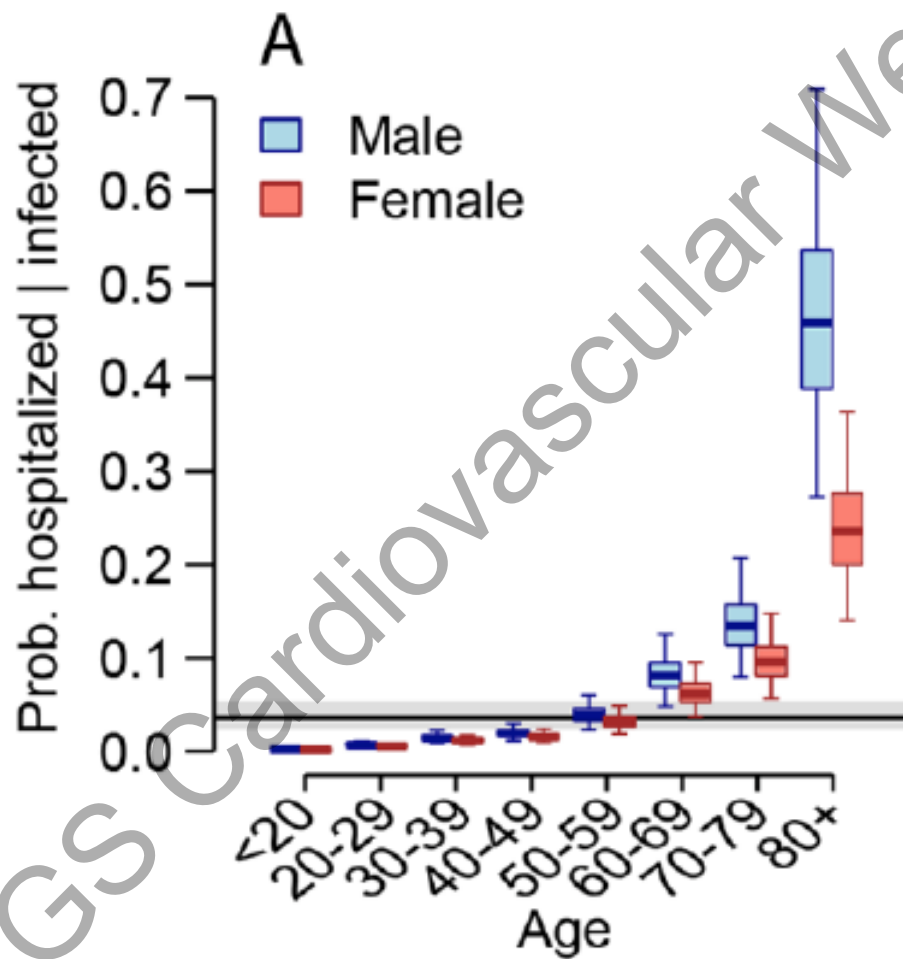
# The Odds Ratio and Mortality

- **Increasing age** (OR 1.10 per year increase, 95%CI 1.03-1.17),
- **Hypertension** (OR 3.05, 95%CI 1.57-5.92),
- **Diabetes** (OR 2.85 95%CI 1.35-6.05),
- **BMI >40** (OR 2.27, 95%CI 1.99-2.58),
- **Coronary artery disease** (OR 21.4, 95%CI 4.64-98.76).

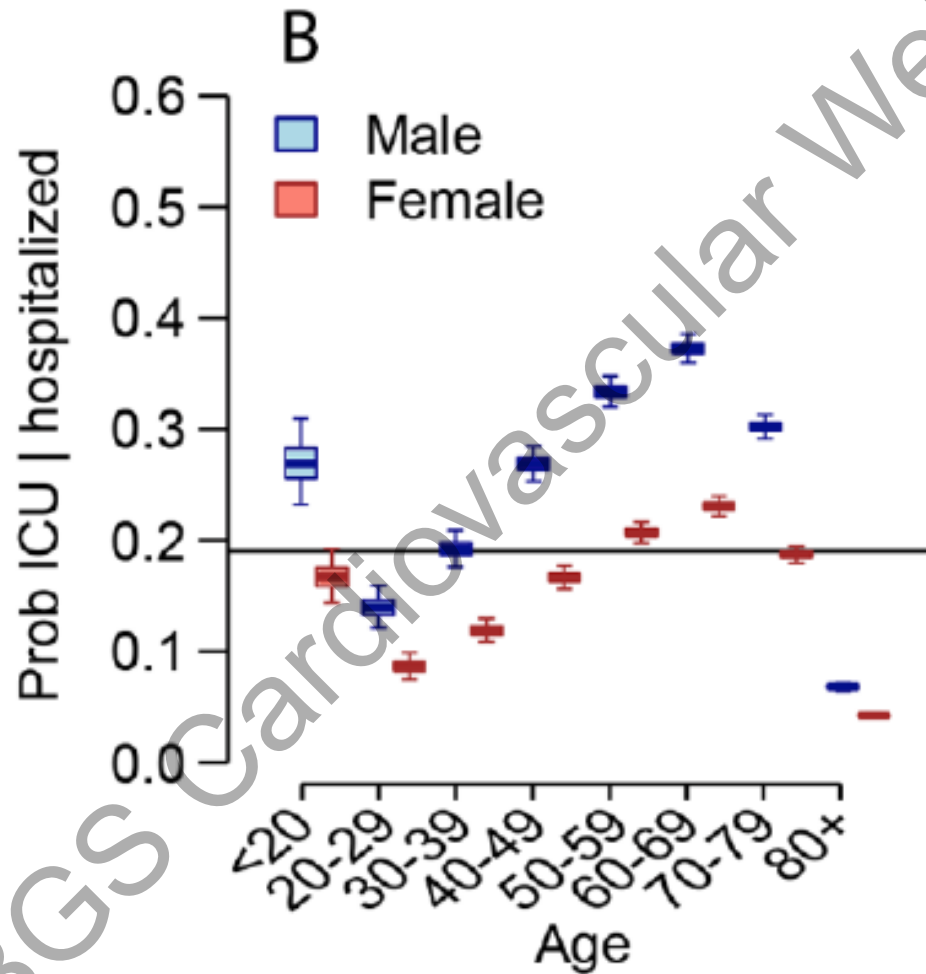




# Rate of Hospitalisation



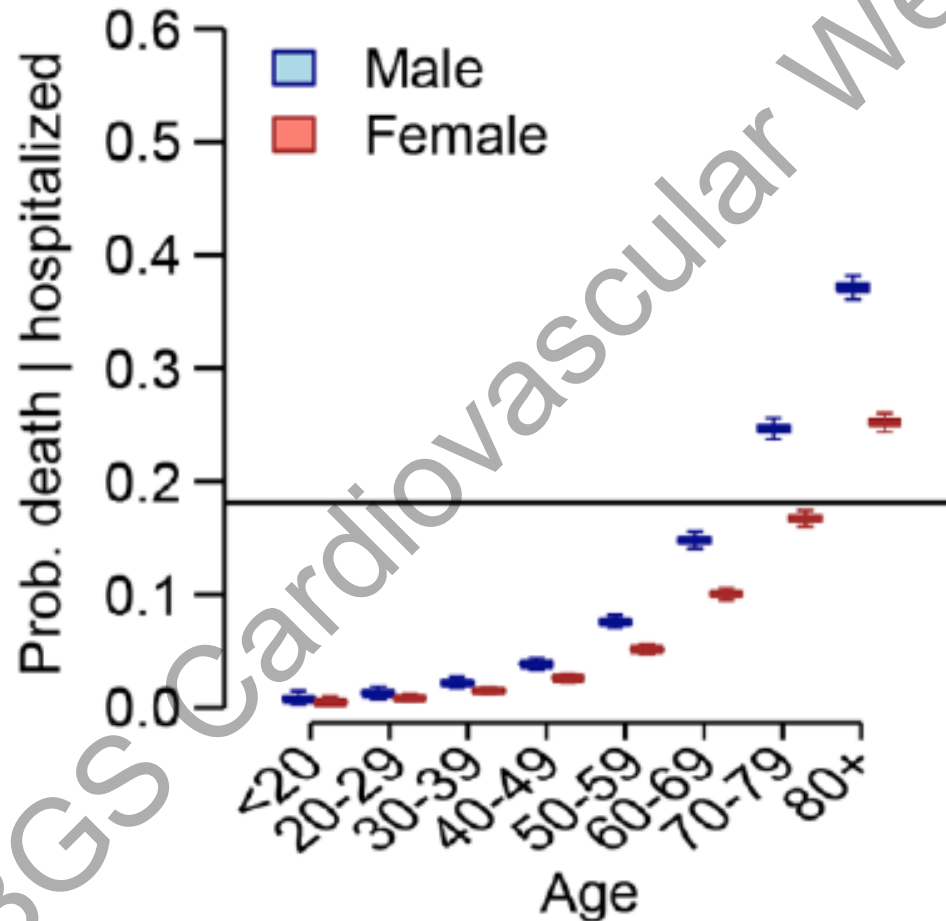
# Inpatient ICU admission



# Rate of inpatient death



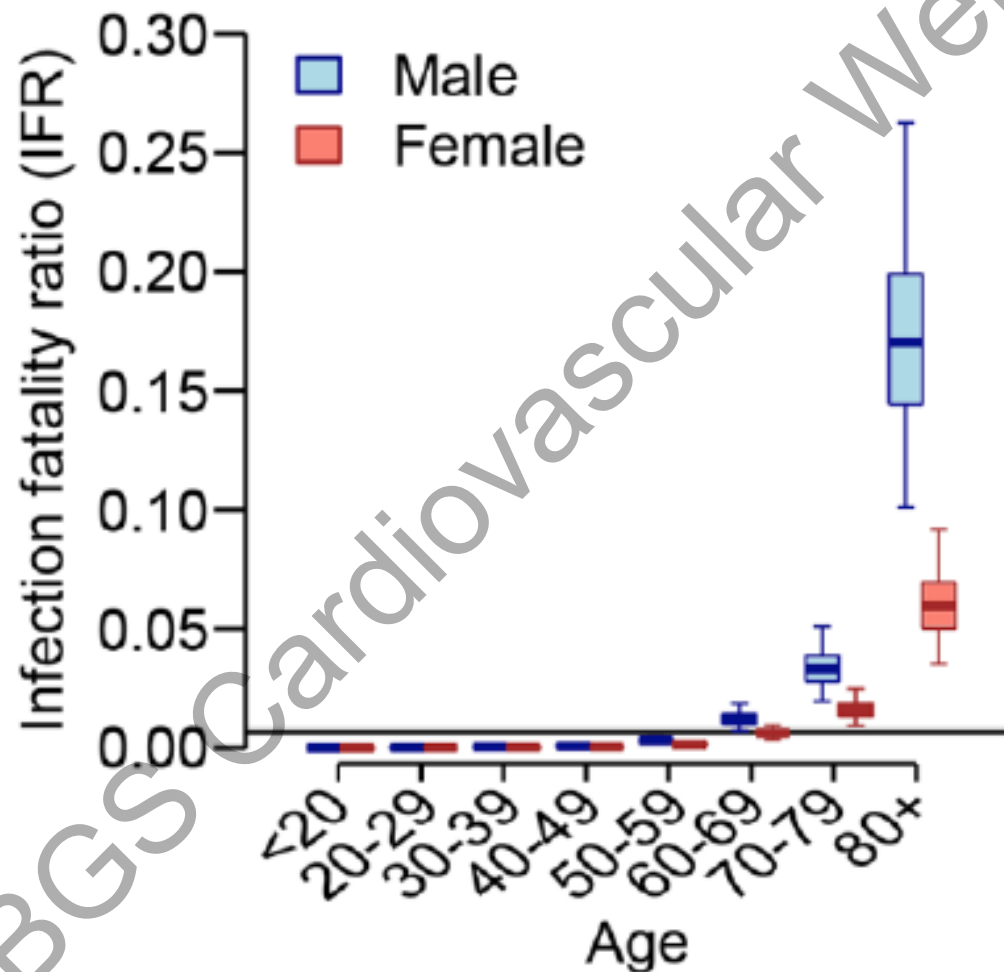
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# Probability of all COVID-19 Deaths



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# All-comer COVID-19 symptoms

Clinical symptoms	No. Reports (n)	No. Patients (n)		Prevalence% (95% CI)
Fever	36	2817		83.3 (78.4-87.7)
Cough	35	2792		60.3 (54.2-66.3)
Fatigue	23	2116		38.0 (29.8-46.5)
Myalgia	21	2094		28.5 (21.2-36.2)
Increased sputum production	16	2042		26.9 (18.3-36.4)
Shortness of breath	13	1981		24.9 (16.6-34.4)
Chest pain	9	423		14.9 (4.9-28.4)



# COVID symptoms in elderly patients

Fever	15 (43%)
Cough	9 (26%)
Fatigue	9 (26%)
Shortness of breath	5 (14%)
Loss of appetite	4 (11%)
Sore throat	3 (9%)
Myalgia	2 (6%)



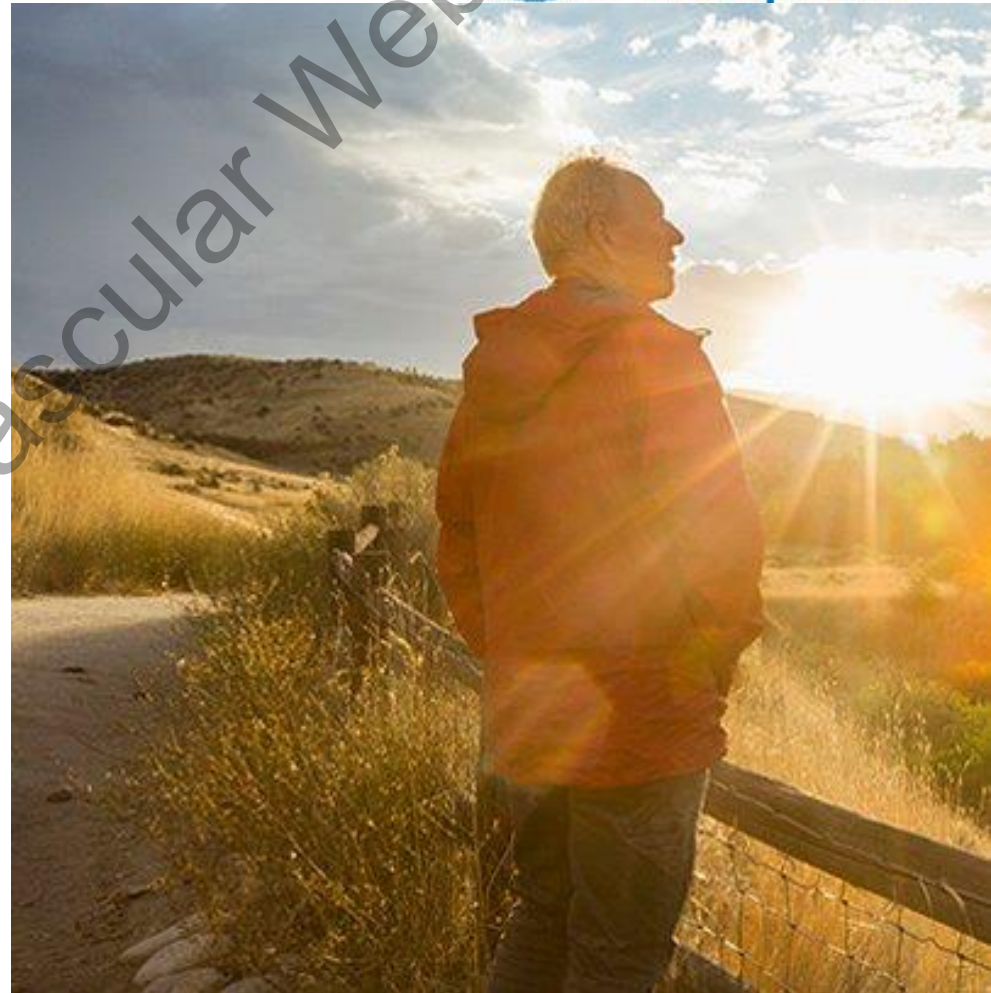


# Vitamin D and COVID-19



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- Vitamin D level has been shown to influence immunological function.
- A recent Study identified a trend between vitamin D level and mortality rate from COVID-19.
- Lower vitamin D level were correlated with higher death rate by Spearman's  $r$  ( $P=0.046$ ).
- Elderly patients have the highest risk of vitamin D deficiency.

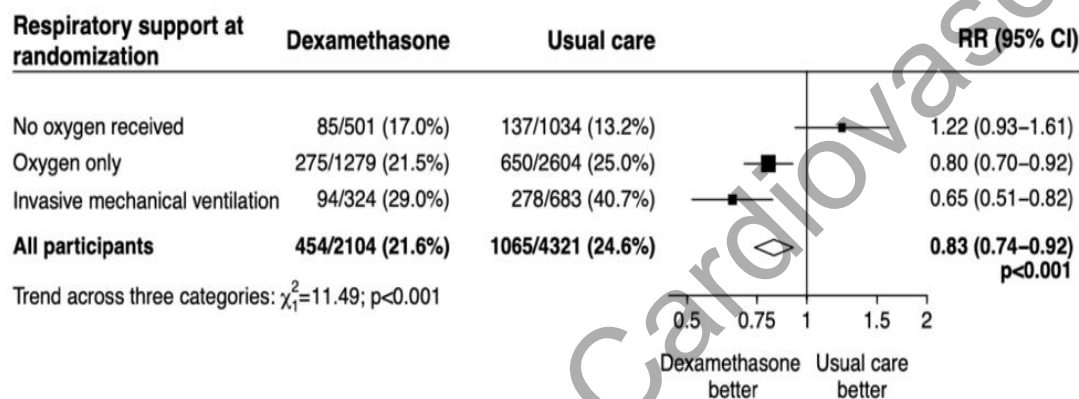


# Recovery Trial



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**Figure 2: Effect of allocation to dexamethasone on 28-day mortality by level of respiratory support received at randomization**



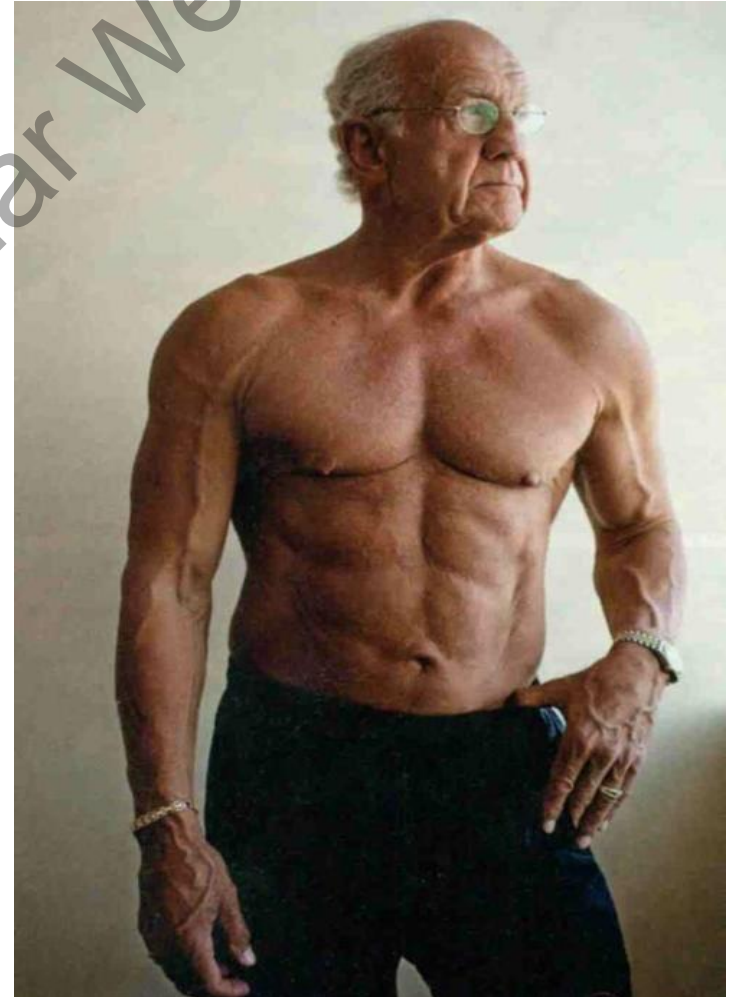
# Steroids in Elderly Patients

1,548,945 patients



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- Higher rate of VTE.
  - 0.14% vs 0.09% (3.33, 2.78 to 3.99)
- Increased delirium (OR 1.52, 1.05 to 2.21).





# The COVID-19 tide



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# Issues For the Future



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**For the immediate future, the traditional 'inpatient' setting is likely to be extremely hazardous for elderly patients.**

**This has strong implications for the treatment of cardiovascular disease in the elderly (such as afib, CAD, CCF, HTN).**

**Patients will want to know that going to hospital will not result in a high-risk disease.**

# Possible Solutions

**If COVID-19 disappears, return to 'normal' practice.**

**In the meantime...**

**Keep elderly patients out of mainstream hospitals if at all possible**

**Community outreach where possible for symptomatic patients (HF, Chest pain) including access to diagnostics and phlebotomy (currently operational in TUH).**

**Virtual cardiology clinics (including device clinics).**



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# Possible Solutions

**Opportunity to redesign/redistribute inpatient facilities to single-bedded units, particularly for high-risk patients**

**Strong communication links between care home/nursing home physicians and your friendly local cardiologist**



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Thank you,  
and stay safe

