

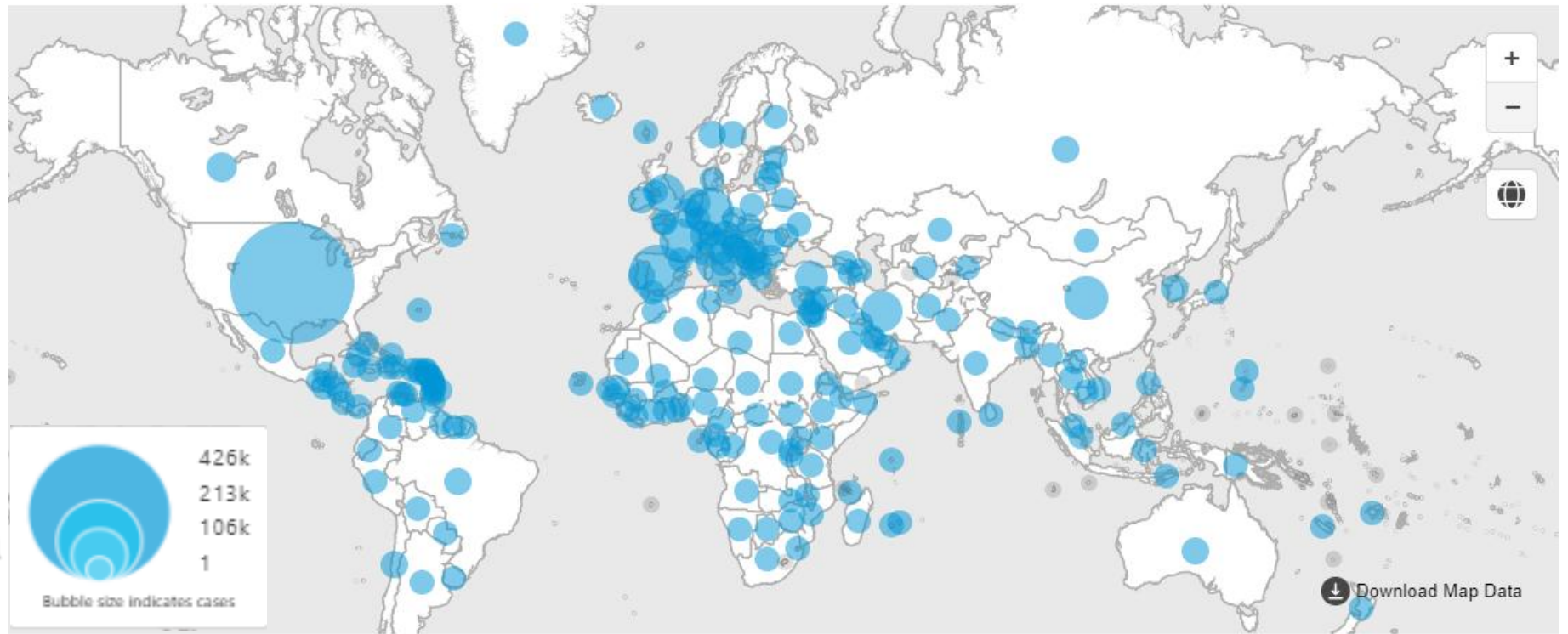
COVID-19 and Diabetes

COVID-19 Impact to Date

>212 Countries

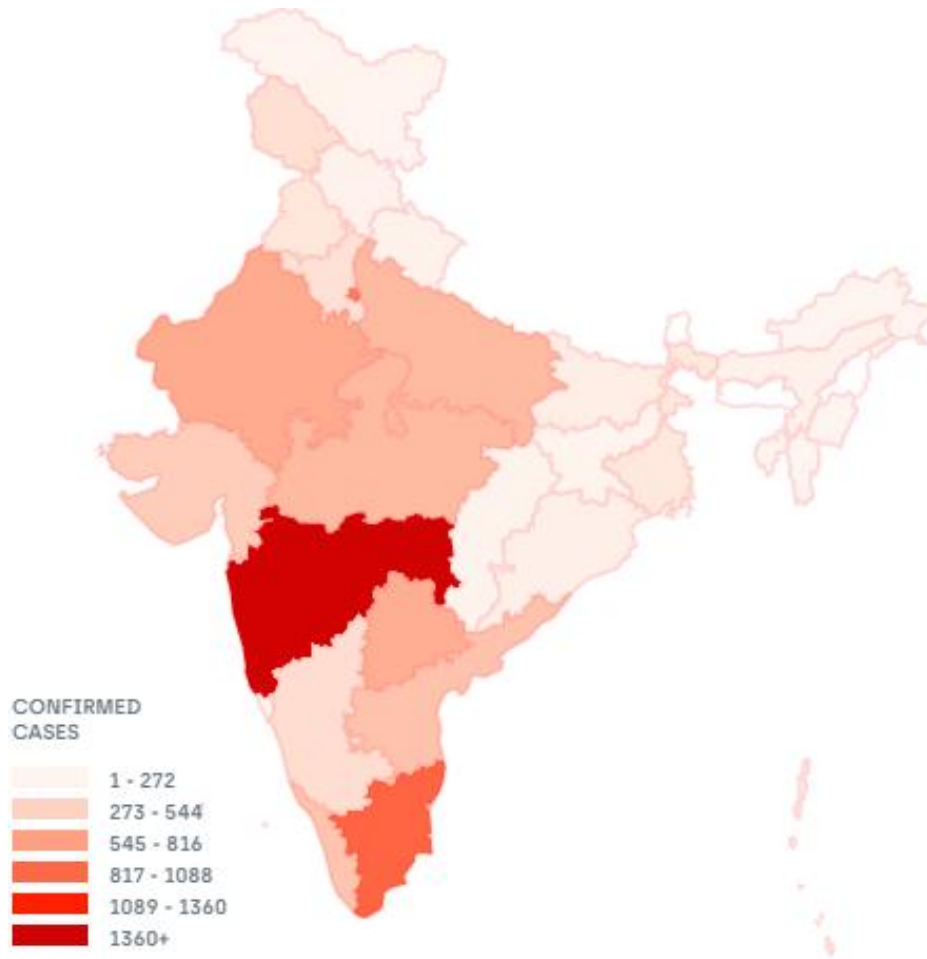
≈ 20 lakh Cases

>1.1 lakh Death



Prevalence- COVID-19

As per Ministry of Health and Family Welfare, Govt. of India



9756
Active Cases

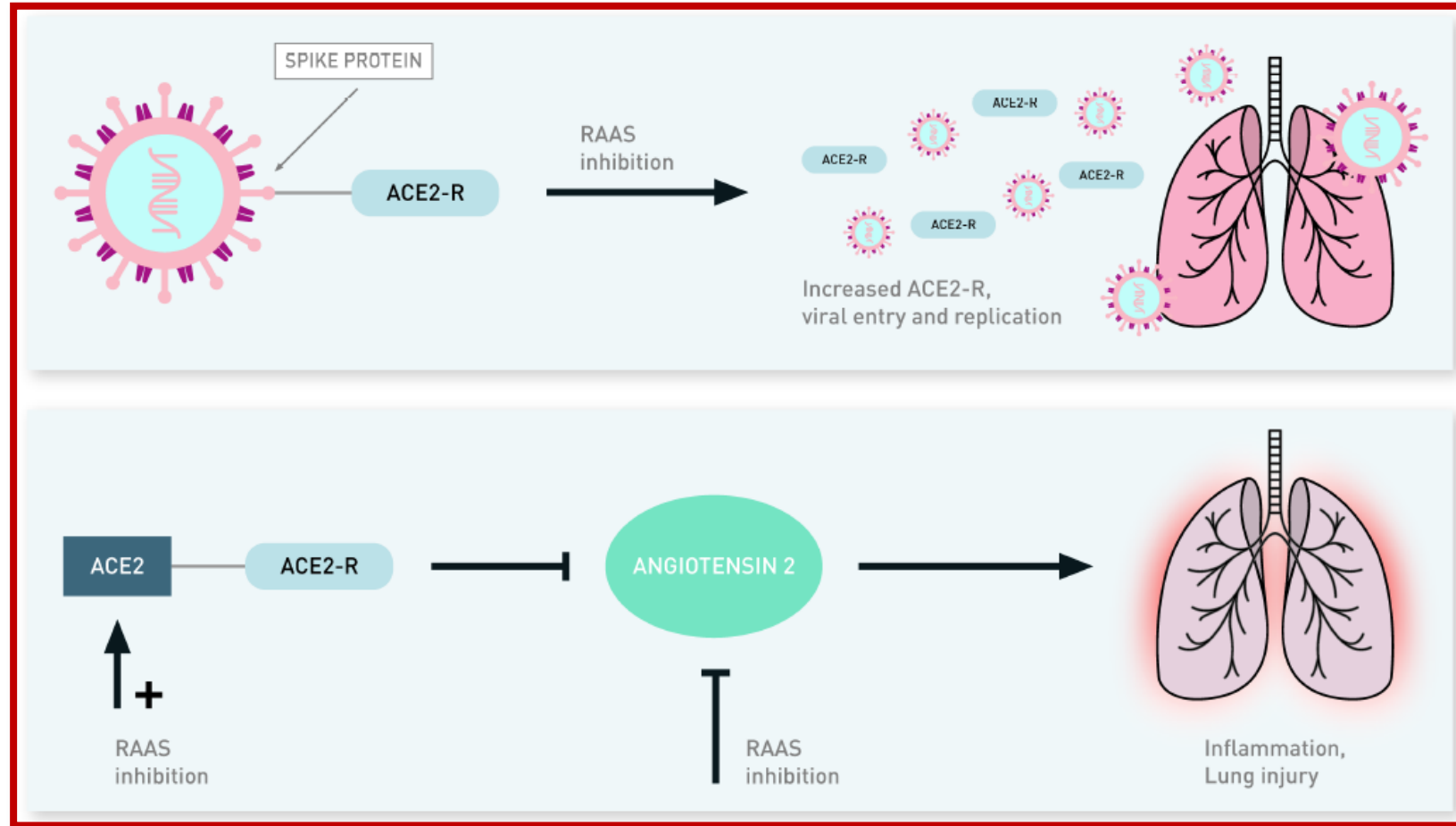


1305
Cured/ Discharged



377
Death

Postulated relationship between SARS-CoV2 and ACE2 receptor



SARS-CoV2 and ACE2 receptor

ACE2 may provide protection against hypertension, myocardial fibrosis, myocardial hypertrophy, arrhythmia, atherosclerosis, and sodium-water retention¹

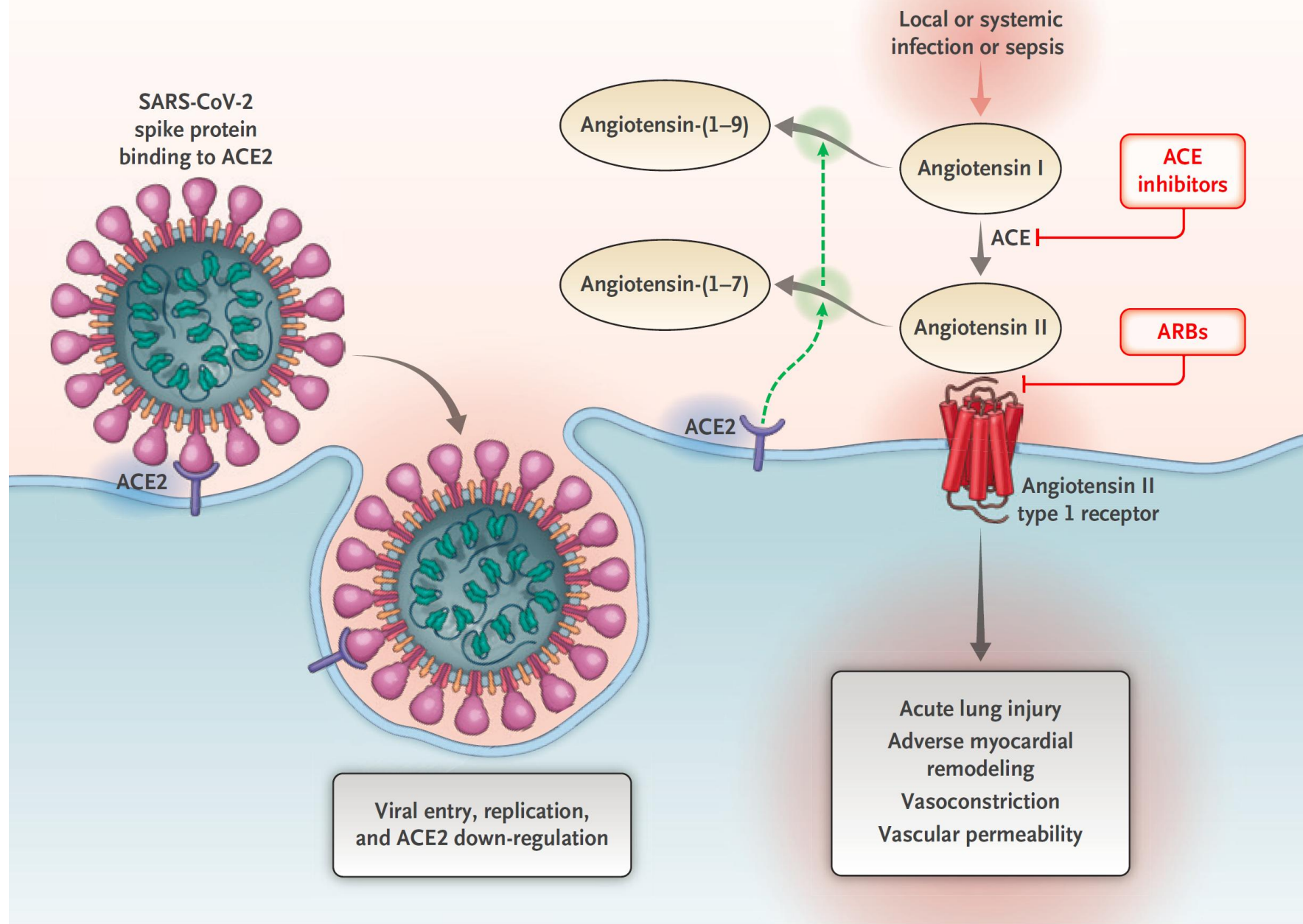
ACE2 acts as the gate for SARS-CoV-2 infection¹

An experimental evidence indicates that the ARB losartan and recombinant human ACE2 can protect mice from severe acute lung injury induced by acid aspiration or sepsis¹

Although these preclinical data suggest that increasing ACE2 expression can attenuate SARS-CoV-2-induced lung injury, there is no direct clinical evidence that has proven ACE2 to be an effective treatment for viral-induced lung injury²

1. Yang C. *JAMA Cardiol.* 2020;10.1001/jamacardio.2020.0934.

2. Patel AB et al. *JAMA.* 2020;10.1001/jama.2020.4812.

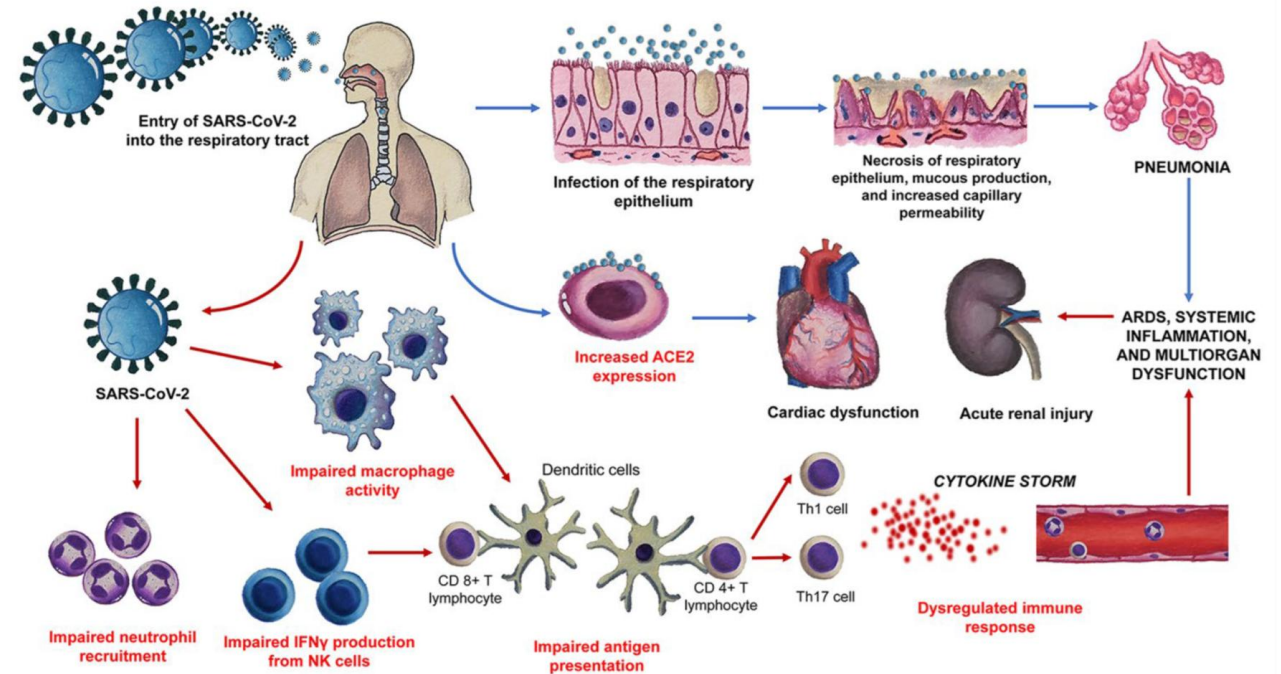


Interaction between SARS-CoV-2 and the Renin-Angiotensin-Aldosterone System

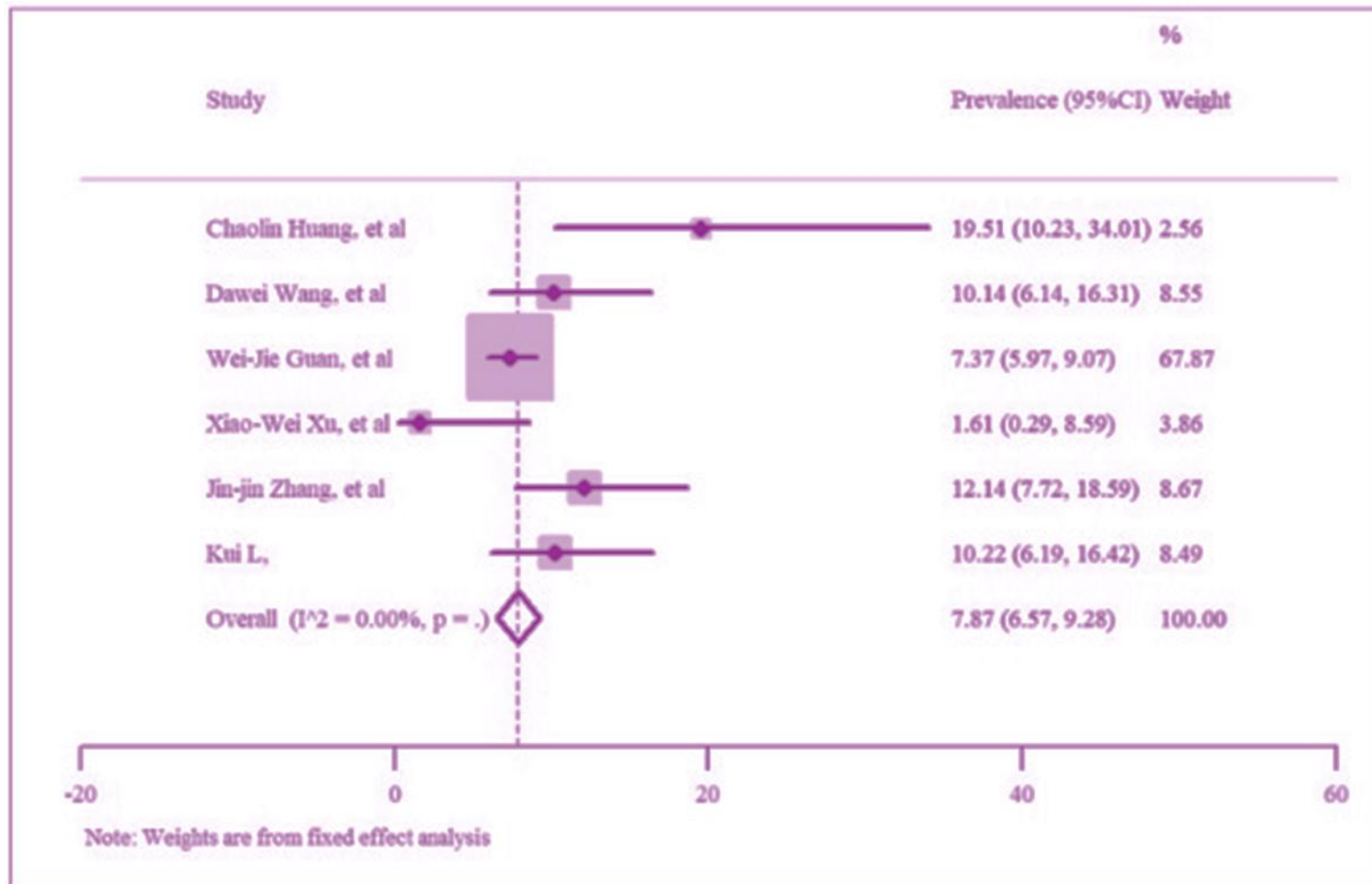
Shown is the initial entry of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) into cells, primarily type II pneumocytes, after binding to its functional receptor, ACE2. After endocytosis of the viral complex, surface ACE2 is further down-regulated, resulting in unopposed angiotensin II accumulation. Local activation of the renin-angiotensin-aldosterone system may mediate lung injury responses to viral insults.

Putative mechanisms contributing to increased susceptibility for COVID-19 in patients with diabetes mellitus (DM).

- Following aerosolized uptake of SARS-CoV-2, invasion of the respiratory epithelium and other target cells by SARS-CoV-2 involves binding to cell surface ACE2.
- Increased expression of ACE2 may favor more efficient cell binding and entry into cells.
- Early recruitment and function of neutrophils and macrophages are impaired in Diabetes.
- Delay in the initiation of adaptive immunity and dysregulation of the cytokine response in Diabetes may lead to the initiation of cytokine storm



Prevalence of diabetes among patients with COVID-19



Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China

Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention

Zunyou Wu, MD, PhD¹; Jennifer M. McGoogan, PhD¹

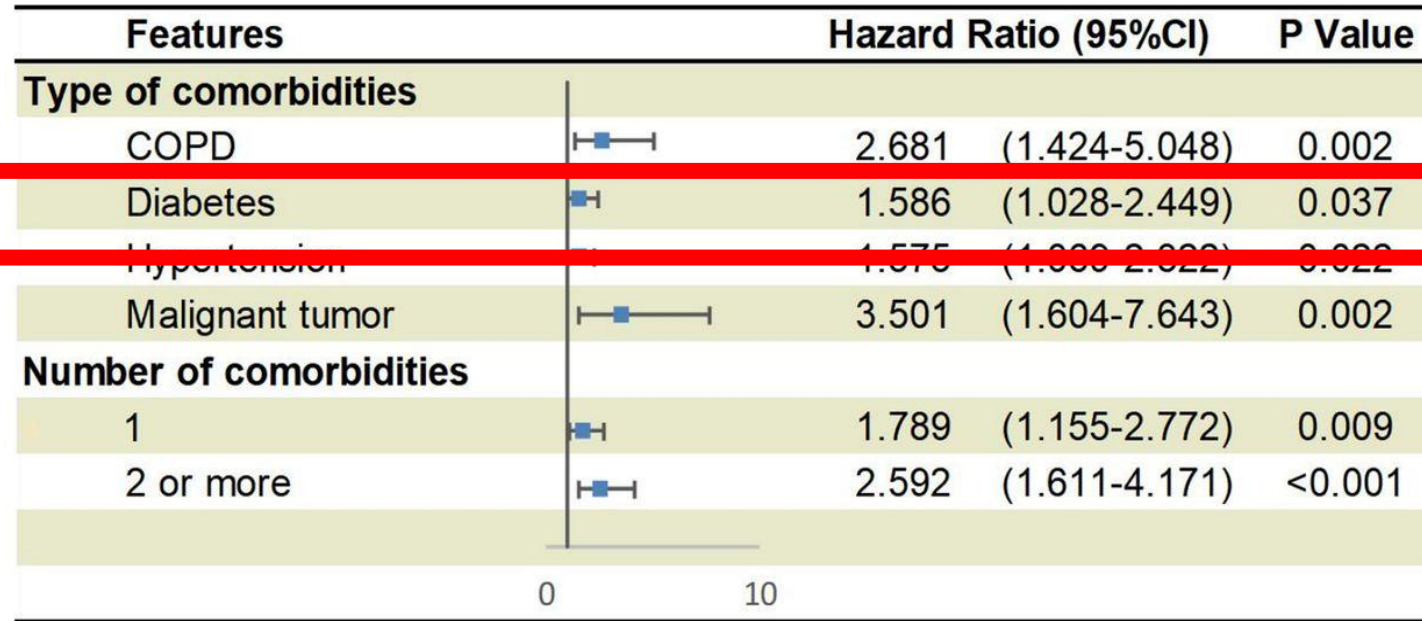
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JAMA. 2020;323(13):1239-1242. doi:10.1001/jama.2020.2648

Case fatality rate
in COVID-19
patients, higher
in Diabetes
Patients

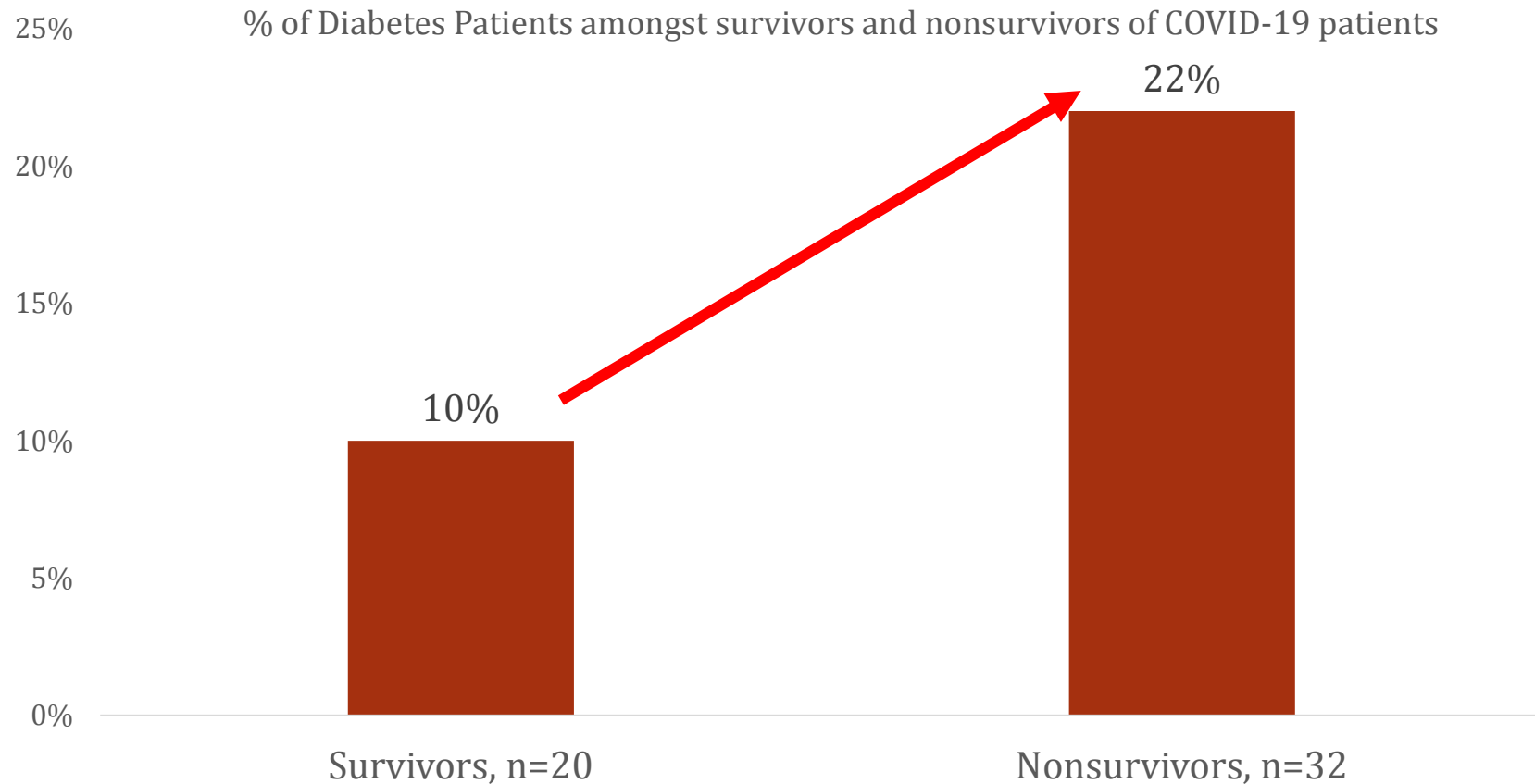
Different cohort of COVID-19 patients	Case Fatality Rate (%)
Overall (n=44672)	2.3%
Aged ≤ 9 years	NIL
Aged 70-79 yrs	8.0%
Aged ≥ 80 yrs	14.8%
With CVD	10.5%
With Diabetes	7.3%
With Chronic respiratory disease	6.3%
With hypertension	6.0%
With cancer	5.6%

Predictors of the composite endpoints in COVID-19 fatal cases



COVID-19 patients with Diabetes has poor prognosis

Diabetes as a comorbidity amongst survivors and nonsurvivors of Critically ill COVID-19 patients



Specific Measures in Patients with Diabetes

- All healthcare personnel engaged in the care of COVID-19 patients must observe necessary precautions at all times.
- Clinicians caring for COVID-19 patients need to be fully aware of the potential side-effects of various therapies used.
- Complications include: Diabetic ketoacidosis, Hyperglycemia, Volume Depletion
- Important to maintain a good glycemic control , as it might help in reducing the risk of infection and also the severity.
- Attention to nutrition, and adequate protein supplementation is important.



Q: Are people with diabetes more likely to get COVID-19?

- People with diabetes are not more likely to get COVID-19 than the general population.
- In the reported cases and published studies, people with diabetes had much higher rates of serious complications and death than people without diabetes
- More the co-morbid conditions, higher their chance of getting serious complications from COVID-19.



Q: Do people with diabetes have a higher chance of experiencing serious complications from COVID-19?

- In general, people with diabetes are more likely to experience severe symptoms and complications when infected with a virus.
- If diabetes is well-managed, the risk of getting severely sick from COVID-19 is about the same as the general population
- Having heart disease or other complications in addition to diabetes could worsen the chance of getting seriously ill from COVID-19, like other viral infections, because your body's ability to fight off an infection is compromised.



Clinical Guide for the Management of people with Diabetes during the Coronavirus Pandemic

- Diabetes services should look to maintain and optimize the health of individuals within their services over the course of the pandemic.
- Some services should not be postponed/cancelled if at all possible, due to acuity and potential impacts, e.g. risk of amputation in the context of active diabetic foot disease.
- Some non-urgent patient contacts could be postponed, but there may not be sufficient capacity in the future to 'catch-up', so it should be acknowledged that postponement will equate to cancellation in a proportion of cases.
- Remote contacts to be encouraged (telephone, email, video conferencing), in case of biochemical tests access to, phlebotomy/blood testing must also be considered. Specific visits for blood testing should only be arranged if the results change management.
- No group-based face-to-face contacts
- Avoid unproductive attendances at hospital.

RSSDI Guidelines for patients with Diabetes and COVID-19

Precautions to be taken by Diabetics

- Advice patients to drink lots of fluids.
- Frequent self-monitoring of blood glucose to prevent hypoglycemia as well as to identify glycemic excursions.
- Specific instructions should be given about hypoglycemia management
- Patients, particularly type 1 diabetes patients, urine ketones to be monitored. If urine ketones are moderate or large or persistently small or there are symptoms of DKA (abdominal pain, nausea, vomiting), immediate medical attention to be advised.

How to implement infection prevention and control measures for patients with suspected or confirmed COVID - 19 infection: RSSDI Guidelines

1) At triage:

- a) Give suspect patient a triple layer surgical mask and
- b) Direct patient to separate area, an isolation room if available.
- c) Keep at least 1 meter distance between suspected patients and other patients.
- d) Instruct all patients to cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others.
- e) Perform hand hygiene after contact with respiratory secretions.

2) Apply droplet precautions:

- a) Droplet precautions prevent large droplet transmission of respiratory viruses.
- b) Use a triple layer surgical mask if working within 1-2 metres of the patient.
- c) Place patients in single rooms, or group together those with the same etiological diagnosis.
- d) If possible, use either disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers). If equipment needs to be shared among patients, clean and disinfect between each patient use.
- e) Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles and light switches). Ensure adequate room ventilation.

Summary

- **All healthcare personnel engaged in the care of COVID-19 patients must observe necessary precautions at all times.**
- **Should be trained in donning, usage, and doffing of the personal protective equipment in accordance with the existing practice guidelines**
- **Clinicians caring for COVID-19 patients need to be fully aware of the potential CV side-effects of various therapies used.**

COVID-19 technical guidance – W.H.O

- Patient management
 - Understand the patient's co-morbid condition(s) to tailor the management of critical illness and appreciate the prognosis
 - Communicate early with patient and family
- During intensive care management of COVID-19, determine which medications should be continued and which should be stopped temporarily.
- Communicate proactively with patients and families and provide support and prognostic information.

Thank You