Guidelines for Management of COVID-19 - A point of Care Approach (Version 4.0)}

Guidelines for Management of COVID-19 (Version 4.0) 

1. Guidelines should be followed in all care settings.
2. Early management of COVID-19 is crucial.
3. Early identification and isolation of cases.
4. Proper infection control measures should be implemented.
5. Regular monitoring of patients with COVID-19.
7. Proper disposal of waste materials.
8. Regular sanitization and disinfection of areas.
9. Regular training of healthcare workers.

Guidelines:

1. Early identification and isolation of cases.
3. Proper infection control measures.
4. Regular monitoring of patients.
5. Isolation of patients.
7. Regular sanitization and disinfection.
8. Regular training of healthcare workers.
9. Regular monitoring of patients.
Guidelines for Management of COVID19

[A Point of Care Approach]

Version 4.0 (POC)

April 2021

Government of Karnataka
HOME ISOLATION

Asymptomatic: COVID-19 Positive
COVID-19 Positive with Mild Symptoms
- Anosmia
- Fever
- Dry Cough
- Myalgia
- Diarrhoea
- Loss of Taste/smell

Investigations Suggested:
- CBC, LFT, RFT
- RBS
- CXR
- CRP
- SpO2 monitoring 6 hourly
- 6MWT(Six Minute Walk Test) or 3MWT (For >60 yrs.)

Management:
- T. Ivermectin 12mg OD for 3 days OR T. Favipiravir 1800mg (200mg x9) BD on Day 1, f/b 800mg(200mg x4) BD For 6 days.
- T. Vitamin C 500mg BD
- T. Zinc 50mg OD

Monitor Symptoms and Body Temperature
Maintain Adequate Hydration

Monitor Oxygen saturation with a Pulse Oximeter
Measure BP twice a day
Perform 6MWT everyday

If the Above patients Develops these symptoms/signs:
- Shortness of Breath/Breathlessness
- Resting Heart Rate >100/Palpitations
- SpO2 <94% on any occasion
- 6MWT/3MWT induced Desaturation of >4%
- Neutrophil Lymphocyte Ratio>3.5
- Worsening of Symptoms

To be shifted immediately to DCHC/DCH.

- All opting for Home isolation should have Pulse Oximeter and BP Apparatus at home.

Eligibility for Home Isolation/Home care:
- The person shall be clinically assigned as asymptomatic/mild case through telephonic triage or by the health staff/medical officer/ physician. Such cases should have the requisite facility at their residence for self-isolation and also for quarantining the family contacts.
- A caregiver should be available to provide care on a 24 X 7 basis. A regular communication link between the caregiver and hospital is a pre-requisite for the entire duration of home isolation/home care
- The person shall provide a signed undertaking for self-isolation/home care and follow guidelines of home isolation/home care. The person shall agree to monitor his/her health and regularly inform their health status to the tele-monitoring team/medical officer/physician/family doctor and District Surveillance Officer (DSO) for further follow up by the surveillance teams.
- Home isolation/home care shall not be applicable for pregnant women 2 weeks before expected date of delivery (EDD)

Guidelines for Management of COVID19: Point of Care Approach
• Patient Who symptoms increase within the next 12-24 hours, needs to be Shifted to CCC/DCHC depending on situation

**COVID CARE CENTRES (CCC)**

Separate well ventilated room with a separate toilet for the person in isolation/home care.
The person shall stay in the identified room and away from other persons in the home.
Group A/B, with no adequate facilities for proper Home Isolation will be in CCC

**Investigations:**
- CBC, LFT, RFT
- RBS
- Chest Xray
- CRP
- SpO2 monitoring 6 hourly
- 6MWT (Six-minute Walk Test) /3MWT

**Management:**
- T. Ivermectin 12mg OD for 3 days OR
  - T.Favipiravir 1800mg (200mg ×9) BD on Day 1, f/b 800mg (200mg ×4) BD for 6 days
- T. Vitamin C 500mg BD
- T. Zinc 50mg OD

Monitor Symptoms and Body Temperature
Monitor Oxygen saturation
Maintain Adequate Hydration/ Drink Plenty of Fluids
Monitor Oxygen saturation with a Pulse Oximeter
Measure BP twice a day
Perform 6MWT everyday

**Supportive Counselling of the Patient & family members**

If the Above patients Develops these symptoms/signs:
- Shortness of Breath (Breathlessness)
- Resting Heart Rate >100, Palpitations
- SpO2 <94% on any occasion
- 6MWT induced Desaturation of >4%
- Neutrophil Lymphocyte Ratio >3.5
- Worsening of Symptoms

To be shifted immediately to DCHC/DCH
50% of beds in CCCs should have facility for Oxygen Supply

Guidelines for Management of COVID19: Point of Care Approach
Patient in CCC will stand discharged /released from home isolation):
- after 10 days of symptom onset (or date of sampling, for asymptomatic cases) and
- no fever for 3 days consecutive,
- Maintains oxygen saturation above 94;

Thereafter, the patient shall be advised to isolate at home and self-monitor their health for further 7 days.

There is no need for any COVID-19 test (RT-PCR / CBNAAT /True-NAT/ Rapid Antigen Test) after the period of home isolation is over.

**Designated COVID Health Centres (DCHC)**

Symptomatic Patients with Comorbidities
- Age >60
- Obesity
- DM/HTN/IHD
- COPD/Chronic Lung Disease
- Immunosuppressed State
- CKD / CLD

Investigations:
- CBC
- LFT
- RFT
- RBS
- ECG
- Chest Xray
- SpO2
- 6MWT/3MWT
- HRCT Thorax (If Available)
- CRP
- D-Dimer

Blood tests to be repeated after 72 hours, if baseline values are abnormal.

Management:
- T. Ivermectin 12mg OD for 3 days OR
  T.Favipiravir 1800mg (200mg x9) BD on Day 1, f/b 800mg (200mg x4) BD for 6 days
- T. Vitamin C 500mg BD
- T. Zinc 50mg OD
- Inj. LMWH [E.g., Enoxaparin 0.5mg/kg/day] S/C or Inj.Heparin 5000U, if D-Dimer >1000ng/ml for 7 days.
- Start on Oxygen therapy immediately if Saturation drops <94%,
  Add Inj. Dexamethasone 6mg IV OR T. Dexamethasone 8mgOD for 5-10 days

Monitor Symptoms and Body Temperature
Monitor Oxygen saturation
Adequate Control and Management of Comorbidities
Antibiotics if Clinical Signs of Bacterial Infection

Supportive Counselling of the Patient & family members

Patient to be shifted to DCH if:
Any Desaturation <90%,
Any Uncontrolled Comorbidities,
Any Neutrophil Lymphocyte Ratio >17
Any Worsening of Symptoms
  • Use Inj.Remdesivir only in patients with duration of symptoms <10 days.(Ideally <5days) so as to STRIKE EARLY and STRIKE HARD

Designated COVID Hospitals (DCH)- Wards

Pneumonia without Respiratory Failure

Investigations:
- SpO2
- CBC
- LFT
- RFT
- RBS
- ECG
- CXR
- CRP, D-Dimer
- LDH,Ferritin
- ABG baseline
- Triglycerides
- Procalcitonin
- HRCT Thorax
- Trop-1, CKMB
- IL-6

Management:
- Inj. LMWH [E.g., Enoxaparin 0.5mg/kg/day]S/C or Inj.Heparin 5000U IV TID if D-Dimer >1000ng/ml for 7 days/ till discharge if values of D-Dimer is still high >500.
  • If CRP is elevated, Steroids can be Considered
    Inj. Methylprednisolone 40mg IV [1-2mg/kg] for 5-10 daysOR
    Inj. Dexamethasone 6mg IV [0.2-0.4mg/kg]OR
    T. Dexamethasone 8mg OD for 5-10 days
- Inj. Remdesivir 200mg IV OD on D1, F/b 100mg IV OD for 4 days
- T. Vitamin C 500mg BD
- T. Zinc 50mg OD
- Start on Oxygen therapy if Saturation drops <94%.

Blood tests to be repeated after 48 hours, if baseline values are abnormal.

ROX INDEX
Ratio of SpO2/FiO2 to Respiratory rate:
<4.8 is an indication to shift to ICU

Guidelines for Management of COVID19: Point of Care Approach
- Pulmonary Rehabilitation Exercises to be initiated
- Supportive Counselling of the Patient & family members

Monitor Symptoms and Body Temperature
Monitor Oxygen saturation
Adequate Control and Management of Comorbidities
Antibiotics if Clinical Signs of Bacterial Infection

Danger Signs:
- SpO2 <90% on any occasion, PaO2 <60mmHg
- Neutrophil Lymphocyte Ratio>17

**Designated COVID Hospitals (DCH)- Wards**

Pneumonia with Respiratory Failure

**Investigations:**
- SpO2
- CBC
- LFT
- RFT
- RBS
- ECG
- CXR
- CRP, D-Dimer
- LDH, Ferritin
- ABG as required
- Triglycerides
- Procalcitonin
- HRCT Thorax
- Trop-I
- CK-MB
- IL-6

**Management:**
- Oxygen Therapy as Appropriate
- CARP(COVID19 Awake Repositioning-Proning) Protocol
- Inj. Methylprednisolone 40mg IV [1-2mg/kg] for 5-10 days
**OR**
- Inj. Dexamethasone 6mg IV [0.2-0.4mg/kg] for 5-10 days
- Inj. LMWH [E.g., Enoxaparin 0.5mg/kg/day] S/C or Inj. Heparin 5000 IU IV TID till the patient is discharged/ D-dimer levels <500ng/dl
- Inj. Remdesivir 200mg IV OD on D1, F/b 100mg IV OD for 4 days.

**ROX INDEX**

Ratio of SpO2/FiO2 to Respiratory rate:
<4.8 is an indication to shift to ICU

Blood tests to be repeated after 48 hours

Guidelines for Management of COVID19: Point of Care Approach
Consider Use of Convalescent Plasma Therapy, 4-13ml/kg (Usually 200ml single dose is given slowly over not less than 2 hours) if Patient continues to be hypoxic when still on Antivirals; Not recommended after 6th day of illness.

- T. Vitamin C 500mg BD
- T. Zinc 50mg OD

Adequate Control and Management of Comorbidities
Antibiotics if Clinical Signs of Bacterial Infection

**Pulmonary Rehabilitation Exercises to be initiated**

**Supportive Counselling of the Patient & family members**

**Danger Signs:**
- SpO₂ <90% on any occasion, PaO₂ <60mmHg
- Neutrophil Lymphocyte Ratio >17

**Designated COVID Hospitals (DCH)- ICU**

Pneumonia with Respiratory Failure with Sepsis /Septic Shock/Multi Organ Dysfunction Syndrome
- SpO₂ <90 on Room Air
- RR>30/min
- PaO₂ <60mmHg
- Altered Mental Status
- Any Sign of End Organ Damage

**Investigations:**
- CBC, LFT, RFT
- RBS
- ECG
- CXR
- CRP, D-Dimer
- LDH, Ferritin
- ABG as needed
- Triglycerides
- Procalcitonin
- HRCT Thorax
- Trop-I, CK-MB
- IL-6
- Blood Culture

**Management:**
- Oxygen Therapy and Airway Management as Appropriate
- CARP (COVID Awake Repositioning Proning) Protocol
- Initiate Antibiotics as per Institution Protocol, Ideally within 1 hour of Admission.
- Inj. LMWH [E.g., Enoxaparin 0.5mg/kg/dayBD] S/C or Inj.Heparin 5000U IV TID until discharge.

Guidelines for Management of COVID19: Point of Care Approach
- Inj. Methylprednisolone 40mg [1-2mg/kg] IV for 5-10 days OR
- Inj. Dexamethasone 6mg IV [0.2-0.4mg/kg] for up to 10 days OR
- Inj. Hydrocortisone 50mg TiD for up to 10 days OR
- Tab. Prednisolone 40mg OD OR
- Tab. Methylprednisolone 16mg BD or 8mg qiD
- Consider use of Inj. Tocilizumab 400mg[8mg/kg] IV in 100ml NS over 1 hour, 12 hours apart OR
- Inj. Toflizumab Up to 1.6 mg/kg iv, to be given in 250 ml normal saline over 6 hours, Single dose: If Patient continues to be hypoxic in spite of Higher Respiratory Support.
- T. Vitamin C 500mg BD
- T. Zinc 50mg OD

Continuous Monitoring of Vital parameters
Adequate Control and Management of Comorbidities
Pulmonary Rehabilitation Exercises to be initiated
Supportive Counselling of family members
Cardiac Monitoring and MR-Scanning for Myocarditis

RED FLAG SIGNS:
- SpO2 <90% on any occasion
- Neutrophil Lymphocyte Ratio >17

Investigations to be repeated as and when appropriate, Decisions to be individualised to each patient

All the decisions to be taken on the basis of Clinical Signs and Symptoms, rather than Blood and Radiological parameters

VENTILATION IN PATIENTS WITH ARDS WITH LOW LUNG COMPLIANCE:
- Select volume A/C mode on the ventilator
- Set ventilator settings to achieve initial VT = 6 mL/kg PBW.
- Set initial rate to approximate baseline minute ventilation (not >35 bpm).
- Aim for a pH over 7.2, do not worry about the PaCO2. If the PaCO2 keeps going up too much in spite of a RR of 35, reduce the dead space in the circuit. If the pH drops below 7.2, consider adding sodium bicarbonate infusion.
- Use a minimum positive end expiratory pressure (PEEP) of 5 cm H2O.
- Plateau pressure goal: ≤30 cm H2O
- Check Pplat (0.5 second inspiratory pause) at least every 4 hours and after each change in PEEP or VT
- If the Pplat remains above 30 cm H2O, decrease VT by 1 mL/kg steps (minimum = 4 mL/kg).
VENTILATION IN PATIENTS WITH ARDS WITH NEAR-NORMAL LUNG COMPLIANCE:

- Select volume A/C mode on the ventilator
- PEEP <10 cm of water with BP monitoring
- FIO2 < 60 - 70% to keep SaO2 > 85, PaO2 < 60 mmHg
- Tidal volume - 8-10 ml/kg
- Prone ventilation not indicated
- Try semi recumbent position
- Try weaning slowly, watch for mucosal oedema, Hydrocortisone 200 mg IV, 30min before extubating.

Monitoring in COVID-19

<table>
<thead>
<tr>
<th>Parameters</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP, Heart Rate</td>
<td>Daily</td>
<td>Daily</td>
<td>12 hrly</td>
<td>6 hrly</td>
<td>6 hrly</td>
<td>Continuously</td>
</tr>
<tr>
<td>SpO2</td>
<td>6 hrly</td>
<td>6 hrs</td>
<td>4 hrly</td>
<td>4 hrly</td>
<td>Continuously</td>
<td>Continuously</td>
</tr>
<tr>
<td>CBC, RFT, LFT, CRP</td>
<td>Once</td>
<td>Once</td>
<td>Every 2 days</td>
<td>Every 2 days</td>
<td>Every 2 days</td>
<td>Daily</td>
</tr>
<tr>
<td>D-Dimer</td>
<td>-</td>
<td>-</td>
<td>Once/As indicated</td>
<td>Every 2 days</td>
<td>Every 2 days</td>
<td>Every 2 days</td>
</tr>
<tr>
<td>ECG</td>
<td>Once</td>
<td>Once</td>
<td>Once/As indicated</td>
<td>Every 2 days</td>
<td>Every 2 days</td>
<td>Daily</td>
</tr>
<tr>
<td>ABG</td>
<td>-</td>
<td>-</td>
<td>Once if Indicated</td>
<td>Every 2 days</td>
<td>Daily</td>
<td>Daily/As Indicated</td>
</tr>
<tr>
<td>Chest Xray</td>
<td>Once</td>
<td>Once</td>
<td>Once/As indicated</td>
<td>Every 2 days</td>
<td>Every 2 days/As Indicated</td>
<td>As indicated/Every 2 days</td>
</tr>
</tbody>
</table>

The Decisions of Management should be on the basis of Clinical Judgement rather than the Radiological and Haematological Parameters
PULMONARY REHABILITATION

Frequency of exercises
1st Week – One full sequence of below (1-8) exercises to be done only once. Repeat 4 times/day with minimum interval of 2-3hrs
2nd week – one full sequence of below (1-8) exercises to be done twice. Repeat 3 times/day
3rd & 4th week - one full sequence of below (1-8) exercises to be done thrice. Repeat 2 times/day

1. Diaphragmatic Breathing.
2. Incentive Spirometry.
3. Sit to Stand Squats.
4. Stand Marching.
5. Seated Arm Reaches.
7. Side stepping.
8. Wall Push-Ups.

Do not proceed if you do not feel well enough to exercise. STOP exercise immediately if you get chest pain, palpitations, exhaustion, or dizziness/lightheadedness.

OXYGEN THERAPY TITRATION

TARGET SATURATION (with lowest FiO2 possible)
All COVID19 patients: SpO2 94-96%
COVID19 patients with COPD: SpO2 88-92%
For Patients on Mechanical Ventilation: SpO2 90-92%

- Nasal Canula Up to 6L/min
- Face Mask Up to 12L/min
- Non Rebreathing Mask up to 15L/min
- High Flow Nasal Canula
- Non Invasive Ventilator
- Invasive Mechanical Ventilator

Guidelines for Management of COVID19: Point of Care Approach
Allow at least 5 mins at each dose before adjusting further upwards or downwards (except with Major and sudden fall in saturation – falls ≥ 3% also require clinical review)

**MANAGEMENT OF HYPERTENSION IN COVID 19 PNEUMONIA**

Among patients with COVID 19, studies have shown that concomitant hypertension is an independent risk factor carrying a twofold mortality risk as compared to non-hypertensives. Hypertension, CKD, AKI, ESRD patients on maintenance haemodialysis and ischemic heart disease with or without diabetes are the array of patients with COVID 19 and hypertension. **Hence the patients with co morbidities are expected to have severe forms of COVID 19.**

There is no evidence that stopping the antihypertensive reduces severity of COVID 19. Studies on hypertensives with COVID 19 using RAAS antihypertensive and non RAAS antihypertensive like beta blockers and calcium channel blockers showed no difference in disease severity, but lower mortality among patients using RAAS agents have been documented.

Patients with AKI not requiring dialysis should be managed with conservative fluid resuscitation goals. Since more patients may in addition have pneumonia and ARDS limiting the use of iv fluids, fluid resuscitation should be individualized based on trackable objective measures like IVC collapse in bedside USG.

For ESRD/CKD and AKI patients requiring RRT, the indications remain the same as for non-COVID patients.

**Investigations recommended for hypertensives with COVID 19:**
- ECG/ 2D ECHO is possible
- BNP, Troponin I, CPK-MB
- RFT/urine routine
- Serum electrolytes
- Cardiac monitoring for arrhythmias
- USG abdomen/chest
- MR scanning for myocarditis.

**All COVID 19 patients presenting with hypertension BP>140/90, / SBP>160 mmHg**

1. With history of hypertensive drugs for same- to continue, if well controlled.
2. Diabetics if on ACE inhibitors or ARBs to continue.
3. CKD/ESRD on HD - to continue same antihypertensive closely monitoring RFT and serum electrolytes/ RRT continued.
4. If AKI suspected- urine routine for proteinuria, haematuria, abnormal RFT.

Guidelines for Management of COVID19: Point of Care Approach
- Monitor input/output chart
- Avoid ACE inhibitors and ARBs. Use non RAAS antihypertensives.
- Daily monitoring of serum creatinine and serum electrolytes.
- Avoid nephrotoxic drugs.
- If associated diabetes mellitus present or steroid used for ARDS COVID 19 regimen, monitor blood sugars
- Check for procalcitonin.

**MANAGEMENT OF HYPERGLYCEMIA AND DIABETES IN COVID19**

Ref: ENDOCRINOLOGY IN THE TIME OF COVID-19: Remodelling diabetes services and emerging innovation in European Journal of Endocrinology, August 2020

<table>
<thead>
<tr>
<th>Where change seen</th>
<th>Key difference with COVID-19</th>
<th>Suggested action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early in admission</td>
<td>People with COVID-19 infection appear to have a greater risk of hyperglycemia with ketones including:</td>
<td>• Check blood glucose in everybody on admission</td>
</tr>
<tr>
<td></td>
<td>• People with type-2 diabetes (risk even greater if on a SGLT-2 inhibitor)</td>
<td>• Check ketones in:</td>
</tr>
<tr>
<td></td>
<td>• People with newly diagnosed diabetes</td>
<td>• Everybody with diabetes being admitted</td>
</tr>
<tr>
<td></td>
<td>Covid-19 disease precipitates atypical presentations of diabetes emergencies (e.g. Mixed DKA and hyperosmolar states)</td>
<td>• Everybody with admission glucose over 12 mmol/l</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Stop SGLT-2 inhibitors in all people admitted to hospital</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Consider using 10-12% glucose where ketoses persists despite treatment in line with usual protocols</td>
</tr>
<tr>
<td>Severe illness on admission</td>
<td>Fluid requirements may differ in those with DKA/HHS and evidence of: or “Lung leak” myocarditis</td>
<td>• After restoring the circulating volume the rate of fluid replacement regimen may need to be adjusted where evidence of “lung leak” or myocarditis.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Contact the diabetes specialist team early</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Early involvement of the critical care team</td>
</tr>
<tr>
<td>All inpatient areas</td>
<td>Infusion pumps may not be available to manage hyperglycemia using intravenous insulin as these are required elsewhere (e.g: for sedation in ICU)</td>
<td>• Use alternative s/c regimens to manage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hyperglycemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Mild DKA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Contact the diabetes specialist team for support</td>
</tr>
<tr>
<td>ICU</td>
<td>Significant insulin resistance seen in people with type-2 diabetes in ICU settings</td>
<td>• IV insulin protocols may be need amending (people seen requiring up to 20 units/hr)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Patients often nursed prone to feeding may be accidentally interrupted – paradoxical risk of hypoglycemia</td>
</tr>
</tbody>
</table>

Guidelines for Management of COVID19: Point of Care Approach
1: People with no past history of Diabetes and no Stress Hyperglycaemia:

<table>
<thead>
<tr>
<th>Blood Glucose Monitoring:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency: Two tests per day – at least</td>
</tr>
<tr>
<td>Timings: Fasting; Before and 2 hours After Meals</td>
</tr>
<tr>
<td>Blood Glucose Targets mg/dl: Pre-meal= 80 to 120; Post-meal= 140 – 180</td>
</tr>
<tr>
<td>Special Note: Even if initial blood glucose levels are normal, repeat frequent daily monitoring should be done if started on steroids.</td>
</tr>
</tbody>
</table>

2: People with no past history of Diabetes; Stress Hyperglycaemia diagnosed in Hospital:

<table>
<thead>
<tr>
<th>Blood Glucose Monitoring:</th>
</tr>
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<tbody>
<tr>
<td>Frequency: Four to six tests per day</td>
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<tr>
<td>Timings: Fasting; Before and 2 hours After Meals; 3 am</td>
</tr>
<tr>
<td>Blood Glucose Targets mg/dl: Pre-meal= 80 to 120; Post-meal = 140 – 180</td>
</tr>
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<td>Special Note: More frequent daily monitoring should be done if started on steroids.</td>
</tr>
</tbody>
</table>

**Oral Diabetes Medications**

Start the following new diabetes medications:

- Always try to include Gliptins [DPP4 Inhibitors] in the treatment regimen [Eg: Tab Vildagliptin / Sitagliptin] at the appropriate doses
- Insulin Injections: Please enter details in the Diabetes Monitoring Sheet

**Start the following new insulin regimen Bolus Only:**

<table>
<thead>
<tr>
<th>Sliding Scale Choices Insulin Units:</th>
<th>TDD= Total Daily Dose given on previous day</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDD</td>
<td>BG &lt; 150</td>
</tr>
<tr>
<td>&lt; 40</td>
<td>Low</td>
</tr>
<tr>
<td>41- 80</td>
<td>Mid</td>
</tr>
<tr>
<td>&gt; 80</td>
<td>High</td>
</tr>
</tbody>
</table>

**Dose Titration:** Daily calculate the Total Daily Dose of Insulin [TDD] and upgrade or downgrade the Scheduled Insulin Doses

3: People with past history of Diabetes on Oral Diabetes Medicines OHA [+/- Insulin]:

<table>
<thead>
<tr>
<th>Blood Glucose Monitoring:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency: Four to six tests per day</td>
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**Oral Diabetes Medications**

Start the following new diabetes medications:

- Always try to include Gliptins [DPP4 Inhibitors] in the treatment regimen [Eg: Tab Vildagliptin / Sitagliptin] at the appropriate doses
- Insulin Injections:

  **Start the following new insulin regimen Basal - Bolus:**

- Basal Insulin Regular Scheduled [Fixed] Dose TID + Sliding Scale Dose TID [Before Breakfast, Lunch and Dinner; Basal Insulin NPH or Glargine: After Dinner – Bedtime:]
Choose the appropriate Sliding Scale: Low – Mid – High

<table>
<thead>
<tr>
<th>Sliding Scale Choices Insulin Units:</th>
<th>TDD= Total Daily Dose given on previous day</th>
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</thead>
<tbody>
<tr>
<td>TDD</td>
<td>Scale</td>
</tr>
<tr>
<td>&lt; 40</td>
<td>Low</td>
</tr>
<tr>
<td>41-80</td>
<td>Mid</td>
</tr>
<tr>
<td>&gt; 80</td>
<td>High</td>
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</table>

Dose Titration: Daily calculate the Total Daily Dose of Insulin [TDD] and upgrade or downgrade the Scheduled Insulin Doses

<table>
<thead>
<tr>
<th>Scheduled Dose Insulin Units: Ratio of Bolus : Basal = 2 : 2 : 1</th>
<th>Example below</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDD</td>
<td>Insulin Units</td>
</tr>
<tr>
<td>Bolus</td>
<td>Regular</td>
</tr>
<tr>
<td>Basal</td>
<td>NPH / Glargine</td>
</tr>
</tbody>
</table>

4: Sick / ICU diabetes patients with severe hyperglycaemia, DKA or HHNK:

**Blood Glucose Monitoring**

Frequency: Seven tests per day

Timings: Fasting; Before and 2 hours After Meals; 3 am

Blood Glucose Targets mg/dl: Pre-meal= 80 to 120; Post-meal = 140 – 180

Special Note: More frequent daily monitoring should be done if started on steroids.

**Oral Diabetes Medications**

Start the following new diabetes medications:

Always try to include Gliptins [DPP4 Inhibitors] in the treatment regimen [Eg: Tab Vildagliptin / Sitagliptin] at the appropriate doses

**Insulin Injections:**

Start the following new insulin regimen Basal - Bolus:

Basal Insulin Regular Scheduled [Fixed] Dose TID + Sliding Scale Dose TID [Before Breakfast, Lunch and Dinner;]

Basal Insulin NPH or Glargine: After Dinner – Bedtime:

[Choose the appropriate Sliding Scale: Low – Mid – High]

**Sliding Scale Choices Insulin Units: TDD= Total Daily Dose given on previous day**

<table>
<thead>
<tr>
<th>TDD</th>
<th>Scale</th>
<th>BG &lt; 150</th>
<th>151-200</th>
<th>201-250</th>
<th>251-300</th>
<th>&gt; 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 40</td>
<td>Low</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>41-80</td>
<td>Mid</td>
<td>0</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>&gt; 80</td>
<td>High</td>
<td>0</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
</tr>
</tbody>
</table>

Dose Titration: Daily calculate the Total Daily Dose of Insulin [TDD] and upgrade or downgrade the Scheduled Insulin Doses

**Scheduled Dose Insulin Units: Ratio of BOLUS : BASAL = 2 : 2 : 2 : 1**

<table>
<thead>
<tr>
<th>TDD</th>
<th>Insulin Units</th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Dinner</th>
<th>Bedtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolus</td>
<td>Regular</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Basal</td>
<td>NPH / Glargine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

Guidelines for Management of COVID19: Point of Care Approach
5: Intravenous Insulin use

Indications for Intravenous Insulin Infusion
1. Patients with nothing by mouth (NPO) status or those having erratic diet pattern (in time and content); 2. Diabetic keto-acidosis (DKA); 3. Uncontrolled hyperglycaemia despite Basal Bolus Regimen [Protocol 4]; 4. Severe hyperglycaemia at onset (Pre-meal BG level ≥300 mg/dl and post-meal BG level; ≥400 mg/dl); ketone status should be checked before starting infusion; 5. Critically ill like in sepsis and septic shock

Insulin Infusion Protocol:
Initiation: Insulin can be initiated at dose of 0.05-0.1 units/kg body weight/hour.
Infusion preparation: 50 units of regular insulin in 50 ml NS (1 unit / ml).
Frequency of blood glucose monitoring: 1 - 22 hourly; Can be extended to 4 hourly, where requirement is low, glucose values are stable and in target.
Glycaemic targets: To achieve and maintain blood glucose of 140 to 180 mg/dl for most individuals. BG target can be tightened to 110-180 mg/dl in a scenario where this target can be achieved without causing significant hypoglycemia and relaxed to 200-220 mg/dl where even a target of 140-180 mg/dl is unsafe and associated with increased risk of hypoglycemia.

6: Steroid – Glucocorticoid Therapy - Special precautions

Oral or Intravenous Steroid use
Please split total daily IV or Oral steroid dose into two doses, first before breakfast, second before dinner; this will help achieve a flatter/ stable 24-hour glucose profiles

Discharge Criteria


1. For asymptomatic individuals:
   - All cases shall undergo regular temperature and pulse oximetry checks
   - They shall be discharged if the following criteria is met at time of discharge:
     - No symptoms
     - No fever (recorded temperatures≤37.5° or ≤99.5° F)
     - Maintains saturation above 95%
     - Respiratory rate less than 24 per minute.
   - Asymptomatic individuals with a positive COVID-19 test report, who continues to remain asymptomatic during their stay in the hospital, shall be discharged 10 days after the positive test for COVID-19
     - For example, if swab wa collected on 1st August 2020 and tested positive for COVID-19, then the patients shall be discharged after 10
days from the date of swab collection i.e on 11th August 2020. It is important that during this period, the patient shall remain free of any symptoms.

- There is no need for RT-PCR/CBNAAT/TruNAT test before discharge of the patient
- At the time of discharge, the patient will be advised to isolate himself at home and self-monitor their health for further 7 days.
- His/her health will again be followed up through tele-conference on 14th day.
- After discharge from the facility, if he/she again develops symptoms of fever, cough or difficulty in breathing, he/she will contact the hospital or Apthamithra helpline 14410 immediately.

2. For Mild and Moderate cases:

- All cases shall undergo regular temperature and pulse oximetry checks.
- The patient shall be discharged after 10 days of onset of symptom/s only if the following criteria is met:
  - No Fever and No Symptom/s for the last 3 consecutive days before discharge (without antipyretics)
  - Maintains saturation above 95% for the last 4 consecutive days (without oxygen support)
  - Resolution of breathlessness
  - Resolution of clinical signs / symptoms (based on the report of investigations)
  - Repeat inflammatory markers (S.Ferritin, S.LDH, D-Dimer & CRP) at the time of discharge. These should be in normal range/decreasing trend
- For example, if a patient developed symptoms on 1st August 2020 and tested positive for COVID-19,
  - **Example 1:** If patient had symptoms for 1-7 days, the patient shall be discharged after 10 days from date of onset of symptoms i.e on 11th August 2020 (minimum 10 days for all symptomatic patients)
  - **Example 2:** If patient had symptoms for 14 days, the patient shall be discharged after 14 days + 3* days = 17 days from date of onset of symptoms, i.e on 17th August 2020 (* no Symptom/s for the last 3 consecutive days before discharge)
- There is no need for RT-PCR/CBNAAT/True-NAT test before discharge of the patient
- At the time of discharge, the patient will be advised to isolate himself at home and self-monitor their health for further 7 days.
3. **For persons in Home isolation/ Home care**

- Patient under home isolation will stand discharged (released from home isolation/ home care) after 10 days of symptom onset (or date of sampling, for asymptomatic cases) and no fever for 3 days. Thereafter, the patient shall be advised to isolate at home and self-monitor their health for further 7 days. There is no need for testing after the home isolation period is over.

- They shall be released if the following criteria are met:
  - No symptoms
  - No fever (recorded body temperature \( \leq 37.5^\circ C \) or \( \leq 99.5^\circ F \))
  - Maintains oxygen saturation above 95%
  - Respiratory rate less than 24 per minute

- There is no need for any COVID-19 test (RT-PCR/CBNAAT/True-NAT/Rapid Antigen test) after the period of home isolation/home care is over.

- The person shall be allowed to resume duty only after satisfactory completion of home isolation/ home care.

A fitness certificate shall be issued by the concerned area medical officer (PHC/UPHC/CHC/GH)/ treating physician/family doctor. Alternatively, an e-certificate may be issued in the prescribed format by tele-monitoring team.

**Transfer of clinically improved patients from COVID hospitals to COVID-19 Care Centres (CCCs)**

- In view of surge in COVID-19 cases in the state and to ensure prudent use of hospital beds both in government and private for moderately and severely ill COVID-19 patients, it is necessary to transfer clinically improved patients to COVID Care Centres (CCCs) as per criteria mentioned below:
  - No Fever and No Symptom/s for the last 3 consecutive days (without antipyretics) before transfer to CCC, and
  - Maintaining oxygen saturation above 95% for the last 4 consecutive days (without oxygen support)

Those who fulfill these criteria in the COVID hospitals shall be transferred to the CCC by the treating physician after a careful clinical evaluation of the patient.

The above guidelines of admission, discharge, and transfer shall be followed in all DCHCs, DCHs, both in government and private in the state.

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Guidelines for Management of COVID19: Point of Care Approach