স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয় স্বাস্থ্য অধিদপ্তর,ঢাকা

# A Concept Paper
# on

# COVID-19 Telehealth Center

***Submitted to:***

স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয় স্বাস্থ্য অধিদপ্তর,ঢাকা

**Directorate General of Health Services (DGHS)**
Ministry of Health & Family Welfare
Mohakhali, Dhaka


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# Covid-19 Outbreak

The coronavirus COVID-19 pandemic is the global health crisis of our time and the toughest challenge the countries are facing worldwide since World War II. As its emergence in Asia at the end of late last year, the virus has spread to other Asian and in the remaining countries very quickly. Countries are too slow to take the special measurements such as by testing and treating patients, contact tracing, limiting travel, blocking areas, quarantining citizens, and cancelling large gatherings.

The coronavirus disease 2019 (COVID-19) outbreak continues to rapidly spread in Bangladesh. Apparently, we have a less medical provision in terms of affect ratio since we are a densely populated country and in a vulnerable position to fight against a large number of affected people. According to the Institute of Epidemiology, Disease Control and Research (IEDCR) of Directorate General of Health Services (DGHS) on 13 June 2020[1] people have reported 84379 confirmed COVID-19 cases and died 1139 so far.

# A2i's Supports

a2i, ICT Division has been playing the vital coordination role for planning, designing, developing and implementing the e-Government intensively across the country supporting all the Ministries/Divisions/ Agencies of Bangladesh Government, therefore it has been advised by DGHS to prepare an effective and comprehensive plan on service coordination of COVID-19 cases in Bangladesh at this paramedic crisis. Based on this Mr. Forhad Zahid Shaikh, Chief e-Governance Strategist played the lead focal role from a2i, ICT division by forming a team involving the domain/field experts like Dr. Md. Zahidul Islam, Upazila Health & Family Planning Officer, Narayanganj Sadar, Narayanganj, Dr. Nizam Udin Ahmed, CEO, Shastho Batayon, Directorate of Health Services Call Center Service and ICT expert Mr. Shohorab Ahmed Chowdhury, Managing Director, Synesis IT LTD for preparing a detailed strategic precise plan.

In continuation of this planning, Mr. Shaikh along with this team presented 2 subsequent presentation of this plan to DGHS on 22/04/2020 and 27/04/2020 with the valuable presence of Dr. Aminul Islam, Director, DGHS, Anir Chowdhury, Policy Advisor, a2i, ICT Division and other concerned officials of DGHS and received their relevant advices and guidelines in this regard. Initially this plan and presentation (on22/04/2020) covered the following areas:

- Current challenges and problems in COVID-19 situation
- Statistics - Health and e-Health Service Providers/Stakeholders
- Layer wise comprehensive health services
- Service Coordination Platform for Covid-19 Positive
- e-Health Service Cycle for COVID-19
- Proposals for COVID-19 "e-Health Rapid Action" plan

[1] WWW.Corona.gov.bd,

As per the feedback and advice of DGHS, the implementation plan was presented on 27/04/2020 which included the following focused areas

- Stakeholders Mapping for Tele-Health Service Coordination
- General Tele-Health & Chronic Disease (Not COVID) Management – Layer 1
- COVID-19 Suspected Case Management and Tele-Health Service – Layer 2
- COVID-19 Positive Case Management and Tele-Health Service Coordination Unit – Layer 3
- Implementation of Tele-Health Service Coordination Unit for COVID-19 Positive Patients
- Introducing a standard operating procedure (SOP) for service coordination and treatment support
- Centralized information management and integration plan
- Inbound and Outbound call service for the patients
- Necessary budget, resources and time plan

The actual concept for implementing the Tele-Health Service Coordination Unit for COVID-19 Patients of Bangladesh basically evolved from the innovative and effective idea of Dr. Zahidul Islam(Upazila Health & Family Planning Officer, Narayanganj Sadar, Narayanganj) and his team (5 DGHS Doctors) who played a fantastic Tele-Health service coordination and support role for the COVID-19 patients of Narayanganj, even though some of them were affected by COVID-19. To perform uninterrupted execution of their initiation, they served COVID-19 positive patients through tele-health service from home.

Dr. Zahidul Islam and his team took the following initiatives to set out the steps for affected patients:

- The follow-up checkup, medical advice, socio-physiological consultancy based on the patient condition; for instance, mild, medium and critical was provided continuously by the team.
- They did regular counseling to the patients from home and provided assistance including their families and caregivers.
- They facilitated the supply of food and medicine in an emergency.
- They assist patients to avail ambulances to hospital or to a test centre and in related activities.
- In case of the death of any patient, the team interacted with the local administration such as Chairman, UNO in order to process the burial steps following required care and measurements.

This practical experience in providing Tele-Health Service to the COVID-19 patients basically helped to plan for implementing a centralized coordination unit covering the countrywide scale-up.

With reference to the advice of DG, Directorate General of Health Services, on 11th May'2020 meeting, a2i, ICT division was advised to implement and set up a Tele- Health Service Coordination Unit at the earliest for COVID-19 Patients of Bangladesh with the leadership DGHS and guidance of IEDCR.

# Challenges in COVID

Bangladesh is a densely populated country with inadequate medical infrastructure, assistance, arrangements and facilities in terms of the rudimentary demand that leads the Government in the face of a challenge to treat this mass number of infectious citizens. In this context, if the Government becomes unable to provide the right services with proper medical assistance at the right time, that might lead to a tragic state of affairs in this global pandemic.

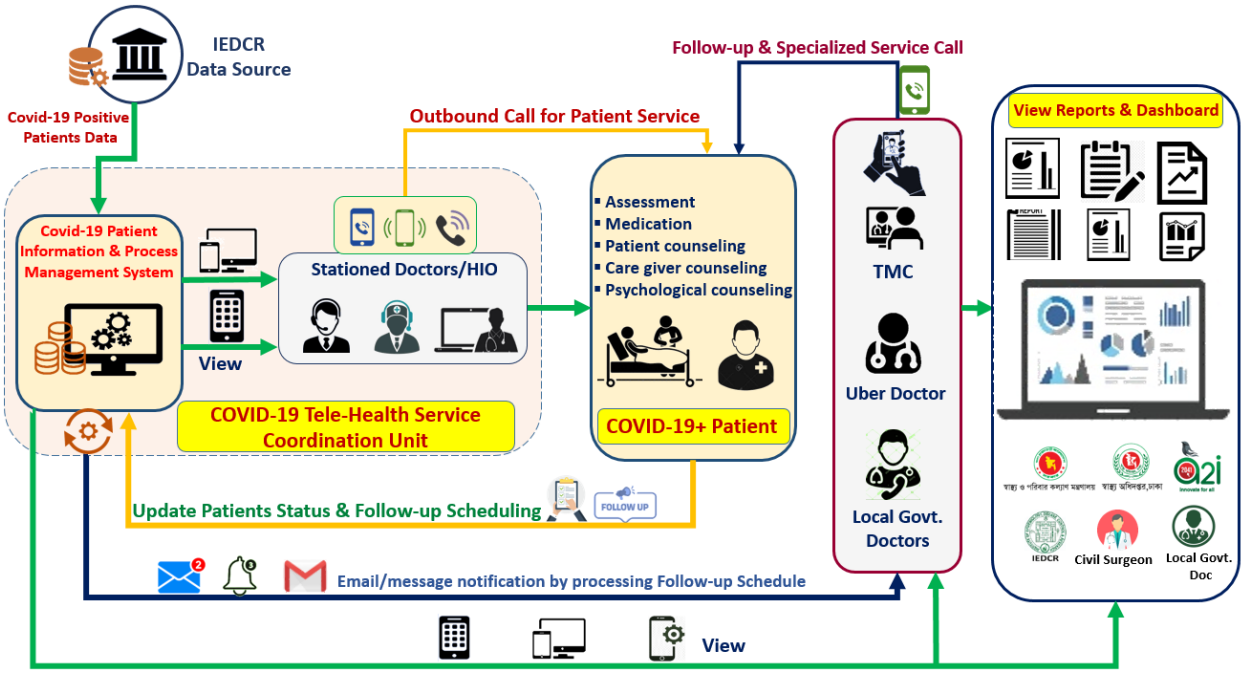
The shortage of COVID19 awareness produces a risky condition in Bangladesh where people disregard the implications of the pandemic. Besides, our doctors are in dire need of medical equipment and knowledge about the COVID-19. The logistics system has also broken down and needs urgent intervention to make it available since essential goods and medical supplies have to be transmitted.

So, to avoid this circumstance the following challenges should be supervised as a prime concern-

- Utilization of existing health workforce efficiently including Doctors, Nurses, Health Workers, Service Providers and all layer of health workforces. Currently COVID-19 positive case management is inadequate.
- Lack of proper Coordination & Collaboration among Service Providers and external environment for unified emergency COVID-19 responses.
- Private sectors, NGOs and citizens participate in responding COVID-19 in different ways in the same perspective but need a proper collaboration.
- Strengthening system for contact tracing, follow-up and management of COVID positive patients along with systematic health and development services.
- Needs to plan and strengthen Centralized Data source and information management systems for providing end-to-end solutions of COVID-19 positive cases along with strengthening the health system for population and service providers.
- Instrumental improvement and coordination of test sample collection, lab test, Hospitalization & follow-up both in home management and hospital treatment as well.
- Medicine & Food Supply is essential during lock down condition.
- Service Manual & defined process and policy for Service Providers is essential and need to train health services providers and systems.
- New emerging disease – will require to plan research and development in aligning with global progress for local evidence.

# Methodology:

The methodology derives the high-level steps of the workflow consecutively that how the concepts will work to serve the COVID-19 positive patient. Coordination Unit's service delivery procedure is described below:




- **IEDCR Data Source:** Collect COVID-19 positive patient information from IEDCR in excel format & import to the system named COVID-19 patient information and service management.
- **Initial call for patient assessment:** In this process , the stationed doctors/HIO will make the initial outbound call to the patient viewing the patient details information from the COVID-19 patient information and service management. In this call, the doctors/HIO will take the following action mentioned below related to this COVID-19 positive patient.

    - Patient Assessment
    - Medication check
    - Patient counselling
    - Caregiver counselling
    - Psychological counselling

- **Update patient status and Follow-up schedule :** After these actions the concerned Doctor/HIO will update the patient information in that software simply over mobile/laptop through the application. Based on the assessment and medication check and entry the relevant information, an automatic "Follow-up" schedule will be generated from the system. On an average, a COVID-19 patient with Mild/Moderate sign & symptom , will require 2-3 follow-up call in a week for each patient.

- ·**Follow up Call:** We are planning to engage 3 categories doctors for the follow-up outbound calls as per system generated schedule i.e. Govt. local doctors (Upazial and Zila Level) , Uber Doctors and Specialist Govt. Doctors or Telemedicine companies doctors. As per the allocation of patients, a system generated follow-up notification in SMS/email format will be fired to the concerned Doctors to notify. In response of that notification or schedule, the concerned assigned doctor may make the follow-up call to the patient viewing latest information or status in the application over mobile/laptop/PC. It may be mentioned here that, at each Upazial and Districts levels a good number of Govt. Doctors are already in duty who can easily make this follow-up call to the COVID-19 Positive patient at their area.

  Telemedicine Companies (TMC) may be involved in special follow-up cases with Co-Morbid patient by the specialist doctors in that areas. There are around 22 TMC companies with different specialization are already ready to work with Government for the COVID-19 patient followup issue.

- **COVID-19 Patient Information and Service Management :** A comprehensive system will run for facilitate the efficient , effective and organized information management related to this operation. This system may have the following information and features
  - Patients Information and condition
  - Patient follow-up & medication history
  - Service History
  - All service providers contact details like hospitals , ambulance, volunteers , UDC, Ups , Tes Lab , doctors, health workers etc.
  - Patients feedback
- **Dashboard & Reports:** Real time dashboards and reports will be active based on the different context and updated information which will assist the concern doctors/HIO and different authorities of Govt (MoHFW, DGHS, a2i, Civil Surgeon, UHC etc. ) to take right time decisions and keep them updated.

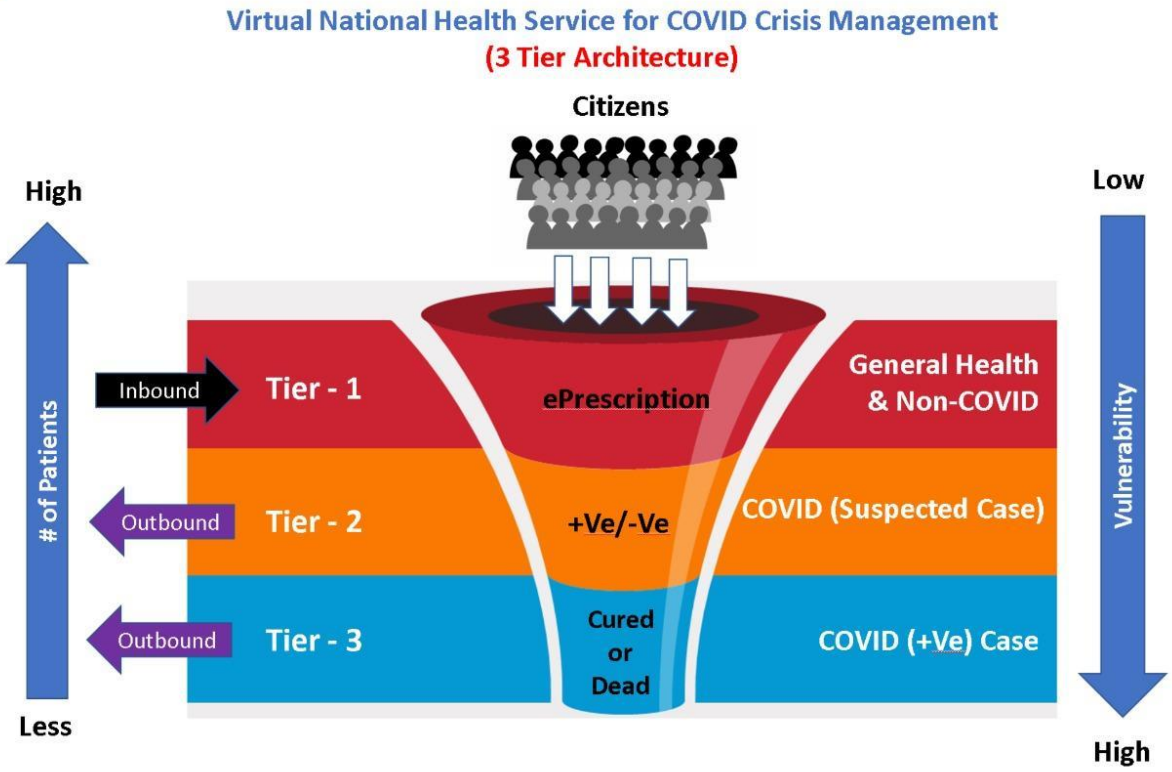
- **Call Center:** An inbound call center will be activated with adequate operators so that patients or their caregivers can easily reach to the service coordination unit for their any needs, urgency and service requests.

# The solution Plan:

Considering the current situation of COVID-19 , health infrastructure and facilities and rapid increment of COVID-19 affected patients, we have proposed plan in 3 Layers which has been described

The following layers of services are presented for effective outcomes as outlined below:

- **Layer 1- General Health and Chronic Disease Management Support**
- **Layer 2- COVID-19 Suspected Case Management**
- **Layer 3- COVID-19 Positive Case Management**




Treatment plans are focused on Risk with High, Mild, Moderate Sign & Symptom. For 10000 Covid-19 Positive patients monthly total talk time will be 90 minutes/per patients & 44 minutes/per weekly repeat call. Operational cost for a patient will be 500 Tk which includes, two weeks continuous in touch. Minimum 12 times consultation by Doctors, HIO & minimum 100 minutes talk time. With the partnership of DGHS, a2i and other public, private agencies DGHS COVID-19 Coordination UNIT is proposed. This can be implemented by DGHS COVID-19 Coordination unit in 10 days.

## Layer 1:

The Layer 1 is the general health & Chronic (Non-COVID) Service Management which has outlined in details the existing health system with the Tele health service for administering services in collaboration with partners and will provide innovative way of health services management with frontline health workforce through digital hospital approaches.

## Layer 1
### General Health & Chronic Disease (Not COVID) Management

| Existing Health System (On Visit) | Tele Health Service (Existing & Porposed) |
|---|---|
| **Community Clinic & UHFWC** | **Upazila Help Line** |
| Upazial Health Complex | Shastho Batayon -16263 , National Call Center - 333 |
| District Hospitals | 94 Telemedicine Centers |
| Medical Collecges & Hospitals | 22 Telemedicine Compnies (Porposed) |
| Specialized Hospitals | |
| DGHS & MOHFW | |

**Expected Services**

- ❑ Health Information Collection
- ❑ Doctor's Consultation
- ❑ Prescription
- ❑ Medicine & Food delivery service
- ❑ Emergency Service (Ambulance, Test Sample collection, Hospitalization, Burial )
- ❑ Referral Service
- ❑ Database & Information Management
- ❑ Awareness , Campaign (Panic Reduction
- ❑ Specialized Health Service (Chronic Disease . Eg. BSMMU Specialized Health Line - 09611677777)



## Layer 2:

The Layer 2 is the COVID-19 Suspected Case Management which has outlined in details for service steps in collaboration with service providers and solutions partners where assorted coordination units will work for in terms of suspected case.

## Layer 2
### COVID-19 Suspected Case Management

| Services Steps | Service Providers/Solutions |
|---|---|
| Collect & Compile Suspected Cases from different sources | DGHS , IEDCR , 16263 , 333 |
| COVID High Risk Case Validation by Medical Doctors | DGHS , IEDCR , UHC, District Hospitals, Medical College Hospitals, 16263, 333 |
| Supsected Case Data and Information Management | Integrated Platform (DGHS- DHIS2) – as Centralized Database |
| Sample Collection | UHC, District Hospitals, Medical Collecges , Private Sector /NGO |
| COVID-19 Testing | Designated COVID-19 Lab (33) |
| TEST Service Coordination & Manaegment | DGHS&a2i Coordination UNIT |

## Layer 3:

Layer 3 is the COVID-19 Positive Case Management which has outlined in details for administering services in collaboration with partners and will provide innovative ways of health services management with frontline health workforce through digital hospital approaches.

## Layer 3
## COVID-19 Positive Case Management

| Services Steps | Service Providers/Solutions |
|---|---|
| **Confirmation of Cases & Categorization for Treatment & Service Support** | DGHS COVID-19 Coordination UNIT |
| **Risk with Mild/Moderate Sign & Symptom (Non Co-morbid) –**Home Management Treatment & other Service Support | Treatment Plan – A by DGHS COVID-19 Coordination UNIT |
| **Risk with Mild/Moderate Sign & Symptom (With Co-Morbid) –** Home Management Treatment & other Service Support | Treatment Plan – B by DGHS COVID-19 Coordination UNIT |
| **High Risk (Severe) Sign & Symptom** - Hospitalization and other Service Support | Treatment Plan – C By DGHS COVID-19 Coordination UNIT |
| **Centralized Case information Management , Dcotors and Patienet database , Stakehodler conatats** | Software Platform for DGHS COVID-19 Coordination UNIT |
| **Centralized Call Center and Telemedicine Support** | DGHS COVID-19 Coordination UNIT |

**COVID-19 Positive Case Management**

- Confirmation of Cases & Categorization for Treatment & Service Support
- Risk with Mild/Moderate Sign & Symptom - Treatment & other Service Support
  - Treatment Plan – A
    - Provide necessary consultancy with medical advice and all will be recorded as a patient history

### Centralized Model
Rapid Service Coordination Unit for Covid-19 Positive
Operation Process – Treatment Plan A

**Treatment Plan (TP) - A:**
**Risk with Mild/Moderate Sign & Symptom (Non Co-morbid)**
- Home Management

| Step | Action | Actor | Standard | Info Management | Post Action |
|---|---|---|---|---|---|
| **Contact with patient (Assessment & counselling)** **TP-A :Step-1** | - Patient Asssement<br>- Medication<br>- Identify Caregiver (2P)<br>- Consultation Caregiver<br>- Counselling Patient<br>- Notify UHC /Relevant Authority | **Ub-Dr./ St.-Dr.** | Template 1 | **View:** Patinet Profile/UHC Contacts **Update:** Patinet Info **Entry:** Care Giver Info /Followup Plan **Send:** Notification | - Contact UHC for Medicine /Food **TP-A:Step-2**<br>- Action for 2 times weekly patinet follow-up **TP-A:Step-3)** |
| **Activate Local Contact with UHC/CS/DGHS** **TP-A :Step-2** | - Conatact & Update<br>- Share Patinet Condition | **St.-Dr./ St.-HIO** | Template 2 | **View:** UHC Contacts **Share:** Patinet Info **Entry:** Update Status **Send:** Notification CS/DGHS | - Action for 2 times weekly patinet follow-up **TP-A:Step-3)**<br>- Continue contact with UHC to get update about their action |
| **Further patient follow-up and consultation** **TP-A :Step-3** | - Current Asssement<br>- Medication Check<br>- Consultation Caregiver (If condiction not well)<br>- Counselling Patient | **Ub-Dr./** | Template 3 | **View:** Patinet Profile/Case **Update:** Patinet Info /Followup status **Send:** Notification UHC/HW | - Refer to specilized Dr. **TP-B :Step-3**<br>- If patinet cured - 2nd TEST **TP-A:Step-4**<br>- If it needs to refer for CVOID Hospitalization **TP-D:Step-1** |
| **2nd COVID-19 TEST** **TP-A :Step-4** | - Notify UHC/DGHS for 2nd TEST<br>- Follow-up TEST status/result collection | **Ub-HIO/ St.-HIO** | N/A | **View:** Patinet Profile/Case **Update:** Patinet Info /TEST status **Send:** Notification UHC/HW | - `If **Negative:** Routine Advice **TP-A:Step-5**<br>- If **Positive :** C ontinue **TP-A:Step-3** for another 14 days |
| **Routine Advice (If Negative)** **TP-A :Step-5** | - Continue Medication<br>- Food & Nutrition balance<br>- Consultation Caregiver<br>- Counselling Patient<br>- Notify UHC /DGHS | **Ub-Dr./ St.-HIO** | Template 4 | **View:** Patinet Profile/Case **Update:** Patinet Info /Follow-up , status , Food and Nutrition balance **Send:** Notification UHC/HW | - Retrun to normal health status<br>- Connect with COVID-Fighter community /Forum of corona.gov.bd<br>- **Case Close** |

- ❖ Risk with Mild/Moderate Sign & Symptom - Treatment & other Service Support
  - Treatment Plan – B
    - Review Treatment Plan A
    - Refer to specialist
      - Consultation, e-Prescription will be recorded as a patient history
      - Refer to specialist (BSMMU)/TM specialist
      - Follow-up checking 2 times in a week
    - All records will be archived as a patient history

**Centralized Model**

Rapid Service Coordination Unit for Covid-19 Positive

Operation Process – Treatment Plan A

**Treatment Plan B:**

**Risk with Mild/Moderate Sign & Symptom (With Co-Morbid)**

- Home Management

| Step | Action | Actor | Standard | Info Management | Post Action |
|---|---|---|---|---|---|
| **Contact with patient (Assessment & counselling)** **TP-B :Step-1** | - Patient Asssement<br>- Medication<br>- Identify Caregiver (2P)<br>- Consultation Caregiver<br>- Counselling Patient<br>- Notify UHC /Relevant Authority | **Ub-Dr./ St.-Dr.** | Template 1 | **View:** Patinet Profile/UHC Contacts **Update:** Patinet Info **Entry:** Care Giver Info /Followup Plan **Send:** Notification | - Contact UHC for Medicine /Food **TP-B :Step-2**<br>- Action for 2 times weekly patinet follow-up **TP-B :Step-3**<br>- Identify and connect the required Specilaists |
| **Activate Local Contact with UHC/CS/DGHS** **TP-B :Step-2** | - Conatact & Update<br>- Share Patinet Condition<br>- Coordination assistance | **St.-Dr./ St.-HIO** | Template 2 | **View:** UHC Contacts **Share:** Patinet Info **Entry:** Update Status **Send:** Notification CS/DGHS | - Action for 2 times weekly patinet follow-up **TP-B :Step-3**<br>- Continue contact with UHC to get update about their action |
| **Further patient follow-up and consultation by Specialist Dr.** **TP-B :Step-3** | - Current Asssement<br>- Medication Check<br>- Call Confernce with Specilaized Doctor<br>- Consultation Caregiver<br>- Counselling Patient | **St.-Dr./ Ub-SP.Dr.** | Template 5 | **View:** Patinet Profile/Case , Specialized doctors pool **Update:** Patinet Info /Followup status /Plan **Send:** Notification UHC/HW | - If it needs to refer for COVID Hospitalization **TP-D:Step-1**<br>- If becomes servere **TP-C:Step-3**<br>- If being cured -2nd Test **TP-B :Step-4**<br>- Weekly at least 1 followup with Specialized doctor **TP-B :Step-3** |
| **2nd COVID-19 TEST** **TP-B :Step-4** | - Notify UHC/DGHS for 2nd TEST<br>- Follow-up TEST status/result collection | **Ub-HIO/ St.-HIO** | N/A | **View:** Patinet Profile/Case **Update:** Patinet Info /TEST status **Send:** Notification UHC/HW | - `If **Negative:** Routine Advice **TP-B:Step-5**<br>- If **Positive :** C ontinue **TP-B:Step-3** for another 14 days |
| **Routine Advice (If Negative)** **TP-B :Step-5** | - Continue Medication<br>- Food & Nutrition balance<br>- Consultation Caregiver<br>- Counselling Patient<br>- Notify UHC /DGHS | **Ub-Dr./ St.-HIO** | Template 4 | **View:** Patinet Profile/Case **Update:** Patinet Info /Follow-up , status , Food and Nutrition balance **Send:** Notification UHC/HW | - Retrun to normal health status<br>- Connect with COVID-Fighter community /Forum of corona.gov.bd<br>- **Case Close** |



- ❖ High Risk (Severe) Sign & Symptom
  - Treatment Plan – C
    - Contact with the local ambulance
      - Send notification to the local contacts (UHC, CS, Focal person DGHS/UNO, U-chairman)
    - Contact with Covid-19 hospital for admission
      - Counselling with caregiver and patient family (test, follow-up)
    - Hospital management patient management
      - Update 3 times in a week from hospital
      - Council 3 times in a week with caregiver and family (HIO)
      - If patient recover
        - Contact with ambulance for returning home
        - Send Notification to the local contacts (UHC, CS, Focal person DGHS/UNO, U-chairman)
      - If patient expired then process burial
        - Contact with ambulance for burial process
        - Notification to the local contacts (UHC, CS, Focal person DGHS/UNO, U-chairman)

- Counselling caregiver and family (test, follow-up) Follow up according to the checklist

**Centralized Model**

Rapid Service Coordination Unit for Covid-19 Positive

Operation Process – Treatment Plan D

**Treatment Plan C:**

**High Risk (Severe) Sign & Symptom**

- **Hospitalized**

| Step | Action | Actor | Standard | Info Management | Post Action |
|---|---|---|---|---|---|
| **Hospitalization TP-D :Step-1** | - Conact Ambulance<br>- Contact with Covid UHC /CS/DGHS<br>- Contact with Covid Hospital<br>- Coordinate for Patinet transfer<br>- Notify UHC /CS/DGHS<br>- Caregiver counselling | St.-Dr./ St.-HIO | Template 8 | **View:** Patinet Profile/UHC/CS/Ambulance DB Contacts **Update:** Patinet trasfer status **Send:** Notification UHC/CS/DGHS | - Contact UHC/CS/DGHS to update TP-C :Step-2.<br>- Inform status to Caregiver and linking with Hospital<br>- Follow –up 3 times weekly TP-D:Step-2. |
| **Patient status collection and update from Covid Hospitals TP-D :Step-2** | - Patient status info collection & Update<br>- Counselling Caregiver<br>- Notify UHC /CS/DGHS | Ub-HIO/ St.-HIO/St.-Dr. | Template 9 | **View:** Patinet Profile/Case , **Update:** Patinet Status **Send:** Notification UHC/CS/DGHS | - followup for weekly 3 days<br>- If cured & return to Home TP-A/B/C:Step-5<br>- If transfer to Home : TPD:Step-3<br>- If died: Arrange for burial TPD:Step-4<br>- If continues : Informing caregivers |
| **Returning to Home TP-D :Step-3** | - Contact & assist for ambullance<br>- Counselling Patient & Caregiver<br>- Continue Treatment plan TP-A/B/C:Step-3<br>- Notify UHC /CS/DGHS | St.-HIO/Ub.-HIO | N/A | **View:** Patinet Profile/Case/Care Giver /Ambullance DB, **Update:** Patinet Status **Send:** Notification UHC/CS/DGHS | - Conitnue plan Treatment plan TP-A/B/C:Step-3 |
| **Assist in burial process TP-D :Step-4** | - Contact & arrange ambullance<br>- Contact & Counselling Caregiver<br>- Notify UHC/CS/DGHS<br>- Request for action UNO/UHC/UP | St.-Dr./ St.-HIO | Template 10 | **View:** Patinet Profile/Case/Care Giver /Ambullance DB,UP,UNO **Update:** Patinet Status **Send:** Notification UHC/CS/DGHS | - Action for Counselling to Caregiver & Family |

and history will be stored too.

- ❖ Hospitalization and other Service Support
- ❖ Centralized case information Management, Doctors and Patient database, Stakeholder contacts
- ❖ Software Platform for DGHS COVID-19 Coordination UNIT

# COVID-19 Patient Factor Analysis

## Vulnerability Index (VI) for COVID +Ve Cases

**Package** is the way to treat the COVID-19 +ve Patients. It will define how and which way the patient will be served and get treated. It is defined by **Vulnerability Index (VI)**. VI will depend on **Factors** (Clinical Conditions, Patient Age, their Socio-Economic Situation and Living Area) and its **Degree of Intisity (DI)**. DI defines how severe the Factor is.

**Factors vs Degree of Intensity (DI)**

| Factors/DI | | HIGH | | MODERATE | |
|---|---|---|---|---|---|
| **Clinical** | [C] | High-Risk | [C-HR] | Moderate/Mild | [C-MM] |
| **Age** | [A] | Old/Child | [A-OC] | Middle/Young | [A-MY] |
| **Socio-Economic** | [S] | Low-Income | [S-LI] | Middle/High | [S-MM] |
| **Location** | [L] | Rural-Area | [L-RA] | Urban/Metro | [L-UM] |

**Package (Support Plan)**

| Support Plan | Package-A | Package-B | Package-C | Package-D | Package-E |
|---|---|---|---|---|---|
| **Vulnerability Index (VI)** | C-xx, A-OC, S-LI, L-xx | C-HR, A-xx, S-LI, L-xx | C-HR, A-MY, S-LI, L-xx | C-LR, A-MY, S-LI, R-xx | C-LR, A-xx, S-MY, R-xx |
| | High Risk<br>Old/Child<br>Living Area (Any)<br>Low Income | High-Risk<br>Age (Any)<br>Living Area (Remote)<br>Low Income | High Risk<br>Age (Any)<br>Living Are (Any)<br>High Income | Mild/Mod Risk<br>Age (Any)<br>Living Are (Any)<br>Low Income | Low/Mod Risk<br>Age (Any)<br>Living Area (Any)<br>High/Middle Income |
| **Support Type** | Station Doctor & HIO<br>Specialized Doctor<br>Food/Relief<br>Home Care/Hospital<br>Logistic Support | Station Doctor & HIO<br>Specialized Doctor<br>Food/Relief<br><br>Logistic Support | Station Doctor & HIO<br>Specialized Doctor | Uber Doctor<br><br>Food/Relief | Uber Doctor |

# Report and Dashboard

This Report and Dashboard is the most useful and added advantage of implementing and managing this centralized Tele-Health Service Coordination Unit for Covid-19 patients of Bangladesh. Here are the facilities of the Reports and Dashboard but not limited to:

- The Dashboard will have provision to generate different types of reports (on-demand, periodic) in time as per the necessity of the management and the higher authorities.
- The dashboard will facilitate real-time monitoring of the operational activities so that the management can take timely and adequate measurements whenever and wherever necessary.
- The dashboard will show at a glance statistic of how many patients received services, total number of services delivered, total doctors, number of doctors are in service in a particular day/shift, follow-up reports, service category wise information, etc.
- The dashboard will generate analytics based on the different types of service data. These analytics will help the management and authorities in the decision-making process to enhance the quality of services as well as to expedite the overall service delivery process.
- Different concerned authorities will have access to important data and information related to Covid-19 Health Services from this Report and Dashboard in real-time from anywhere anytime.

# Piloting and findings:

To justify the effectiveness & impact of this coordination unit, as per planned standard operating procedure (SOP) a2i, ICT Division along with concerned technical partners implemented a short pilot. The pilot was implemented among 50 Covid-19 positive patients and 15 doctors & data was provided by Institute of Epidemiology, Disease Control and Research (IEDCR).

### Piloting & Findings

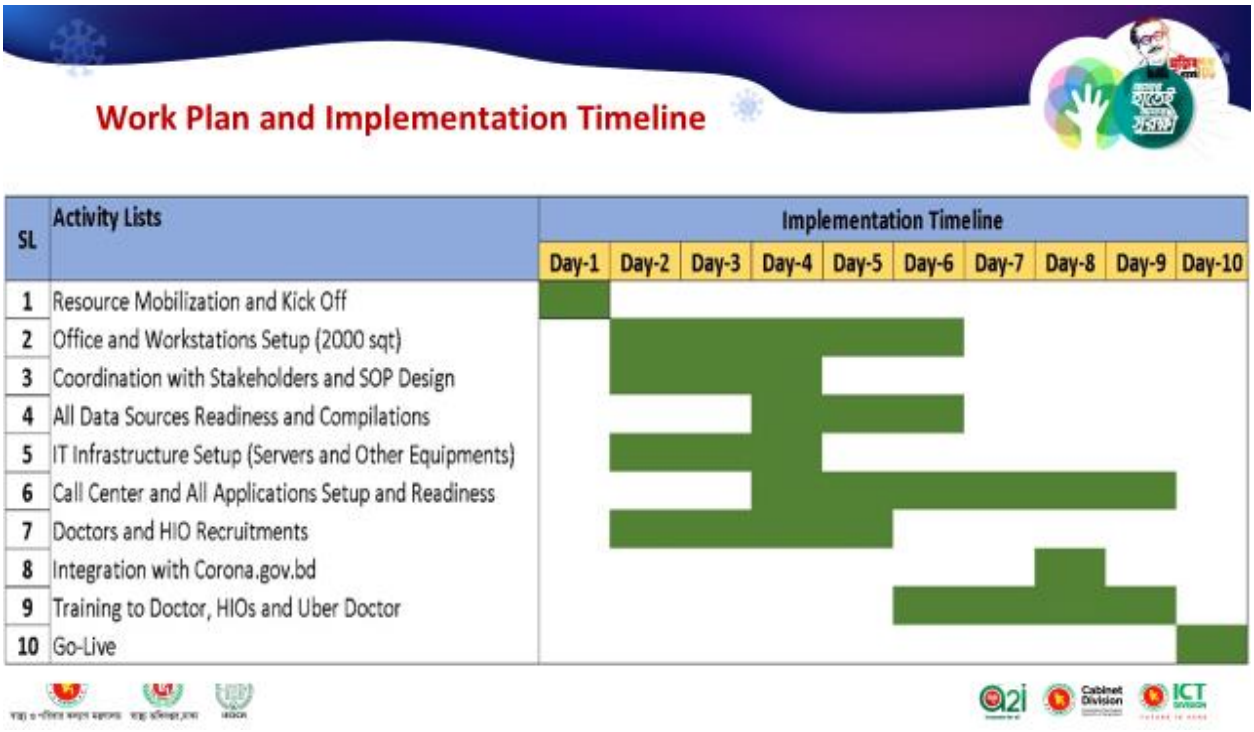
After implementation of the short pilot some insightful outcomes are achieved. These are listed bellows:

- 42 patients were counselled by doctors, they need further counselling.
- 80% of patients were almost mild, follow up phone calls will be good for them.
- 9 patients with severe symptoms were consulted to be admitted to hospital.
- 10 patients got a Symptomatic treatment/Medicine.
- 10 patents are in moderate situation need next follow till cycle end
- Among the 41 patients 23 patients didn't have any symptom
- all patients need second follow up.

Some gaps are also acknowledged while implementing this pilot. Some the findings are listed bellows:

- Symptomatic treatment/Medicine checks should provide more efficiently.
- Questionnaires to reach outpatient health conditions should be more accurate.

# Work & Implementation Plan




# Transition from information to insight: Analytical report preparation

Data from community clinics: licensed beds, ICU beds, staffed beds, nurses, doctors, supporting staff, equipment, medicine, self-production capacity, internet connectivity, patient database existence

- Information: capacity for treatment based on available infrastructure and resources for treatment
  - Insight from information: projected demand in resource

- Analytics based support to DG Health and Hospitals
  - Analytics will generate actionable items for health care providers, in both responding to beneficiaries and relaying feedback to administration.

# Possible Result and Impact from the solution

## Results:

- The current status of any patient whether s/he is hospitalized or in-house management can be monitored instantly. And the service can be delivered to the patient more efficiently in a coordinated way accommodating all the services providers in the service ecosystem.
- Due to the implementation of this platform, the service providers can make the right decision analyzing the service data and information and will be able to ensure required services in time.
- Government can ensure maximum service delivery to the patients by the utmost management of the Doctors, HIO and related workforces.
- Regardless of health services, other services like Ambulance service, Hospitalization, Burial, Medicine, Food Supply, Caregiver counselling etc. can be ensured in a timely manner as per the necessity.
- Any type of service-related trends analysis can be done using service data and information which can play a vital role in the decision-making process.

## Impacts:

- The government will be able to minimize the deaths by ensuring quality services to the Covid-19 patients.
- An organized, effective and efficient service management system will be established bringing all the service providers in the ecosystem to fight this global pandemic.
- After all, the
- + satisfaction level of availing services will be increased due to this efficient and well-coordinated service management system.
- This system will create a positive impact on the people of Bangladesh seeing that the Government is taking care of all the Citizens in this emergency situation.
- The government will be able to manage resources more effectively and efficiently implementing this system.

# Phase wise operational plan:

We have proposed 3 phases as mentioned below

1. Phase I: Learning
2. Phase II: Streamlining & Fine Tuning

| **Phase I** | **Learning** | | **Phase-II** | **Streamling & Fine Tuning** | **Phase-III** | **Sclae Up** |
|---|---|---|---|---|---|---|
| Duration | 14 | Days | 14 | Days | 14 | Days |
| Start from | 500 | Patients | 3,000 | Patients | 5,000 | Patients |
| Daily Addition | 500 | Patients | 3,000 | Patients | 5,000 | Patients |
| Total Patients (Avg) | 4,000 | Patients | 24,000 | Patients | 40,000 | Patients |
| Coverage | 490 | Upazila | 490 | Upazila | 490 | Upazila |
| Engagement<br>SD for Assessment Call | **SD** | Only | **Both** | SD & GD | Both | SD & GD |
| Start From | 1,000 | | 2,000 | | 2,000 | |
| Daily Addition | 0 | Patients | 2,000 | Patients | 2,000 | Patients |
| Total Patients (Avg) | 1,000 | Patients | 16,000 | Patients | 16,000 | Patients |
| Coverage | 3 | Upazila | 490 | Upazila | 490 | Upazila |
| Engagement | **Both** | SD & GD | **Both** | SD & GD | **Both** | SD & GD |
| Start From | 10,000 | | | | | |
| Assessment/Day | 714 | Patients | | | | |
| Total Patients (Avg) | | Patients | | | | |
| Coverage | 490 | Upazila | | | | |
| Engagement | **SD** | Only | | | | |

3. Phase III: Scale-up