

Diabetes, high blood pressure & Covid-19

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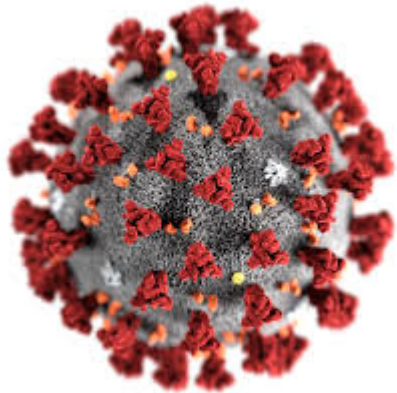
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Risk factors for Covid-19 severity, complications & death

- Age > 60 years
- Respiratory illnesses
- Cardiovascular disease
- Chronic kidney disease
- Cancer & immuno-deficient states
- Obesity
- Hypertension
- Diabetes mellitus

Covid-19, Diabetes mellitus, Hypertension & CVD

- **Mortality in Covid-19 patients with HTN – OR 3.36 (95% CI 1.96 – 5.74)***
- **Mortality in RR Covid-19 patients with DM – RR 2.12 [1.44 – 3.11)****
- **Mortality in RR Covid-19 patients with CVD – OR 2.93 (1.73 – 4.96)*****



* J Infect. 2020 Apr 11:S0163-4453(20)30189-4

** Diabetes Metab Syndr. 2020 Apr 17;14(4):395-403

***Aging (Albany NY). 2020 Apr 8;12(7):6049-6057

Association between Covid-19 & diabetes mellitus

- Chronic inflammation
- Increased coagulation activity
- Impaired immune response
- Potential direct pancreatic damage by virus

Why diabetes worsen Covid-19 ?

- Higher affinity cellular binding and efficient virus entry
- Decreased viral clearance
- Diminished T lymphocyte function
- Hyper-inflammation & cytokine storm syndrome
- Presence of Cardiovascular Disease

Management of people with diabetes infected with COVID-19

- **Anti-diabetic medication**
 - Patients should follow the advice of the physician (diabetes care team) on adjustments to their anti-diabetic medication(s)
- **Monitoring**
 - Blood glucose levels should be frequently checked (generally, every 2-4 hours, keeping records)
- **Maintain glycaemic control**
 - Management of COVID-19 infection by patient and HCPs should follow sick day rules appropriate to any other infection
 - Patients should be aware of signs and symptoms of hyperglycaemia

Therapeutic goals in people with diabetes infected with COVID-19

- **Plasma glucose concentration:** 4-8 mmol/L
- **HbA1c:** less than 53 mmol/mol (7%)
- **CGM/FGM** targets
- **Time in Range** (3.9-10 mmol/L): more than 70% (>50% in frail and older people)

- **Hypoglycaemia** (<3.9 mmol/L): less than 4% (<1% in frail and older people)
- **Plasma glucose concentration** 5-10 mmol/L in the frail

Consensus recommendation Continued

Consideration of potential metabolically interfering effects of drugs in suspected or COVID-19 positive patients with type 2 diabetes

Metformin

- Dehydration and lactic acidosis will probably occur if patients are dehydrated, so patients should stop taking the drug and follow sick day rules
- During illness, renal function should be carefully monitored because of the high risk of chronic kidney disease or acute kidney injury

Sodium-glucose co-transporter 2 inhibitors

- Risk of dehydration and diabetic ketoacidosis during illness, so patients should stop taking the drugs and follow sick day rules
- Patients should avoid initiating therapy during respiratory illness
- Renal function should be carefully monitored for acute kidney injury

Insulin

- Insulin therapy should not be stopped
- Regular self-monitoring of blood-glucose ever 2-4 hours should be encouraged, or continuous glucose monitoring
- Carefully adjust regular therapy if appropriate to reach therapeutic goals according to diabetes type, comorbidities, and health status

Glucagon-like peptide-1 receptor agonists

- Dehydration is likely to lead to a serious illness so patients should be closely monitored
- Adequate fluid intake and regular meals should be encouraged

Dipeptidyl peptidase-4 inhibitors

- These drugs are generally well tolerated and can be continued

Connected Health Models and Telemedicine

- Should be used to continue regular reviews and self-management education programmes virtually and ensure patients are adherent to therapy.

General preventative measures



Maintain a **good glycaemic control** to reduce the risk of infection and also the severity.



Special care needed for those with co-existing heart disease or kidney disease to **stabilise their cardiac/renal status**.



Encourage **exercise** to stay healthy.



Attention to **nutrition and adequate protein intake is important**, correcting any nutritional deficiencies where appropriate.



It is important to take **influenza and pneumonia vaccinations** to decrease the chances of secondary infections.

Guidance for people with diabetes to prepare for COVID-19

People with diabetes should have ready



Contact
information
of health care
provider



A stock of
medications and
supplies for
monitoring blood
glucose



Enough stock of
simple
carbohydrates
like regular soda,
honey, jam, etc.
to manage low
blood glucose



Glucagon and
ketone strips, in
case of poor
glycaemic
control

COVID-19 and Hypertension

- Most common co-morbidity in COVID-19 (15-30%)
- Very common in older patients – usual victims
- Covid-19 patients with HTN had worse heart problems and complications from the infection
- COVID-19 may be an endothelial disease

COVID-19 and Hypertension treatment

- Maintain good control of blood pressure
- Avoid changes in the medication regime unless recommended by expert healthcare team
- ACE inhibitors and ARBs should not be stopped unless clinicians advised to do so
- Withdrawal of medications should be only under medical supervision

Thank you!

Ensuring people **live longer**
healthier & more active lives..

