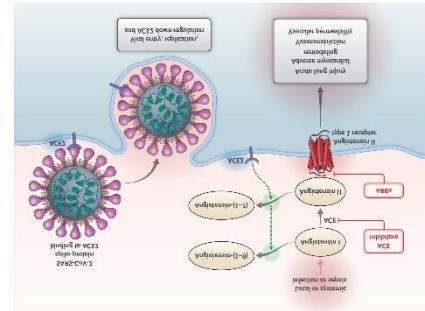




COVID19 AND CARDIOVASCULAR DISEASE

SARS-CoV-2, the coronavirus that causes Covid19 is a ssRNA virus that invades multiple tissues in the body via ACE2 binding to gain cellular entry¹.

While this primarily causes a respiratory infection with high ACE2 on type 2 pneumocytes, other tissues such as the GI tract and cardiac myocytes also express ACE2 and are affected by SARS-COV-2.



1. What cardiac effects does SARS-COV-2 have?

Cardiac patients are at increased risk from SARS-Cov-2. Age >70, hypertension, T2DM and prior heart attack are some of the factors that increase risk and also describe many cardiac patients^{2,3}. Our heart patients should therefore take extra care to isolate and practice good hand hygiene.

Covid19 manifests with fever (44-98%), SOB (31%), dry cough (46-82%) and often with chest pain¹. The chest pain can result from myocarditis and pericarditis that is more common with SARS-Cov-2 than other non-coronavirus infections.

Treatment is symptomatic and while there are no RCT, recommendations have appeared to avoid NSAIDS. Colchicine may be of some benefit for pericarditis as neutrophil infiltration is described.

Arrhythmias were common in the Wuhan population, but this may relate to high use of (Hydroxy)Chloroquine and Azithromycin which when combined can increase QTc and promote Ventricular arrhythmias⁴. Neither of these agents have any demonstrated effect on outcomes and cannot be currently recommended pending better evidence.

2. I heard that ACE-I and ARB may increase the risk of Covid-19. Should I stop these on my cardiac patients?

ACE-I and ARB are commonly used for hypertension, cardiac failure and reno protective effects. Whilst there are theoretical reasons to suggest ACE-I and ARB may impact Covid19 by affecting ACE-2 or angiotensin-II it is not clear if they are protective or hazardous. Withdrawing these agents from patients with cardiomyopathy however can be very hazardous and all relevant advisory groups have advised that there is no evidence to recommend ceasing ACE-I or ARB. For a recent review see NEJM⁵.

3. What treatments currently exist?

Currently there are limited evidence-based therapies for Covid19. Treatment is supportive with oxygen (max 6L/min) or ventilation (ventilator mortality 50+%)⁶. NSAIDs should be avoided although this advice is not backed by any RCT. There is no evidence base to recommend chloroquine or



[azithromycin](#)⁷. Trials are ongoing looking at these agents as well as remdesivir, losartan as well as many programs aiming to develop a vaccine.

4. Remember patients will still have their normal cardiac condition while we all deal with the Covid19 pandemic.

Anecdotally Lombardy has recorded a 70% reduction and Madrid a 40% reduction in STEMI presentations over the last month. This is NOT because STEMI incidence has decreased. Patients naturally fear attending ED, however as things currently exist, patients should be encouraged to attend ED and for GP review as they normally would or via telehealth. As an example, this last weekend one of the STEMI presentations I was called in to care for at FSH delayed her ED presentation 12 hours for this very reason. Her occluded LAD was opened but some damage will have been done.

5. What can we do?

We need to get $R_0 < 1$. R_0 is the number of patients infected by each infected individual. An $R_0 < 1$ means the infection is disappearing. Currently isolating infected individuals, reducing the spread from asymptomatic individuals and protecting those at increased risk is essential. For at risk patients the yearly influenza vaccine is recommended.

Better identification with new and more widespread testing (soon hopefully)⁸, a potential vaccine (at least 12-18/12 away) and eventually increased herd immunity and viral attenuation will help. Until then keep your patients, loved ones and yourselves safe (there is no emergency in a pandemic – see link for some good PPE advice⁹).

As more information related to the heart and covid19 comes to hand I will send an updated review. Follow the link for more information. <https://www.wacardiology.com.au/for-doctors/cardiologist-articles/>

Keep safe,

A/Prof Chris Judkins

MBBS MClInRes PhD FRACP

WA Cardiology

Director Training and Research Mount Hospital

Fiona Stanley Hospital

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