PAKISTAN PREPAREDNESS & RESPONSE PLAN COVID-19

PPRP 2021-22

Acronyms

AEFI	Adverse Event following Immunization
CFR	Case Fatality Rate
CM	Chief Minister
CCSWG	Country Commodity Security Working Group
CSO	Civil Society Organization

DG WHO	Director General World Health Organization
Do CHE	Director of Central Health Establishment
EOC	Emergency Operation Centre
EPI	Expanded Program on Immunization
GAVI	Global Alliance for Vaccines and Immunizations
GoP	Government of Pakistan
HSA	Health Services Academy
HDF	Health Declaration Forms
ICT	Islamabad Capital Territory
ICU	Intensive Care Unit
IDIMS	Integrated Disease Information Management System
IDSR	Integrated Disease Surveillance and Response
IEC	Information Education and Communication
IHME	Institute of Health Metrics and Evaluation
ILI	Influenza like Illness
JEE	Joint External Evaluation
KII	Key Informant Interview
KP	Khyber Pakhtunkhwa
LHS	Lady Health Supervisors
LHW	Lady Health Worker
MoNHSR&C	Ministry of National Health Services Regulation and Coordination
NAP	National Action Plan
NCC	National Coordination Committee
NCOC	National Command Operation Centre
NEOP	National Emergency Operation Cell
NIH	National Institute of Health
NPI	Non-Pharmaceutical Interventions
PEI	Polio Eradication Initiative
PHD	Provincial Health Department
PM	Prime Minister

PoE	Point of Entry
PPE	Personal Protective Equipment
PPRP	Pakistan Preparedness and Response Plan
PSTF	Provincial Scholars Task Force
RCCE	Risk Communication and Community Engagement
RRT	Rapid Response Team
SAPM	Special Assistance to the Prime Minister on Health
SARI	Severe Acute Respiratory Illness
SOP	Standard Operating Procedure
SPRP	Strategic Preparedness and Response Plan
TTQ	Test Trace and Quarantine
UCC	Ultra Cold Chain
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
VoC	Variant of Concern
WHO	World Health Organization
WMO	Women Medical Officer

Acknowledgment

The Ministry of National Health Services, Regulations & Coordination (NHSR&C) acknowledges the contribution of Director General Health wing for COVID-19 pandemic preparedness & response. The role of National Institute of Health and Directorate of Central Health Establishments is also commendable for their services for an effective response especially for surveillance, expansion of laboratory services, infection prevention and control, vaccine production and Points of Entry.

The Ministry of National Health Services, Regulation and Coordination (MoNHSR&C) gratefully acknowledges the technical and financial support provided by the World Health Organization; World Bank; Asian Development Bank; Asian Infrastructure Investment Bank; European Union; Islamic Development Bank; Government of France; Government of Germany; European Commission; Global Alliance for Vaccines and Immunizations (GAVI); Foreign, Commonwealth, and Development Office (FCDO), United Kingdom; Government of Australia; Government of the United Arab Emirates (UAE); Government of Canada; Japan International Cooperation Agency (JICA); The Global Fund; Government of the Republic of Korea; Save the Children; United Nations International Children's Emergency Fund (UNICEF); and United Nations Population Fund (UNFPA) for the support provided to respond to COVID-19. Through this support, the Government of Pakistan was able to successfully respond to all the four waves of the pandemic; identify and test over 16,278,190 suspected COVID-19 cases; manage of 958,408 cases of COVID-19; and maintain the CFR below 2.5%.

The Government of Pakistan reaffirms its commitment to continue cooperating with partners in addressing challenges that the pandemic has inflicted on the population of Pakistan.

Executive summary

The Pakistan Preparedness and Response Plan (PPRP) 2021-22 is a continuation of the first PPRP that was launched on 23 April 2020 in response to the notification of COVID-19 in Pakistan on 26 February 2020 and the global upsurge and spread of the disease. The PPRP 2020, was worth USD 595 million. The Government of Pakistan, with support from partners contributed USD 599,248,299 (flexible funds and pillar 9 funds). The PPRP 2021-22 highlights the achievements in the implementation of PPRP 2020, the challenges and lessons learned, and the proposed priority intervention to be implemented over one year period from July 2021 to June 2022. The current plan is worth USD 372,929,794.

This plan has been developed by the Ministry of National Health Services, Regulation and Coordination (MoNHSR&C) in consultation with all provinces (Punjab, Sindh, Khyber Pakhtunkhwa, Balochistan and Gilgit-Baltistan) and Federating Areas (Azad Jammu and Kashmir and Islamabad Capital Territory). The Plan outlines the international assistance required to support the Government of Pakistan to respond to COVID-19 from July 2021 to June 2022. WHO and partners provided technical support to the development of the document. The Strategic Objective of the PPRP 2021-22 is in line with the Pakistan National Action Plan (NAP) and the WHO Strategic Preparedness and Response Plan (SPRP) 2021 and aims to achieve the following six Strategic Objectives.

Epidemiology of COVID-19 (March 2020 to July 2021)

Pakistan has experienced, and adequately responded to three waves of COVID19 as of 30th June 2021, during which period we have had a total of 957,371 confirmed cases and 22,281 deaths (CFR= 2.3%). The most affected province in terms of severity being Punjab (CFR=3.1%) and least was ICT (CFR= 0.9%). More males are affected than females and most affected age group is the 21-30 years of age; more deaths have been reported in males than females as well.

Coordination and planning

The overall coordination has been under the National Coordination Committee (NCC) and chaired by the prime minister, the NCC was operationalized by the national command and operation center. There was creation of the cabinet committee on vaccines following introduction of vaccines and NDMA as the leading operational agency. Coordination, planning, and response was enhanced by data from modelling and projection of the COVID 19 evolution, and sero prevalence study.

Risk communication and community Engagement

During the reporting period national RCCE strategy was developed, rapid behavioral assessment and studies were undertaken by government and partners. Effectiveness in campaigns included utilization of community influencers, use of social media, newspapers, and electronic media. This have been useful in provision of information, education, and communication on COVID 19 response, including uptake of new technologies like vaccines. The "Sehat Tahaffuz" Helpline was established to provide technical advice related to a wide range of questions from the public which, in many cases, involves intensive two-way engagement with the callers. 1166 also provided information for registration for vaccine and change of healthcare facility.

Surveillance, rapid response teams and case investigations

Under this pillar, existing PEI surveillance systems, including the polio NEOC was critical to the TTQ strategy and Integrated Disease Information Management System (IDIMS) developed by National Emergency Operation Centre (NEOC). COVID 19 guidelines and SOPs were updated and disseminated, SARI/ILI sentinel surveillance was activated and enhanced and implementation of non-pharmaceutical interventions. As a result, 14,130,297 suspected COVID-19 cases were identified, and 14,590,230 people were tested.

Point of Entry

In response to COVID 19 pandemic, government undertook assessment of the national core capacities and quarantine capacities at the POE. The findings enabled the support to human resources capacities strengthening. The traditional paper HDF collection system was digitized and replaced with the Travelers Surveillance Management Information System (TSMIS) that was developed as early as February 2020. The data generated at the PoE was collected and sent online (through TSMIS) to the main dashboard in Directorate of CHE (DoCHE) for forwarding to EOC established in NIH and later to the MoNHSR&C. Screening capacities using thermo-guns and infra-red thermal scanners were installed and isolation facilities at the POE were established to enhance implementation of the TTQ strategy. Inbound and exiting travelers received health education messages and advise at PoE help desk. At least 4,645,279 people were screened between April 2020 and April 2021.

Laboratory and diagnostics

Pakistan COVID-19 laboratory testing capacity was enhanced from under 100 test per day as of February 2020 to over 79,749 tests/day as of 30 June 2021. So far, 16,278,190 tests have been performed. These capacities were established in all provinces. Public private partnership for COVID-19 testing was established and, MoU were signed with Private laboratories/hospital facilities for requisitioning additional testing capacity at subsidized prices across the country.

Currently, 103 private labs exclusively providing COVID-19 RT-PCR services with a capacity of 37,585 tests and utilization of 19,622 per day.

Infection prevention and control

The government conducted rapid assessment of the IPC capacities using developed checklists and tools for WASH, COVID& IPC, these formed the basis of planning and strengthening, thus the review and updating of national IPC guidelines, development of a standardized IPC training program for doctors, nurses, and house keepers. provision of supplies and equipment though support of NDMA and directly to the intervention areas.

Case management

Treatment guidelines were developed or adapted and disseminated for use, health facilities were equipped, and health workers capacity were enhanced, including in use of PPE and management of COVID-19 cases. The health systems capacities were continues monitored including daily ICU bed and ventilator occupancy by COVID-19 cases. These has enabled timely response to evolving demands.

Operational support and logistics, and supply chain

The government through the NDMA supported the quantification of supplies and with the support of partners COVID 19 supplies were procured, distributed to points of use, and tracked using the Logistics Management Information System. The federal government relaxed the public procurement regulatory authority rules and the ministry of justice put in place the indemnity and liability agreements for COVID 19 vaccines though COVAX and bilateral agreements. These effort by government is part of effort to ensure enabling environment for vaccine availability.

Other Essential health services and systems

COVID 19 disrupted the delivery of other essential health services, necessitating efforts to maintain and enhance its provision; assessments from SARA, HeRAMS in balochistan, and health facility readiness assessment for COVID-19 report enhanced planning for continuity of EHS and guidelines were produced. Various aspects were enhancing such as in access to RMNCH including GBV using telemedicine, use of courier and NDMA logistic structures to deliver commodities for chronic care and family planning respectively, enhancement of immunization services through enhanced OUTREACH SERVICES and digitization of health tools in predicting pandemic trends and monitoring health system capacities.

Vaccination

The target of government as of June 30th June 2021 is to vaccinate up to 119 million people aged 18 years and above and 15,416,197 doses have received administered. Government registered seven vaccines and issued emergency authorization for their use, procured cold chain equipment, and implemented rollout that has been undertaken concurrently with monitoring of vaccine safety though enhancing AEFI surveillance.

Preface

The Pakistan Preparedness and Response Plan (PPRP) 2021-22 is a continuation of the first PPRP that was launched on 23 April 2020 in response to the notification of COVID-19 in Pakistan on 26 February 2020 and the global upsurge and spread of the disease. The PPRP 2020, was worth USD 595 million. The Government of Pakistan, with support from partners contributed USD 599,248,299 (flexible funds and pillar 9 funds). The document highlights the achievements in the implementation of PPRP 2020, the challenges and lessons learned, and the proposed priority intervention to be implemented over one year period from July 2021 to June 2022. The plan/document considers the followings.

1. **Stock of the evolving epidemiological situation in the world**
2. **The emergence of SARS-CoV-2 Variants of Concerns (VoC)**
3. **Review of lessons learned about the virus and our response**
4. **Identify the gaps in our knowledge while anticipating the potential challenge ahead**
5. **Ensuring gender responsiveness and equitable response based on respect for human rights**
6. **The need to continue rapid and equitable deployment of new tools such as RDTs and vaccines**

This plan has been developed by the Ministry of National Health Services, Regulation and Coordination (MoNHSR&C) in consultation with all provinces (Punjab, Sindh, Khyber Pakhtunkhwa, Balochistan and Gilgit-Baltistan) and Federating Areas (Azad Jammu and Kashmir and Islamabad Capital Territory). The Plan outlines the international assistance required to support the Government of Pakistan to respond to COVID-19 from July 2021 to June 2022. WHO and partners provided technical support to the development of the document. The Strategic Objective of the PPRP 2021-22 is in line with the Pakistan National Action Plan (NAP) and the WHO Strategic Preparedness and Response Plan (SPRP) 2021 and aims to achieve the following six Strategic Objectives.

1. **Suppress transmission**
2. **Reduce exposure**
3. **Country misinformation and disinformation**
4. **Protect the vulnerable**
5. **Reduce death and illness**
6. **Accelerate equitable access to new tools, including vaccines, diagnostics, and therapeutics**

These objectives will be achieved through the following pillars:

Pillar 1: Coordination, planning, financing, and monitoring

Pillar 2: Risk communication, community engagement, and infodemic management

Pillar 3: Surveillance, epidemiological investigation, contact tracing, and application of public health and social measures

Pillar 4: Point of entry, international travel and transport, mass gathering and population movements

Pillar 5: Laboratory and diagnostics

Pillar 6: Infection prevention and control, and protection of health workers

Pillar 7: Case management, clinical operations, and therapeutics

Pillar 8: Operational supports and logistics, and supply chain

Pillar 9: Strengthening essential health services and systems

Pillar 10: Vaccination

Below is the resource requirement for the plan.

Table 1		
Pillar	**Description**	**Budget**
Pillar 1	Coordination, planning, financing, and monitoring	**2,520,000**
Pillar 2	Risk communication, community engagement, and info-demic management	**5,190,000**
Pillar 3	Surveillance, epidemiological investigation, contact tracing, and adjustment of public health and social measures	**28,491,794**
Pillar 4	Point of entry, international travel and transport, mass gathering and population movements	**31,410,000**
Pillar 5	Laboratory and diagnostics	**72,958,000**
Pillar 6	Infection prevention and control, and protection of health workers	**2,615,000**
Pillar 7	Case management, clinical operations, and therapeutics	**92,225,000**
Pillar 8	Operational supports and logistics, and supply chain	**10,450,000**
Pillar 9	Strengthening essential health services and systems	**72,920,000**
Pillar 10	Vaccination	**54,150,000**
Total		**372,929,794**

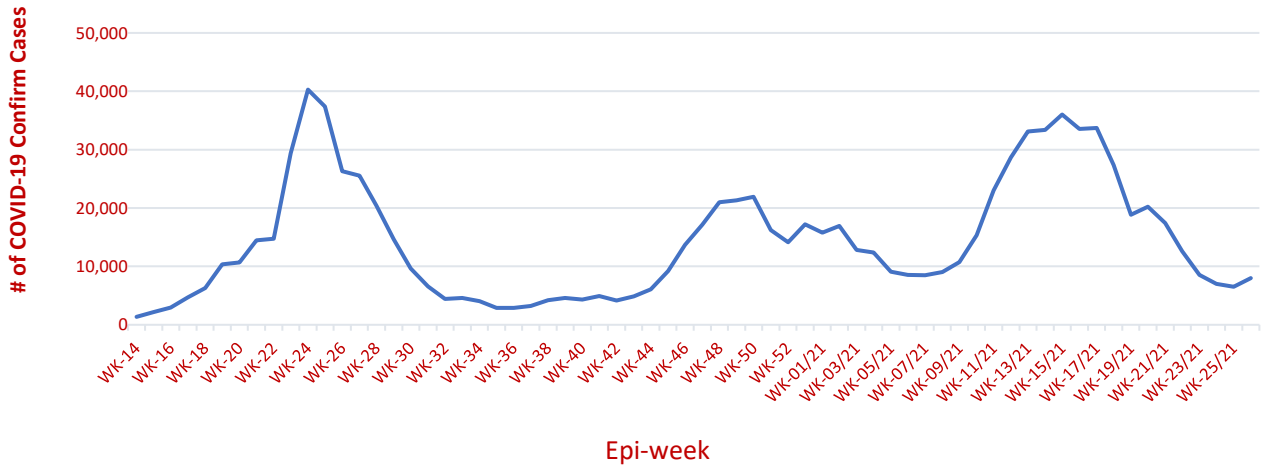
1. Enhanced COVID-19 surveillance i.e. test, trace and quarantine strategy is crucial to interruption of transmission. This is more effective when implemented together with strict adherence to non-pharmaceutical interventions and vaccination drive.
2. A robust Integrated Disease Surveillance and Response (IDSR) is critical for the timely detection, effective response, containment, and monitoring of the outbreaks (COVID-19).
3. Focusing of the major cities and districts contributing to the highest disease burden is crucial to curtailing the spread and thus controlling the pandemic.

4. Frequent re-evaluation of the interventions particularly content of the information, education and communication messages and designing approaches that promote change in attitude and behavior has been useful in enhancing uptake in the era of fatigue with compliance to non-pharmaceutical interventions.
5. The use of local influencers such as religious, community and family leaders in the face of inadequate access to information from social media and other electronic means and access to health facilities has been crucial to enhancing acceptance of vaccination. building the capacity of the influencers has helped to empower them with the right information that can be cascaded across the target population.
6. An integrated Supply Chain and Procurement Unit need to be established at the Ministry of NHSR&C for system strengthening and capacity-building support of all relevant stakeholders.
7. Dedicated human resource designated at the national and subnational levels for all components of the supply chain management including pandemic forecasting and planning, procurement, warehousing and distribution, monitoring, and data reporting on supplies is essential.
8. Use of a single Government-owned logistics management information system (www.lmis.gov.pk) which is an open-source business model and an ideal technology to meet the needs of COVID-19 is essential.
9. A robust coordination mechanism needs to be established among all stakeholders, involved in COVID-19 activities including logistics and supply chain for uniformity and to avoid duplication of efforts and wastage of resources.

Epidemiology of COVID-19

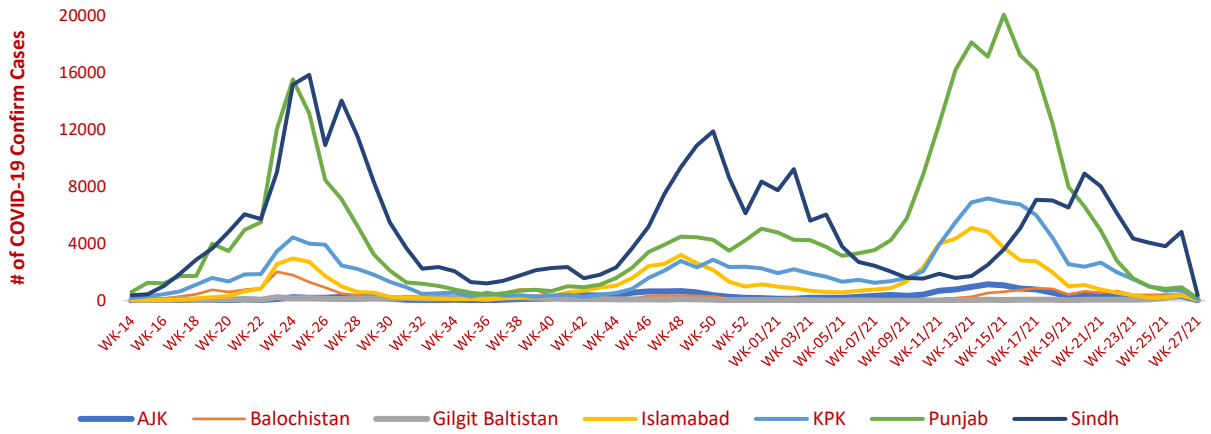
In Pakistan, the first two cases of COVID-19 were notified on 26 February 2020. One case was notified in Karachi while the other case was reported in Islamabad City Territory. The outbreak has now spread to all provinces and regions. Pakistan has experienced three waves. During the peak for the first wave, 40,287 cases were reported in week 24, 2020. Two subsequent waves were also recorded with the peaks in epi-week 50, 2020 and week 15, 2021. See figure 1 below showing number of confirmed cases by week in Pakistan.

Fig 1: Number of COVID-19 Confirmed cases by week till 30 June 2021



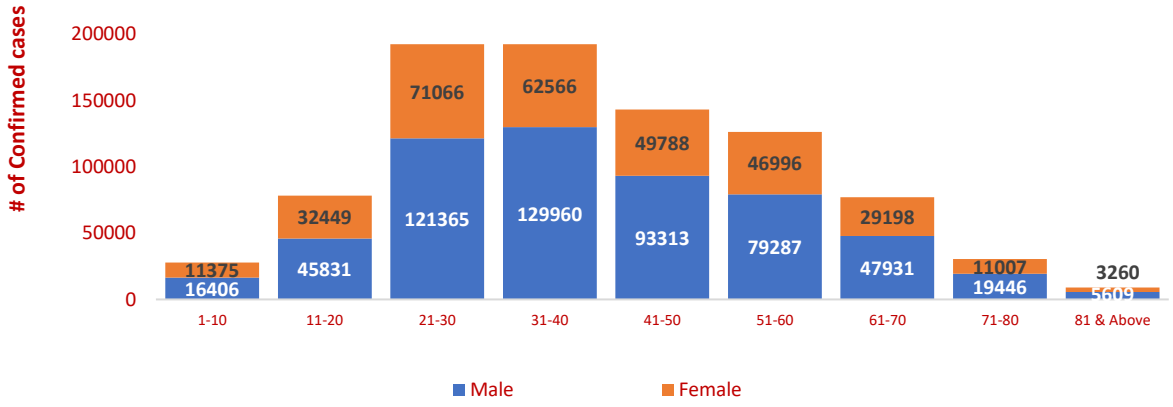
As of 30 June 2021, a total 957,371 confirmed cases and 22,281 deaths with overall 2.3% Case Fatality Rate (CFR) reported in the country. Punjab is the most affected province with 346,180 cases and 10,747 deaths (CFR 3.1%), followed by Sindh with 337,052 cases and 5,440 deaths (CFR 1.6%), Khyber Pakhtunkhwa 137,951 cases and 4,316 deaths (3.12%) Islamabad Capital Territory 82,652 cases and 777 deaths (CFR 0.9%), Balochistan 27,145 cases 308 deaths (CFR 1.13%) Azad Jammu Kashmir (AJK) 20,293 cases and 582 deaths (CFR 2.87%) and Gilgit Baltistan (GB) 6,098 cases and 111 deaths (1.8%). Figure 2 showing weekly trend of cases reported by province.

Fig 2: Weekly trends of COVID-19 Confirmed cases by by province till 30 June 2021



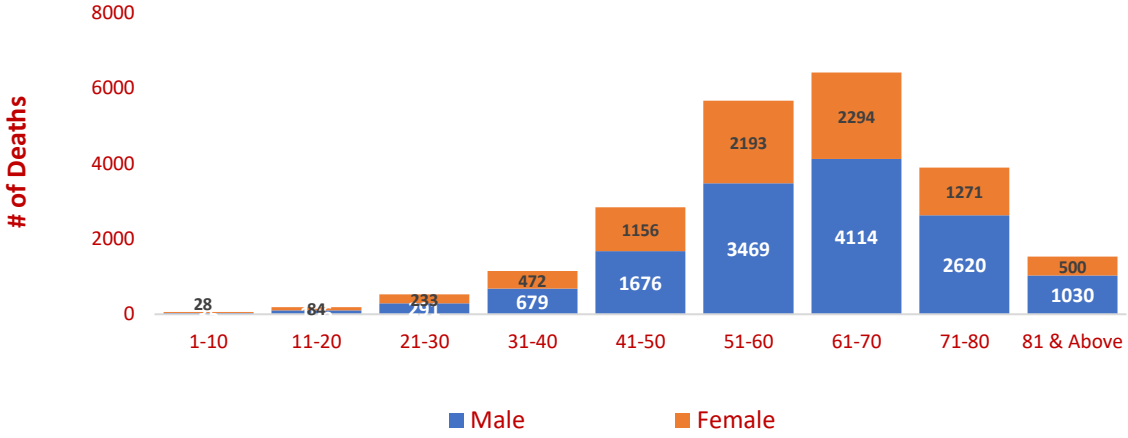
reported in people between 21 to 60 years age. In the 70 year and above age group, 39,322 (4.5%) cases were reported. Figure 3 showing the distribution of cases by sex and age group.

Fig 3: COVID-19 Confirmed cases by Age and Gender till 30 June 2021



More deaths reported in males 14,020 (63%) as compared to females 8,231 (37%) and high proportion of deaths reported in people above 51 years age (Fig 4).

Fig 4: Deaths due to COVID-19 by Age and Gender till 30 June 2021



Pillar 1: Coordination and planning

Background

Severe Acute Respiratory Syndrome (SARS-CoV-2) was first reported in December 2019 in Wuhan, China. On 30 January 2020, COVID-19 was declared by DG WHO as a Public Health Emergency of International Concern, and later as global pandemic on 11 March 2020.

Coordination and planning at national level

The Minister of State/Special Assistance to Prime Minister (SAPM) on Health, chaired the first formal consultation with national and international experts on 15 January 2020. After the report of the first case on 26 February 2020, and the increasing number of cases coupled with rapid spread of the outbreak, The Prime Minister constituted the following fora to provide national oversight to the pandemic response:

1. **National Coordination Committee (NCC) chaired by the Prime Minister**
2. **National Command Operation Centre (NCOC) established and notified by NCC**
3. **Cabinet Committee for Vaccine constituted by the federal cabinet. This committee was created after the introduction of COVID-19 vaccine in Pakistan**
4. **National Disaster Management Agency (NDMA) as the leading operational agency**

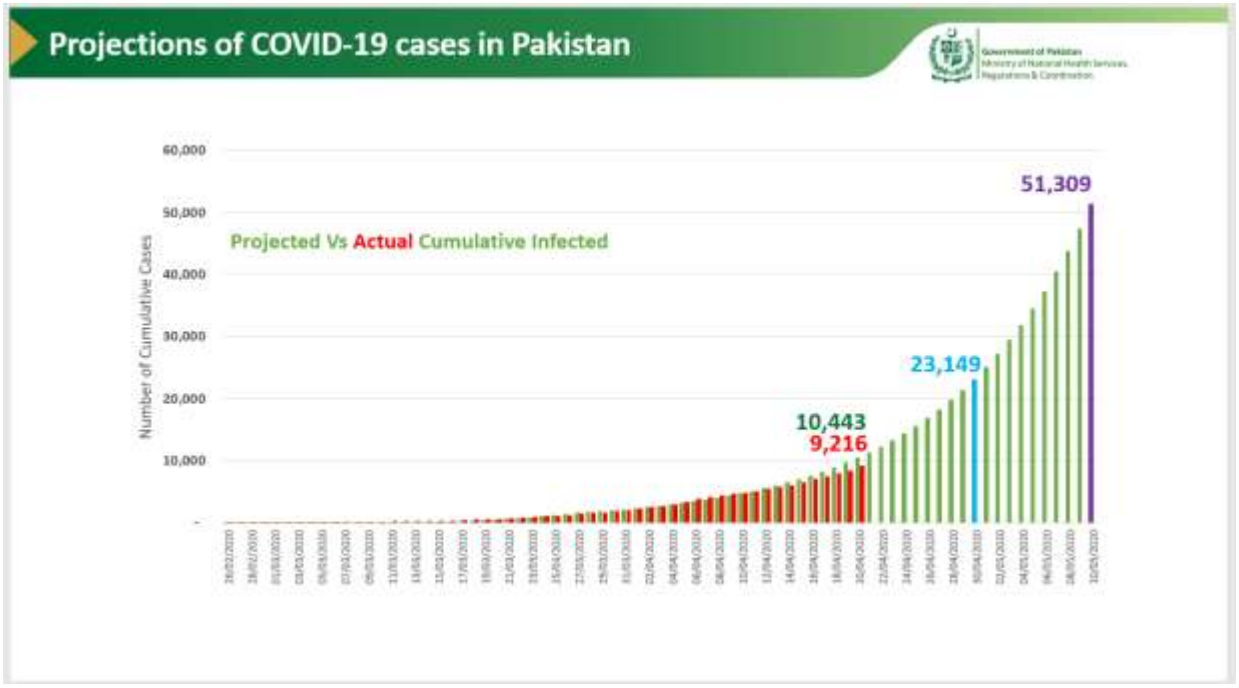
The Emergency Operation Centre (EOC) at the National Institute of Health (NIH) was activated as an Incident Command and Control Hub. A technical working group with three sub committees for RCCE, supply/cold chain and vaccine logistic and surveillance of Adverse Event Following Immunization (AEFI) were established at Federal EPI. They report weekly on the readiness level to deputy director program at MoNHSR&C.

At the provincial level, provincial coordination structures for COVID-19 were established beginning with the highest level of government and in line with the national coordination structures. For instance, in Punjab a Cabinet Committee on COVID-19 Chaired by: Minister Health and Chief Secretary Punjab was established.

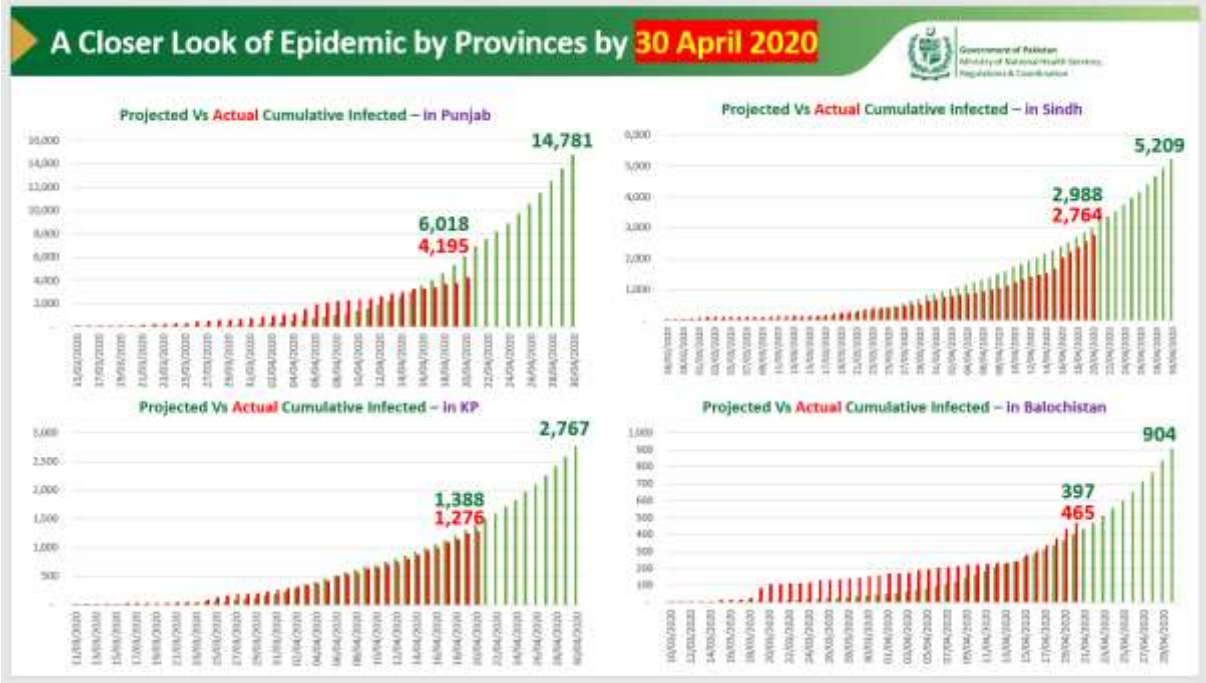
In Sindh province, the Chief Minister (CM) Task Force for COVID-19 and chaired by the CM. In Khyber Pakhtunkhwa Province, COVID-19 Task Force was established and Chaired by Chief Minister/Chief Secretary Khyber Pakhtunkhwa. In Balochistan, Command and Operation Cell for COVID-19 was established and chaired by Secretary Home department. In AJK, the State Task Force Committee was established under the Chief Secretary. Similarly, in GB Apex Committee on health was established under the Chief Minister, Gilgit-Baltistan.

Modeling and projection of the evolution of COVID-19

During the early stages of COVID-19, the government of Pakistan with support from partner and academic institutions conducted modeling and projection of the possible evolution of COVID-19. The modelling framework covered predicative analysis on various short-, medium- and long-term scenarios based on weak or strong intervention. The important parameters that were analyzed included the expected number of COVID-19 cases, cumulative mortality by treatment category for severe cases, health system requirements such as hospital resources (beds, ICU beds and ventilators). See figure 5 below



See figure 6 for provincial projection



Results obtained from the modeling guided response planning especially in predicting and preparing for the first and second wave of the outbreak.

Coordination of response by the UN

The WHO being a technical agent lead coordination of partner response to COVID-19. A Crisis Management Team was also constituted under the leadership of RC with membership of WHO, UNICEF, World Bank, and UNFPA.

Seroprevalence study

The Government of Pakistan with support from partners conducted the following assessments/studies, findings of which formed the basis of planning for COVID-19 response.

1. COVID-19 mortality and its associated risk factors in four major hospitals of Khyber Pakhtunkhwa
2. Population-based Age-Stratified Sero-Prevalence Study for COVID-19 Infection in Pakistan (June 2020)
3. Population-based Age-Stratified Sero-Prevalence Study for COVID-19 Infection in Pakistan (December 2020).

Challenges

1. After devolution in 2011, the health care services have been devolved. The major challenge was bringing together all provinces/areas at one platform for the preparedness and response of COVID-19

2. COVID-19 pandemic response was beyond health and needed multisectoral response. In the beginning, there were some issues mobilizing other sectors about the gravity of the situation
3. One consistent challenge faced was the implementation of the NPIs (Non-Pharmaceutical Interventions) by some provinces. As every province has its own environment and requirements
4. There was some difference of opinion amongst the provinces for the decision of complete lockdown or smart lock down at some point of time

Way forward

1. The current mechanism of coordination with NCOC as the coordination body will continue till the COVID-19 situation settles.
2. Government has decided that the coordination hub will be transferred to National Institute of Health, M/ONHSR&C at some appropriate time.

Priority intervention

1. Review and update multi-sectoral coordination mechanisms at all levels to support COVID-19 emergency preparedness and response actions, including in cities and urban settings
2. Coordinate within and across other sectors and health pillars (inclusive of private sector, operational partners, and civil society)
3. Enhance hospital, primary care and community readiness plans including private health care providers; ensure that relevant capacities, space, staffing (surge capacity across response and staff continuity plans) and supplies are adequate
4. Integrate and continue to promote a 'whole-of-society' approach to coordination, specifically to position the health sector response within the broader socioeconomic response and recovery
5. Liaise and provide public health guidance to socioeconomic sectors for their business continuity planning and adoption of public health measures
6. Prepare for regulatory approval, market authorization and post-market surveillance of COVID-19 products such as diagnostics, therapeutics, and vaccines
7. Consult with neighboring countries, other countries and regional bodies on planning, information sharing, and COVID-19 preparedness and response across sectors, as well as strengthening collaboration and process harmonization though the EOC-NET supported by WHO and partners
8. Conduct simulation exercises to examine country response plans and procedures and reinforce COVID-19 readiness and response capacities as relevant to country context and technical area

9. Undertake continuous assessment of community coordination (e.g., area-based, inclusive, led by local decision makers) to ensure strategy, planning, and implementation are aligned with the principle of equity
10. Monitor coordination across humanitarian, development, peace, and government actors, inclusive of civil society and communities, for conflict-sensitive pandemic response management
11. Conduct regular reviews (i.e., operational reviews and intra-action reviews (IAR), all hazard risk assessments) to assess implementation success and failures and impact on the epidemiological situation, adjust operational plans as necessary, and share good practices and lessons learned with other countries
12. Document experience to inform longer term preparedness and all hazard risk management, and guide emergency risk management within the health system to promote resilience; use this as input for the revision of National Action Plans for Health Security and their integration in national policies and plans.

Pillar 2: Risk communication and community engagement

The Risk Communication and Community Engagement (RCCE) is integral to the success of response to health emergencies. Failure to communicate well leads to a loss of trust and reputation, economic impact, and in worst cases loss of lives. During the reporting period, the government of Pakistan registered the following achievements under RCCE:

Achievements

Development of National RCCE Strategy

RCCE Strategy (Risk Communication and Community Engagement for COVID-19) was developed by Government of Pakistan in consultation with development partners for guiding the implementation of community engagement activities. The national plan presented an overview of situational analysis, RCCE objectives and target audiences. This document describes the essential steps, both strategic as well as tactical, that national and provincial governments should ensure at the respective levels as part of addressing the outbreak in Pakistan. The document has evolved over time through the phases of the pandemic.

Rapid Behavioral Assessments and studies

Several assessments and studies were conducted by the government and partners. The studies include: COVID-19 related RCCE behavioral change survey in Pakistan, a longitudinal survey with national coverage collected data directly from people at the community level. Key Informant Interviews (KII) with stakeholders including Journalists, Community Workers, and Religious leaders, Teachers, Health Care Workers and CSOs to assess COVID-19 related perceptions, rumors, and vulnerability analysis. The findings of the KII informed RCCE programming and were shared with relevant stakeholders. Three knowledge and practices surveys were carried out by Gallup Pakistan. Findings from the assessments and surveys provided insights and recommendations that were used by Pakistan's National COVID-19 RCCE Taskforce, led by the MoNHSR&C for internal COVID-19 response discussions.

Utilization of Community Structures

The RCCE campaigns leveraged upon local influencers such as community leaders, religious leaders, health workers, community volunteers collecting information on barriers to uptake health messages and for dissemination of awareness messages for adopting preventive measures. The MoNHSR&C developed a series of public service announcements that featured celebrities, national sports icons, religious leaders, and doctors. These messages focused upon reinforcing adoption of preventive measures such as wearing mask and maintain social distancing.

High level engagement with Heads of Islamic Advisory Group and National Islamic Advisory Group was carried out to leverage upon the influence of religious leaders. The GoP and partners engaged with religious clerics and Provincial Scholars Task Forces (PSTF) members in the provinces for dissemination of IEC materials, embedding COVID-19 messages in Friday sermons, proactive media engagement and sharing of testimonials.

Effective Use of Social Media

As social media portals are of the frequent sources of information. These media were effectively utilized to reach out to wider audience. The MoNHSR&C carried out weekly briefing by the Special Assistant to the Prime Minister on Health (SAPM) that presents an overview of the weekly COVID situation which is broadcasted on TV as well as social media. Development partners also developed and disseminated content through Facebook and other social media portals on RCCE in this regard static and animated content based on latest COVID-19 guidelines was developed regularly. Approximately USD 2 million in Google ad credits was secured and is being used to amplify the verified sources of information.

Newspapers and Electronic Media

Multiple advertisements were published in newspapers and aired on TV, including but not limited to Ramzan and Eid SOPs, encouraging COVID-19 vaccination, sharing Muharram SOPs, and urging citizens to get vaccinated. The campaigns were intensified during the times when there was an anticipated high engagement of population such as Ramzan, Eid festivals and Muharram processions. The COVID-19 caller tunes messages was another strategy used to educate the public on COVID-19. The caller tune message was updated regularly reflecting on the evolving challenges.

The awareness messages aimed at reducing exposure by enabling communities to adopt risk-reducing behaviors by encouraging them to maintain physical distance from others; practicing proper hand hygiene; using masks; and improving indoor ventilation. In this regard, 15 animated videos to raise COVID-19 awareness were developed in 7 languages (English, Urdu, Pashto, Sindhi, Punjabi, Saraiki and Balochi) which were aired on multiple TV channels as well as radio.

Counter Misinformation and Rumor Management

To maintain uniformity of accurate information while also taking into consideration confidentiality of suspects (or confirmed cases), a team is operating at the federal level that receives all media queries, analyses any rumors/misinformation, and responds to the situation based on the following standard operating procedures:

1. **Media Monitoring:** Measures are in place to monitor the print, broadcast, and electronic media to track rumors and take relevant action. This includes tracking of social media posts, trends, and sentiment analysis to inform communication response
2. **Positive Messaging:** Influencers like renowned doctors, government officials, local influencers, celebrities, media, and bloggers were engaged to spread positive messages to change public's opinion
3. **User Generated Content:** Key responses to parents' concerns is available and endorsed by MoH and shared with Communication team so positive information can address negative sentiments
4. **Rebuttal:** Any fake or negatively framed reporting is handled with positive messaging, retraction of negative content, issuance of official statements, extensive media support, and highlighting government's response to the outbreak.

See figure 7 below for media monitoring for rumor

Media monitoring for rumors and respective decisions

Community Engagement by 1166 Helpline

The support and utility of "Sehat Tahaffuz" Helpline was crucial during the pandemic and, therefore, was strengthened with additional respondents and experts to address COVID-19 specific queries. The number of calls at 1166 Helpline has increased over time. An expert panel of doctors has been engaged at the Helpline that responds to questions which are filtered by the first line of Call Center agents and provided with expert opinions.

The Sehat Tahaffuz Helpline 1166 is one of the primary sources of information for registration for vaccine, change of healthcare facility, and provision of technical advice related to a wide range of questions from the public which, in many cases, involves intensive two-way engagement with the callers. These responses are vetted by experts from EPI, WHO and Health Services Academy (HSA) Islamabad. Moreover, the Helpline is playing an active role in enhancing public confidence on immunization campaigns and handling misinformation/anti-vaccine propaganda.

Technical Analysis of Existing Situation-shifting Priority

A taskforce on RCCE has been established at federal level and provinces - with key partners represented (as part of the emergency response) where partners contribute and provide support to the MoNHSR&C. Coordination with other government departments is led by the MoNHSR&C to avoid duplication and maintain consistency in communication. The following are the main objectives of Pakistan's COVID-19 RCCE Strategy:

1. Provide timely and accurate information to limit human-to-human transmission including reducing secondary infections among close contacts and healthcare workers

2. Increase knowledge of families and communities about key behaviors related to respiratory and hand hygiene and health seeking behaviors
3. Communicate critical risk and event information to all communities, and counter misinformation.
4. Communicate mitigation behaviors at the individual, household, and community level, in case of widespread transmission of disease
5. Educate individuals, families and community on home isolation, basic treatment at home, and their role in testing as well as case management

In the mitigation phase of the pandemic, the Government of Pakistan has revised the National Action Plan of which RCCE is a strong component. An emergency control room has been established, which is overseeing the COVID-19 response including the RCCE component. Following are the roles of the three broad pillars of RCCE Strategy during the mitigation phase:

1. **Media Engagement:** This stream, directly overseen by the Prime Minister's secretariat, keeps the people and media informed about key decisions and their implementation status every day through a media briefing. At the same time, people are also informed about the social protection strategies especially for the poor that are being put in place. Minister of State for health and Chairman NDMA hold this daily press briefing while other relevant ministers also join based on the developments at the highest level.
2. **Social media interventions:** This dynamic stream of activities, jointly designed and developed by MoNHSR&C, its partners and ongoing advice of the PM's Social Media team, works on disseminating information as well as addressing misperceptions as and when they arise.
3. **Strategic communication on COVID-19:** Developed and overseen by MoNHSR&C in association with its health and development partners, this stream of activities focuses on providing strategic and targeted communication to the audience to provide them with correct knowledge, enhance positive attitudes and facilitate adoption of behaviours that are helpful in combatting the pandemic. The range of behaviours will include hand washing and hygiene, signs and symptoms and early health seeking, importance of nutrition for immune compromised and at-risk population, and physical distancing.

Dynamic, Data-driven Strategy

The RCCE pillar is guided by a dynamic data driven examination of the entire situation on weekly basis, including the COVID-19 surveillance data i.e. number of COVID-19 active and recovered cases and mortality, along with their provincial and district-based distribution. Additional information inflows are the social data coming from various sources including electronic media

monitoring, social media sentiment analysis, calls received at 1166 helpline and qualitative data being collected by PEI teams working at the community level. The evolving epidemiological as well as psycho-behavioral picture helps in making strategic communication decisions according to the situation.

Challenges

RCCE in rapidly evolving situation

It is challenging to effectively communicate guidelines that are constantly changing. Just when the message really begins to seep into every geographical area and demographic, it must be changed. This leads to a lot of confusion and a lag in people's awareness of what the latest information is. However, this problem is not specific to Pakistan because health departments across the globe and international health regulatory bodies are still struggling to understand the nature of the virus and how vaccines function. The messaging therefore needs to be pragmatic and cognizant of emerging findings.

Perception Management of COVID Pandemic

Since the very inception of the pandemic, a series of misinformation and rumors have been associated with the pandemic globally as well as in Pakistan. One of the foremost challenges in this regard is that there is a significant segment which out rightly denies the existence of COVID-19. Then there are common myths rife on social media regarding COVID-19 vaccination that it can make people impotent, change their sexuality and that it comes with a chip which could trace people, among others. The main source of misinformation about COVID-19 vaccines is WhatsApp, which is used by 39% of the country's population. Countering this misconception is still a big challenge.

Addressing Vaccine hesitancy

There is a distinct level of hesitancy amongst public regarding COVID vaccination. This hesitancy stems for the expedited speed in development of vaccines, their varying levels of efficacy and the adverse effects associated with COVID-19 vaccine. One reservation is associated with mRNA vaccines which is a new type of vaccine to protect against infectious diseases. The rumor associated with mRNA is that it will genetically modify the DNA which is not factual as mRNA never enters the nucleus of the cell. This is where our DNA (genetic material) is kept. Countering such misconception has been a challenge.

Myth of herd immunity

A segment of population believes that Pakistan has already achieved an effective herd immunity for the virus, therefore, people have no need of the vaccine. This specific misconception has resulted in a serious decline in COVID-19 related prevention and health-seeking behaviours. To address this barrier, there is a need to increase public communication on the risk and severity of COVID-19 while promoting the benefits of the vaccine as a high priority.

Proposed interventions

1. Conduct rapid assessments and analyses to assess target populations behaviors, barriers, and access to services
2. Establish social data, behavioral insights and dashboard within M&E mechanism to guide decision making and inform RCCE interventions
3. Revised COVID-19 RCCE coordination mechanisms established at Federal and provincial levels
4. Revised Federal and provincial plans for the COVID-19 RCCE response in Pakistan developed and endorsed.
5. Strengthened capacity in COVID-19 RCCE of community-based workers
6. Strengthened health education and communication units at the federal and provincial levels
7. Develop content that addresses emerging questions, concerns, and disinformation in coordination with partner organizations, networks, and local influencers.

Pillar 3: Surveillance, rapid response and case investigation

Disease Surveillance is a key Pillar of any epidemic response. The key actions to either stop or suppress COVID-19 disease transmission include timely case detection, testing, investigation, Isolation, and management. Tracing of contacts, quarantining and contact follow up is crucial to identification of symptoms and prompt action. Enhancing surveillance activities aids in monitoring disease trends, community transmission and generation of evidence for public health action. At the onset of the pandemic, the surveillance systems in Pakistan were mainly program and disease based. There was need to develop a system to capture information on the COVID-19 through the existing disease surveillance system. PEI surveillance infrastructure was initially used however, the government now is in the process of integrating COVID-19 surveillance into the IDSR which is now being rolled out in some districts. Below are key achievements under surveillance, rapid response teams, case investigation and application of non-pharmaceutical interventions.

Achievements

Enhancing the existing PEI surveillance systems for monitoring of COVID-19 transmission

From the onset of the outbreak of COVID-19 in February 2020, the surveillance infrastructure which includes 3,563 active surveillance sites and 10,748 weekly zero reporting sites and reporting systems (information systems) including human resources was engaged to enhance the COVID-19 surveillance thus ensuring early case detection and reporting. Polio surveillance utilizes the PEI facilitated field level data collection and analysis across the health systems. The PEI Surveillance team is engaged in data collection, compilation, and transmission from the reporting sites to district levels. From the district level the PEI teams are also engaged in aggregation and transmission of the compiled data to provincial and federal level. As a result, 14,130,297 suspected COVID-19 cases were identified, and 14,590,230 people were tested.

Provision of robust and timely epidemiological data for active monitoring and reporting of disease trends, and impacts

The Polio National Emergency Operation Cell (NEOC) Islamabad is the central coordinating unit at the Federal level to collect, compile, analyze COVID-19 data and to produce daily reports for action. The PEI surveillance teams has been able to conduct daily Epidemiological analysis of the COVID-19 data, produce daily situation reports at provincial and National level and share with stakeholders. The actions have helped for advocacy and evidence-based decision making in the COVID-19 response.

Integrated Disease Information Management System (IDIMS)

Integrated Disease Information Management System (IDIMS) developed by National Emergency Operation Centre (NEOC) forms the national repository for all COVID-19 related data. However, each province has developed electronic data reporting system for the COVID-19 and are linked/synchronized with IDIMS for near real-time data exchange. The system forms the basis for advanced data analysis for disease projections, TTQ strategy and identification of smart lockdowns. In some provinces data collection and reporting is operationalized through a Public Private Partnership and this data is linked to the IDIMS. Capacity building of the health care workers on surveillance, case investigation and contact tracing were conducted for different cadres including medical, Paramedical staff, informal health care providers & courier service providers. These trainings were crucial to initiation of case detection, reporting and contact tracing. Further trainings were conducted later for Rapid Response Teams, SARI/ILI sentinel surveillance contact tracing.

Test, Trace and Quarantine (TTQ) Strategy

TTQ strategy uses the Geo fencing technology to detect, test and isolate the cases. The focus is on limiting human to human transmission by testing of suspected cases, tracing of contacts of cases and quarantine. Ministry of National Health Services, Regulation and Coordination with the support from partners developed a training manual for frontline workers on COVID-19 surveillance and response. This manual covers the triad of Test, Trace and Quarantine (TTQ) as a strategy adopted for COVID-19 control. The Rapid response team were trained for case detection, contact tracing initially by the PEI teams. The contact Tracing and quarantining guidelines in both soft and printed copies were shared and widely circulated for implementation. WHO/EMRO conducted virtual RRT trainings for the National and Provincial RRT master trainers.

Update and dissemination of COVID-19 SOPs and guidelines

WHO updated/adapted COVID-19 cases definitions, line list forms, case investigation forms, case reporting forms, contact tracing guidelines, and protocols to the country context and disseminated to health care providers. The guidelines and SOPs developed/adapted specifically include:

1. **Advisory on Mitigation strategies**
2. **Advisory developed for COVID-19 related pneumonia and Surveillance activities**
3. **Surveillance, Case Definition, and Investigation Performa for active screening of passengers on all international airports in coordination with Directorate of Central Health Establishment**
4. **SOPs for sample collection and testing, and suspected case referral system from airports to designated hospitals**
5. **AEFI (Adverse Effect Following Immunization) surveillance**
6. **Guidelines for IPC**
7. **SOPs for contact tracing**
8. **Testing strategy incorporating COVID-19 antigen detection rapid diagnostic tests (Ag-RDT)**
9. **Guidelines to implement preventive health measures for passengers, conveyances, and cargo at ground crossings**
10. **Guidelines for the international Passengers Arriving at Airports in Pakistan**

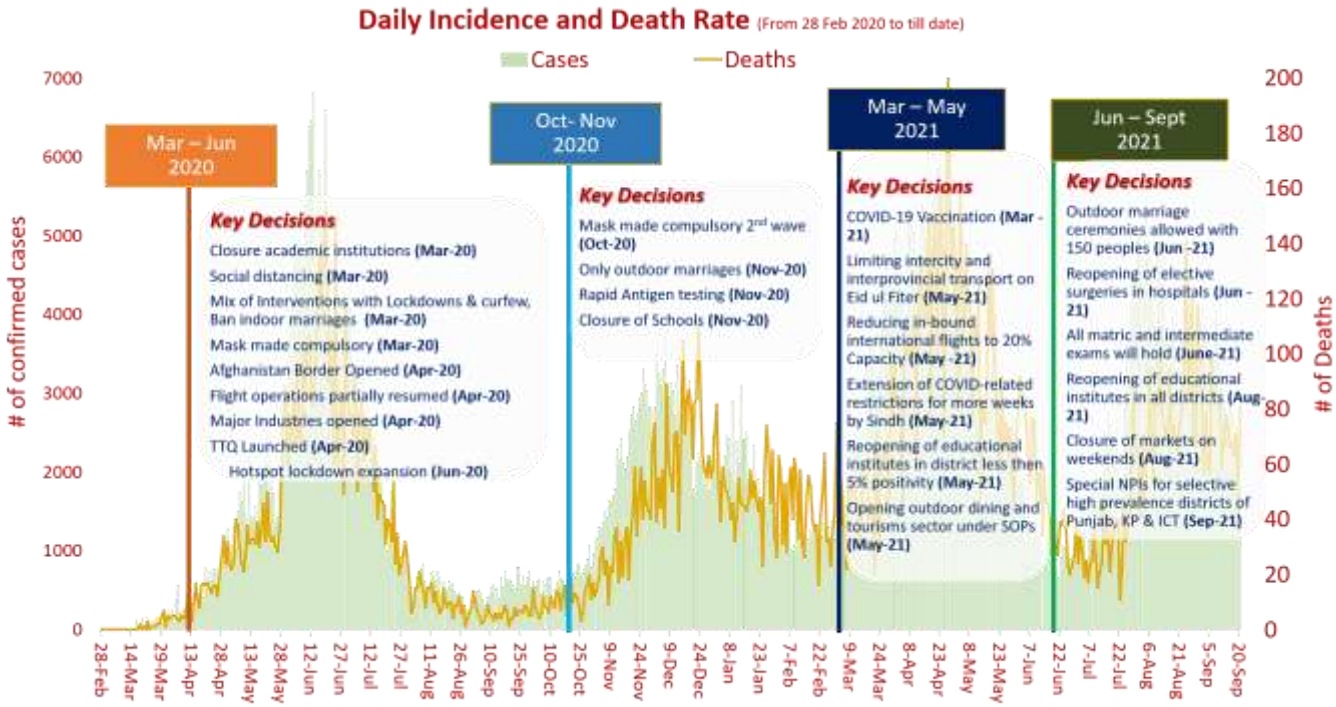
Activation of active case finding with Severe Acute Respiratory Infection (SARI) and influenza-like illness (ILI) sentinel surveillance

250 SARI/ILI sentinel surveillance sites were identified in both public and private sectors at national and provinces level in consultation with the health authorities and Rapid Response Teams (RRTs). SARI/ILI surveillance were used as a proxy to monitor the occurrence and spread of

COVID-19 in the community. SARI/ILI sentinel surveillance operational plan were developed to outline a uniform surveillance. The plan was implemented across all provinces, territories, and districts for early detection of the COVID-19 cases and timely response. In this regard, healthcare providers were trained on case definitions, data collection, analysis and reporting at all levels (health facility, district, provincial and national level). Development/adaptation and implementation of surveillance tools was undertaken in coordination with National and Provincial departments of health and other stakeholders. The functionality of the RRT were enhanced through capacity building and provision of required resources (PPE, Case Investigation tools, and contact tracing tools).

Application of Non-Pharmaceutical Interventions (NPI)

To restrict the spread of virus, the government has been undertaking several preventive measures including but not limited to imposing smart lockdown in selected areas of infected cities, restricting amusement activities, limiting the timing of commercial activities, directing



offices to reduce their staff to 50%, prohibiting large gatherings, closing the educational institutes, and banning the sports/cultural activities. The implementation of the NPIs were coordinated either at the national or provincial level. See details in the figure 8 below of the NPIs declared at the national level.

Challenges

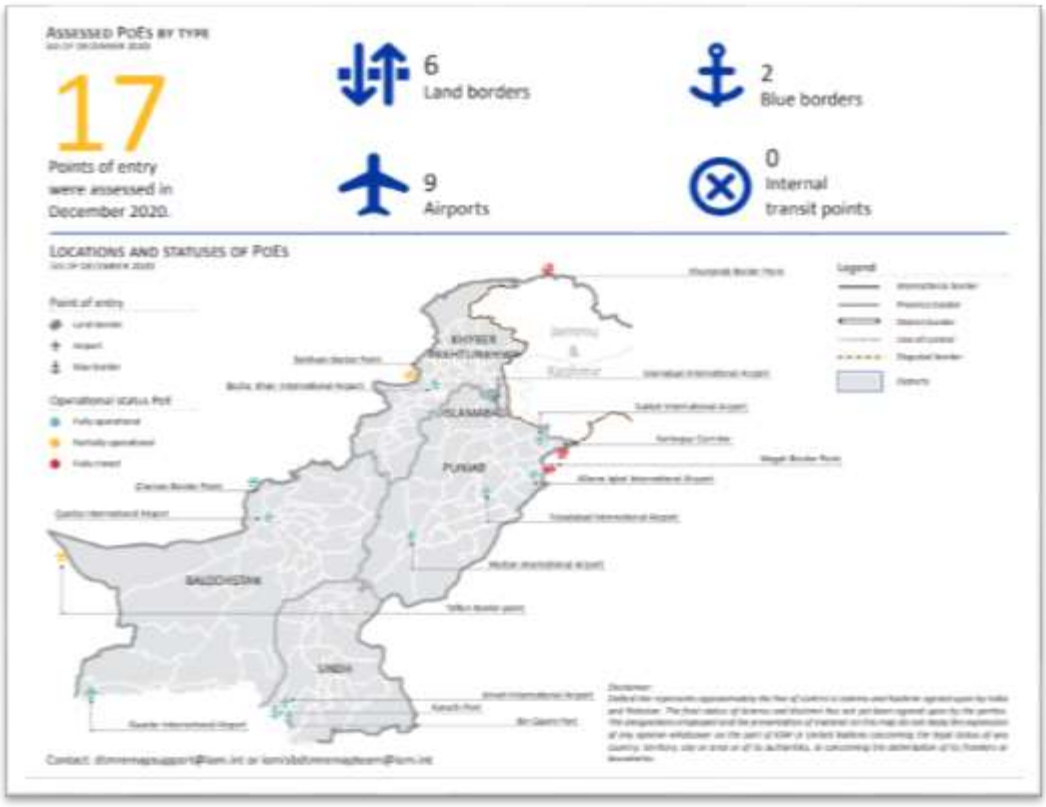
1. Fragmented surveillance system (in all provinces, territories) and along programs and diseases as well

2. Each Province has established COVID-19 surveillance and reporting system. Synchronization with IDIMS, currently operated by the NEOC, is still a challenge and this raises the issue of sustainability of the integration process in the long run
3. Structured and formal SARI/ILI Sentinel site surveillance that was introduced health facilities with the support of NIH is non-functional in 8 health facilities. This has raised the issue of continuous enhancement and strengthening of SARI/ILI surveillance in the public sector for long-term gains
4. Timely data collection and timely sharing at district, Provincial and Federal Level and Submission on standard format remains a challenge
5. Referral of SARI cases for testing and timely case reporting has been affected by weak co-ordination
6. There is inadequate availability of trained surveillance manpower in the public sector. This includes core surveillance human resources and data management staff that has affected efficiency in data transmission
7. There is inadequate monitoring of Other Epidemic prone diseases at present
8. Fewer RRTs are actively functioning now and face frequent challenges in supplies, logistics and equipment at district level
9. Case-based reporting to WHO within 24 hours under IHR (2005) is still incomplete

Pillar 4: Point of Entry

Background

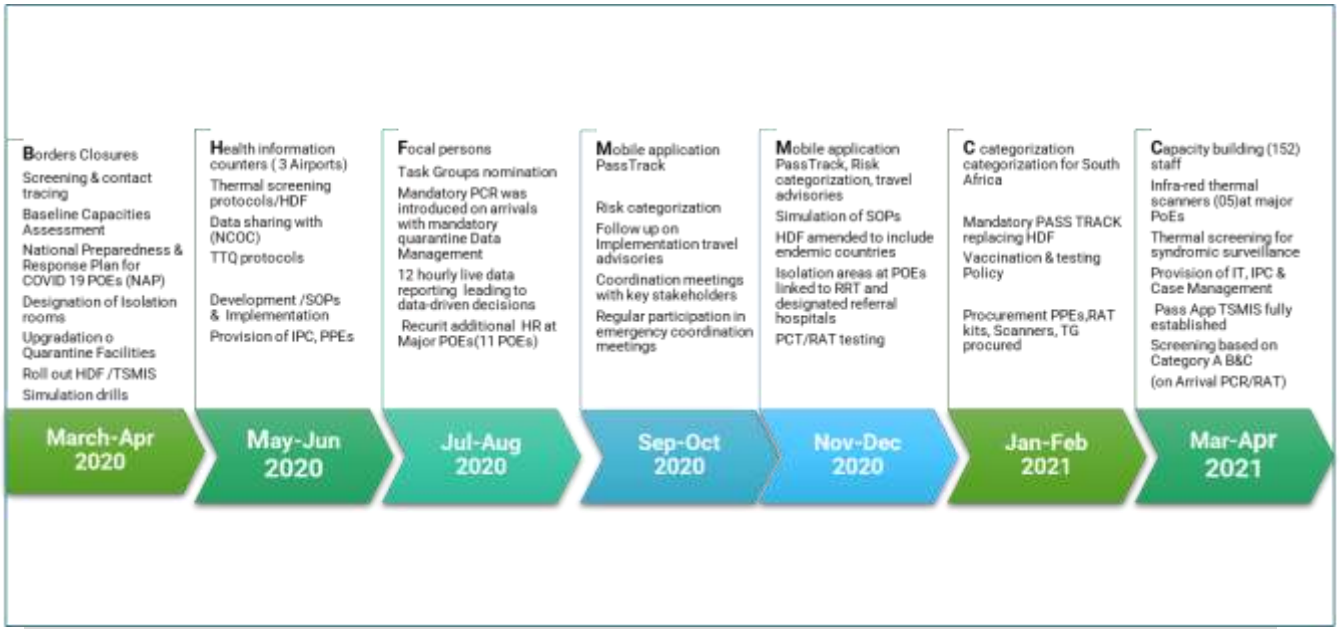
The COVID-19 pandemic highlighted the critical need to develop required core capacities at all Points of Entries (land, sea, and air) to minimize public health risks while adopting an all-hazard approach to ensure efficient preparedness and response to public health emergencies. See map 1 below showing the location of PoE, in Pakistan.



To achieve the above, the Government of Pakistan with support from partners, updated policies for travelers, developed guidelines and protocols for PoE, frequently issued travel advisories based on the COVID-19 situation globally and nationally, established quarantine facilities at PoE, strengthened testing of travelers, conducted tracing of contacts of travelers and quarantine of suspects and implementation of public health measures. See details of the achievements below.

Achievements

Screening at PoE is to reduce the international spread of communicable disease by detecting departing travelers who are sick or who have been exposed to the disease and preventing them



from leaving the country they are in (exit screening) or by detecting them upon arrival and directing them to appropriate care and follow up, as needed (entry screening). Below is a snapshot of the key achievements. See figure 9 below for achievement timeline for PoE

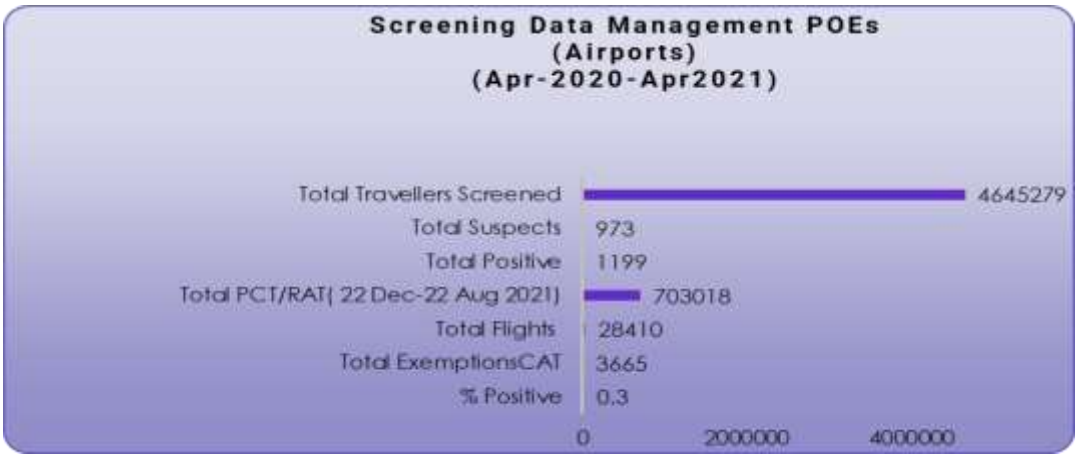
Information for planning

Strengthening of PoE at the onset of the SARS-CoV-2 pandemic was based on the already identified gaps from the JEE evaluation in 2016 and the Directors office of the Central Health Establishment internal assessment in 2018. However, in response to the SARS-CoV-2 pandemic the government of Pakistan conducted the following assessments to inform planning:

- **Assessment of national core capacities in March 2020**
- **Assessments of quarantine facilities at PoE**

Findings from the assessment guided the development of plans, guidelines, SOPs, training of human resources at PoE, deployment of staff at PoE among others.

Exit and entry screening at the PoE



At least 4,645,279 people were screened between April 2020 and April 2021. At the onset of pandemic Pakistan installed infra-red thermal scanners and provided thermal guns at PoE. In addition, and based on risk analysis, all travelers entering Pakistan must provide traveler contact information through the PassTrack mobile app or web-based form, undergo screening by a health official at the PoE and provide certificate of negative COVID-19 RT-PCR test (The test must be conducted at least 72 hours before departure). The Do CHE was given the mandate to test all inbound passengers through RAT at all designated airports and land border terminals in coordination with the provincial district administration.

The RAT positive cases as per TTQ protocols were immediately shifted to quarantine facilities for PCR confirmation as per the SOPs. Isolation rooms at all PoE were established with adequate and proper space, medical equipment, PPE, IPC supplies and printed material for interim case management. The quarantine hospital under DoCHE at Karachi airport was upgraded. See figure 10 below for data on screening at PoEs

Data Management and Information for Action

Data-driven timely decision-making based on accurate data generated at the PoE has been one of the key factors in the successful COVID-19 response in Pakistan. This was exemplified in the notification of VoC where immediate course of action for control of importation and containment of transmission in Pakistan was critical. A revised NCOC inbound passenger policy was successfully implemented to filter the importation of virus at all airports and land crossings.

The traditional paper HDF collection system was digitized and replaced with the Travelers Surveillance Management Information System (TSMIS) was developed as early as February 2020 in place of the traditional paper HDF collection system. The data generated at the PoE was collected and sent online (through TSMIS) to the main dashboard in Directorate of CHE (DoCHE) for forwarding to EOC established in NIH and later to the MoNHSR&C. The data on contact details of travelers, flight and airport of arrival, the origin of country was shared with the health authorities at the federal and provincial level for surveillance and contact tracing. The local administration along with the local health authorities used this information for TTQ which worked well for the detection of suspects and controlling the spread of COVID-19 across Pakistan.

In addition, the Government of Pakistan developed an interactive mobile application PassTrack App from 5 October 2020 to digitalize PoE data. Passengers are required to fill their credentials on travel history and other details through the cell phone or on the web portal. The PCR reports of intending travelers were also required to be uploaded on the PassTrack App. The App has been made mandatory from 1 May 2021 and has replaced the paper HDF. This application has been valuable in providing advanced data on travelers before arriving at PoE in Pakistan.

Human Resource and Capacity Building

Health staff have been identified, trained and deployed from Federal and Provincial Departments as screening teams. Capacity-building activities for implementing screening and management of suspected were designed and organized as online courses and training workshops for the staff

at Points of Entry. The trainings were designed to build competencies, knowledge, and skills for compliance with IHR requirements for public health measures at PoE.

Advice to travelers

IEC materials targeting travelers were developed guided by the national RCCE Strategy. The materials were displayed as flyers and posters. Information on precautionary measures at key locations at the airports and land crossings through standees and pictorial display of preventive measures for increasing the awareness of travelers. IEC material distribution made mandatory at the health education desk on international arrivals for passengers arriving at PoE from high-risk countries.

Monitoring and Evaluation System

The data and information collected during monitoring and evaluation constituted the critical basis for action and decision-making. Comprehensive monitoring and evaluation system for all PoE was developed and implemented.

Challenges

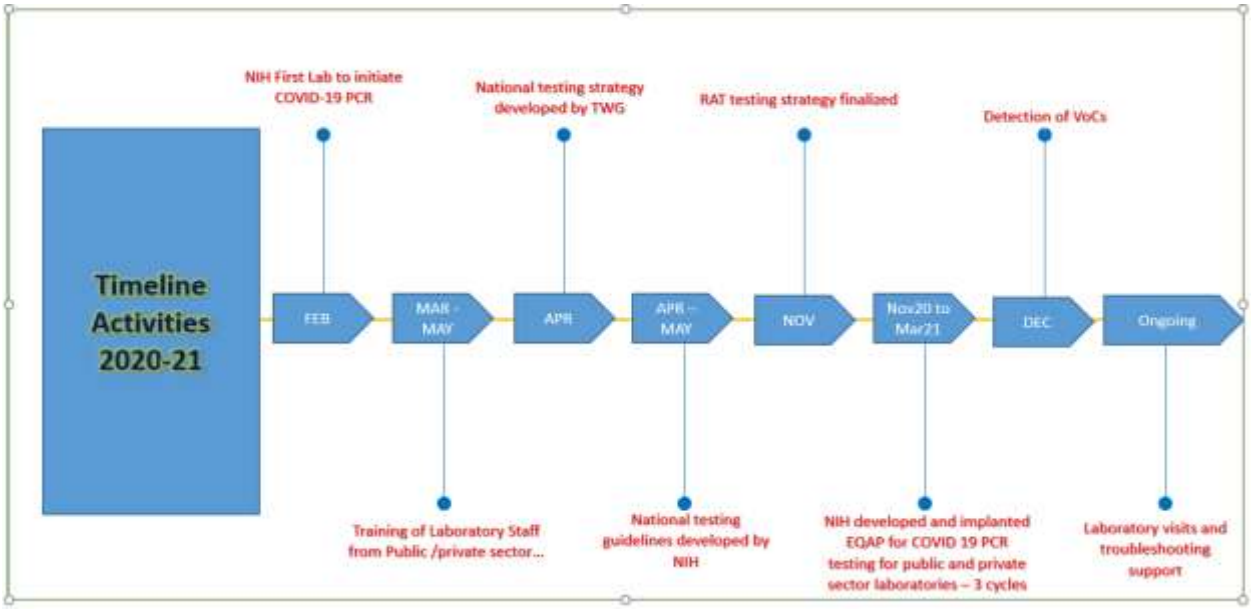
Paper-based system that initially existed at the PoE with manual collection of information on Health Declaration Forms (HDF) for monthly reporting to DoCHE, Islamabad through post has been upgraded to digital data management system in most PoE as COVID-19 pandemic surveillance necessitated availability of data for quick, prompt, and real-time response. There is still needed to further strengthen the digitalization process in terms of human resources, training, and provision of IT for TSMIS. That aside, the digital data management system, required to be rolled out at the PoE.

The digitalization of information with TSMIS and PASSTRACK. There were complaints on uploading the App and inability of the travelers to fill data on time at various airports, with occasional mobile systems mismatch. Computer illiteracy and lack of knowledge was another issue with filling the App. The TSMIS functioned well at the airports however, utility was compromised at some ground crossings due to non-availability of appropriate internet connection.

Pillar 5: Laboratory and diagnostics

Background

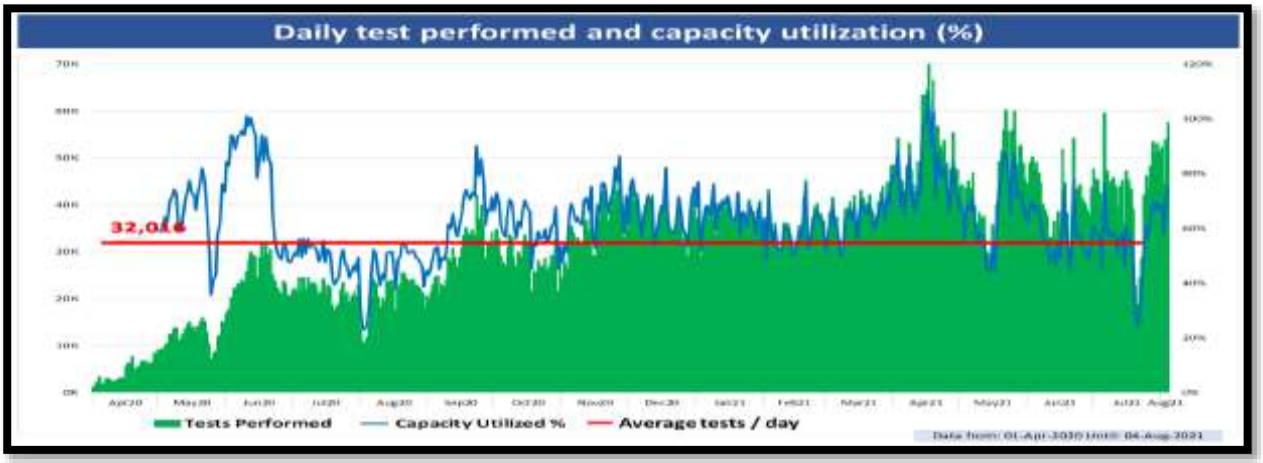
Health laboratory services provide vital support for disease prevention, screening, diagnosis, treatment, and research. Pakistan like other countries across globe has prompted SARS-CoV-2 testing capacity as part of major response interventions. The National Institute of Health, as national reference public health laboratory acquired requisite capability for SARs-CoV-2 diagnostic and initiated PCR testing for SARS-CoV-2 on 1 Feb 2020. Subsequently, number of SARs CoV-2 diagnostic laboratories increased from one lab at National Institute of Health (NIH), Islamabad, to 173 Laboratories, in public and private sector, across the country with enhanced national testing capacity below figure 11 is the timeline of achievement.



Enhancing capacity for laboratory confirmation of COVID-19

Pakistan COVID-19 laboratory testing capacity was enhanced from under 100 test per day as of February 2020 to over 79,749 tests/day as of 30 June 2021. So far, 16,278,190 tests have been performed. These capacities were established in all provinces. Public private partnership for COVID-19 testing was established and, MoU were signed with Private laboratories/hospital facilities for requisitioning additional testing capacity at subsidized prices across the country. Currently, 103 private labs exclusively providing COVID-19 RT-PCR services with a capacity of

37,585 tests and utilization of 19,622 per day. See figure 12 below showing the daily COVID-19 test performed vs lab capacity utilization.



Pakistan after a thorough consultative process has introduced Rapid Antigen Testing for enhanced disease mapping, surveillance, and screening to compliment PCR based testing. RDT started across country from December 2020, in certain defined settings. Currently, RDTs are performed more specifically on Points of Entry. Pakistan still stands amongst the country across globe whose daily testing size is between 50,000 to 100,000.

According to the Institute of Health Metrics and Evaluation (IHME) burden of disease predictive modelling Pakistan's average infection-detection rate was close to 1% on 17 May 2021 and there is further needed to enhance the daily testing capacity.

Development of guidelines, protocols, SOPs and training materials

The Technical Working Group on laboratory has developed the key guideline and SOPs for safe laboratory protocols and procedures in the beginning of the COVID-19 pandemic which are now implemented in the key labs testing for SARs-CoV-2 along with the training of the HCWs as per safe protocols.

1. **National Guidance on sample collection, storage, and transport of suspected COVID-19 samples**
2. **National recommendations for priority COVID-19 testing**
3. **National testing strategy for COVID-19. This strategy is being regularly updated**
4. **Recommendations for COVID-19 Laboratory Diagnostics**

Strengthening country capacity for genomic sequencing

After the emergence of COVID-19 outbreak, researchers have been closely observing SARS-CoV-2 genetic transformation in real time as compared to any other virus in the history. With marked diversity of this virus so far, many new variants reported i.e., UK strain VOC 202012/01 South Africa stain (VOC202012/02), Brazil/Japan stain (P.1), and delta strain from India (B1.617), which warranted need for genomic sequence data representative of geographic regions. Government of Pakistan strengthened the capacity of genomic sequencing and surveillance of National Institute of Health Pakistan for the SARs- CoV-2 viruses, which subsequently served to build sequencing capacity for other pathogens of public health concern in the country. See table 2 below for details by province/region.

Implementation of External Quality Assurance Program

The NIH developed and implemented External Quality Assurance Program (EQAP) for COVID-19 PCR testing for 55 public and private sector laboratories. A total of 3 cycles have been completed. Based on the findings, the quality gaps in testing are being addressed by strengthening the identified laboratories.

Laboratory Information Management Systems (LIMS)

One of the core components of IHR 2005 and COVID-19 Strategic preparedness and response plan of WHO 2021 is a functional Laboratory Information Management System to ensure traceability of results and facilitate laboratory data management and sharing. The laboratory Information Management system (LIMS) was strengthened to ensure smooth data sharing at district, provincial and national levels and reporting in to the IDIMS network.

Strengthening/capacity building of Laboratory personnel

Capacity building activities were conducted through face to face as well as virtual trainings on laboratory Quality Management system (LQMS), Biorisk Management (BRM), Diagnostic

Province	Total labs	# of total capacity	# of tests performed	Capacity utilization
Azad Jammu & Kashmir	5	668	668	100%
Balochistan	7	1,728	603	35%
Gilgit Baltistan	4	416	364	88%
Islamabad	25	18,865	1,979	10%
KP	25	8,668	6,868	79%
Punjab	76	28,220	17,131	61%
Sindh	29	19,490	11,419	59%
Total	**171**	**78,055**	**39,032**	**50%**

protocols. Furthermore, support was provided to provincial Public Health Laboratories for accreditation in line with International Standards Organization (ISO) standards for health laboratories.

Technical Analysis of Existing Situation-Shifting priority

- **NIH first lab to initiate COVID-19 PCR (Feb 2020)**
- **Training of Laboratory staff from public/private sector on PCR (Mar to May 2020)**
- **Laboratory visits and troubleshooting support (Ongoing)**
- **National testing strategy developed by TWG (Apr 2020)**
- **National testing guidelines developed by NIH (Apr - May 2020)**
- **RAT testing strategy finalized (Nov 2020)**
- **NIH developed and implemented EQAP for COVID-19 PCR testing for public and private sector laboratories - 3 cycles (Nov 2020 - Mar 2021)**
- **Detection of VoC from December 2020 onwards**
    - Requirement to repurpose funds towards Genomic surveillance capacity enhancement at country level
    - National Consortium established – June 2021

Proposed activities

1. Develop and implement a national testing strategy with clear links to defined public health and social measures
2. Special considerations for fragile, conflict-affected, and vulnerable settings, including humanitarian settings
3. Adopt and disseminate standard operating procedures (as part of disease outbreak investigation protocols) for specimen collection, management, and transportation for COVID-19 diagnostic testing
4. Establish access to a designated international COVID-19 reference laboratory
5. Identify hazards and perform a biosafety risk assessment at participating laboratories; use appropriate biosafety measures to mitigate risks
6. Adopt standardized systems for molecular and antigen based (POCT) testing, supported by assured access to reagents and kits
7. Identify gaps in human resources and use to develop and implement training for the laboratory workforce, particularly those involved in specimen collection, transport, and testing
8. Develop a SARS-CoV-2 sequencing strategy with specific goals, such as surveillance for variants or targeted populations and identify national, regional, or international capacity

for sequencing, and leverage existing networks such as GISRS. Ensure timely sharing of genetic sequence data through open access platforms such as GISAID. See WHO interim guidance on SARSCoV-2 genomic sequencing for public health goals

9. Develop and implement plans to link laboratory data with key epidemiological data for timely data analysis
10. Develop and implement surge plans to manage increased demand for testing; consider conservation of lab resources in anticipation of potential widespread COVID-19 transmission
11. Develop a quality assurance mechanism for point-of-care testing, including quality indicators
12. Conduct an Intra-Action Review (IAR) for Laboratories and diagnostics during COVID-19 response for improvement.

Pillar 6: Infection prevention and control

Background

Infection prevention and control (IPC) is one of the tools that can be used to reduce the spread of SARS-CoV-2, both in health facilities and in the community. WHO's guidelines for countries are two folds.

1. Prevent the spread of SARS-CoV-2 infections during healthcare delivery and to protect health workers and patients and maintain safe essential health services.
2. Prevent the spread of SARS-CoV-2 in public and private communal settings through a comprehensive package of infection prevention and control and public health and social measures.

These can be achieved through establishment of a sustained IPC programmes, development and implementation of a local IPC guidelines, IPC training for health workers, implementation of IPC measures using a multi-modal strategic approach, monitoring, and providing feedback on IPC measures, adequate patient to health worker ratio, access to IPC supplies and personal protective equipment (PPE), and access to safely managed water, sanitation, and hygiene (WASH).

Achievements

Assessment of IPC capacity

The government of Pakistan conducted rapid assessments of health facilities on 15 IPC and 13 WASH indicators, assessments on hospital readiness capacity to manage COVID-19 using WHO tool for rapid hospital readiness checklist for COVID-19 and IPC baseline assessment using the IPCAF. Finding from the assessment formed the basis for planning for IPC strengthening.

Review and updating of IPC guidelines

The launch and dissemination of the National IPC Guidelines on 2020 in April 2020 was a major achievement in establishing the policy environment for IPC implementation at all levels. Other documents reviewed and updated include guideline on cleaning and disinfection of surfaces in the wake of COVID-19, screening of hospital admitted non-COVID-19 patients and health care workers, mandatory use of face mask, burial and safe management of COVID-19 dead body, home isolation and discharge guide, rational selection and use of PPE, mass gathering, social distancing. These documents guided the response and contributed to reduction of the COVID-19 cases.

Coordination of IPC implementation

Strengthened the roles of IPC technical Working Group under the MoNHSR&C, nominated a focal point for IPC, established a TWG at NIH for development and updating of IPC guidelines, established IPC units at provincial for IPC implementation, formed IPC teams at COVID-19 designated facilities at Provincial levels, notified IPC committees at health facilities.

Provision of supplies and equipment

NDMA provided logistic support to the procurement and distribution of all supplies to the respective province, districts, and hospitals. Partner support were delivered either through the NDMA or directly to the intervention areas.

Training on IPC

Developed standardized IPC training programs for Doctors, Nurses, and housekeepers as detailed below:

1. IPC Learning Resource Package for Nurses (1 month)
2. Standard IPC Curriculum for Doctors (1 week)
3. Training Manual Housekeeping Staff (3 days)
4. An IPC Leadership Module is also under development on the same pattern.
5. Conducted trainings of staffs from Points of Entry, HCFs/Hospitals, EPI, Polio and MNCH Programs, Nutrition Stabilization Center, Family Planning health workers on IPC

Lessons Learnt and Way forward

1. Ensure compliance to IPC protocols as part of Job Description and link IPC breaches to HCWs performance and accountability. IPC units/teams at the HCFs need to report on IPC breaches
2. Need for sustainable monitoring and evaluation systems with engagement of regulatory bodies for both public and private health sector. Third party verification audits by regulators like Provincial Healthcare Commissions for establishing institutionalized indicators-based monitoring on IPC practices.
3. Critical need for IPC stewardship at national, provincial/regional and HCF level
4. Advocacy and facilitation for availability and access to standard PPE and IPC supplies
5. Establish health care worker surveillance for occupational health and safety

Challenges

1. Lack of clarity on role and responsibilities, facility- based IPC system not aligned to the IPC multimodal strategies
2. Absence of relevant IPC legislation & weak role of regulators for audit of IPC system
3. Harmonization of SOPs /guidelines of health care commission and environmental department on standards for waste management, disposal, and functionality of incinerators, drinking water, waste- water treatment, etc.
4. Poor IPC planning (absence of annual provincial/district/HCF action plans (including improvement plan, training plans, daily ICN round plans, IPC procurement plans) and regular review by IPC committee
5. Non-existent HCF policy on IPC protocols for infrastructure/building requirement (construction/HVAC/CSSD/waste/food supply/laundry, etc.)
6. Weak institutional IPC implementation and leadership support
7. Lack of practice and mechanism for follow up and monitoring of IPC trainings for sustained impact
8. Need for timely, effective, and efficient health care waste management
9. Integration of WASH in HCF operations

Pillar 7: Case management

Case management is one of the key pillars in reducing mortality and morbidity and saving lives. This can be achieved through early diagnosis of cases, managing clinical pathways, increase health care capacity, ensure health workforce are trained and protected, availability of biomedical supplies including oxygen and therapeutics and ensuring that the population is vaccinated. In Pakistan, 958,408 cases with 22,321 death (CFR 2.32) had been registered as of 30 June 2021.

904,320 cases had recovered, and 31,767 cases remained active. Below are major achievements under case management.

Development/adaptation and dissemination of treatment guidelines

The clinical spectrum of SARS-CoV-2 infection includes asymptomatic or pre-symptomatic infection and symptomatic infections. The symptomatic infection may present as mild, moderate, severe, or critical illness. The government provided clinical guidance for management of patients. This includes patients who do not require hospitalization or supplemental oxygen and those who have been discharged from an emergency department or a hospital. That aside, the management of COVID-19 for different clinical scenarios like pregnancy, elderly age groups, children and people with co-morbid condition was a huge challenge. In this regard, MoNHSR&C engaged specialist doctors to review/adapt/developed guidelines specific for different age groups and categories. These Guidelines were updated and shared on the website (www.covid.gov.pk). Below is list of some of the guidelines.

1. **Clinical Management for COVID-19 Infections**
2. **Clinical Management of COVID19 during Pregnancy**
3. **Management of COVID-19 in Children**
4. **Efficient Utilization of Oxygen for COVID-19 Patients**
5. **Working of Outdoor Patient Departments/Primary Health Care Centre in wake of COVID-19 outbreak (7-6-2020)**
6. **Pregnant Healthcare Workers amidst COVID-19 Pandemic**
7. **Care of Old Patients in Wake of COVID-19**
8. **Sexual, Reproductive and Maternal Health Services during COVID-19**
9. **Cleaning and Disinfection of Environmental Surfaces in Wake of COVID-19**
10. **Providing Dental Care Services during COVID-19**
11. **Management for the Neonate of Suspected or Confirmed COVID-19 Mother**
12. **Use of Convalescent Plasma in COVID-19 Patients**
13. **Covid-19 Treatment Guidelines update: alternatives to Tocilizumab**
14. **Screening of Hospital Admitted Non-COVID Patients and Healthcare Personnel**
15. **Care of Old Patients in Wake of COVID-19**
16. **Guidelines Zoning of Hospitals during COVID-19 Outbreak**
17. **Home Isolation and Discharge Guidelines**
18. **Home Quarantine during COVID-19 Outbreak**
19. **Guidelines Oxygen Facilities for COVID-19 Patients**
20. **Guidelines for Ethical Healthcare Decision-Making in Pakistan**

The guidelines were printed and disseminated. Health care workers throughout the country were trained on the guideline.

Identification and Equipping of Health facilities for COVID-19 patient management

Rapid assessment was conducted for all facilities managing COVID-19 cases to assess their readiness for COVID-19 case management. In addition, public and private health facilities were mapped to identify the facilities that may be used to provide treatment for the COVID-19 patients. Initially 58 health facilities were assessed for the availability of Biomedical equipment and oxygen systems in the facilities across the provinces. Intensive Care health Units, Patient isolation facilities and quarantine facilities were identified as well. Availability of Human Resource was mapped in the provinces identified; they were trained and equipped for COVID-19 patient care in each province. See picture 1 below of isolation center.

As a first step for preparedness and quick response to the COVID-19 patient care, government

of Pakistan identified 35 tertiary care hospitals for the management and hospitalization of patients

all over the country. 215 health care facilities with 2,942 beds capacity identified and equipped for COVID-19 patient isolation and care and 63 palaces with 23,557 beds capacity identified as quarantine facilities. The patient management facilities were further enhanced and equipped over time with the increase in COVID-19 patient load. Additional makeshift health facilities were established to cover the additional case load beyond the established capacity. Two such facilities were established; one each in Lahore and Karachi City Expo Centers. Total 46,892 Health professional (11,496 doctors and 35,396 nurses) were dedicated for COVID-19 patient care. See table 3

Table 3: COVID-19 patient treatment capacity by Province

S. #	Resources available	Punjab	Sindh	Balochistan	KP	AJK	GB	ICT	Total
1	Total Isolation Beds available for COVID-19 patients	1,0237	10,586	2,148	459	227	158	355	24,170
2	Total ICU beds available for COVID-19 patients	4,325	552	31	219	85	37	69	5,318
3	Human Resource available for COVID-19 Response	4,227	1,315	3442	33387	387	379	3755	46,892
3.1	Doctors	1,339	567	807	7,500	136	64	1,083	11,496
3.2	Nurses and other paramedic staff	2,888	748	2,635	25,887	251	315	2,672	35,396

Patient beds, ventilators and other equipment for intensive patient care procured on emergency basis and provided to the hospitals to further enhance the capacity for patient care. Continuous

Oxygen supply was ensured by increasing production through utilizing the oxygen production capacity in industries to manufacture oxygen for hospital use. As of 30 November 2020, total 24,170 isolation beds, 5318 ICU beds were made available for COVID-19 patient care.

Ambulances for safe referral Patients

Ambulances were procured to support referrals of patients. In addition, linkages were established with the Rescue 1122, Edhi and other ambulance services. Ambulance staff were trained and equipped for safe referral of COVID-19 patients. These dedicated and equipped teams have been crucial in the transportation of suspected and confirmed cases.

Capacity building trainings on COVID-19 case management

The Federal and provincial health departments conducted extensive trainings of the doctors, Nurses and Para medical staff on the COVID-19 case management. Technical Working groups were constituted in the provinces to develop/update the case management guidelines and training plans on basic patient care and ICU Care and, oxygen therapy. Over 100,000 health care workers including doctors and paramedical staff were trained on the rationale and appropriate use of PPE; over 1,000 health care providers were trained on basic management of COVID-19 cases; 7-day training was undertaken for 529 Health Care Workers on management of ICU and 506 health care workers from Punjab, KP, Balochistan and AJK were trained on Case Management by 5 Case Management consultants engaged by WHO.

Monitoring health systems capacity

A website was created by the Ministry for the dissemination of information regarding the number of total confirmed, critical, recovered cases and deaths due to COVID-19 in the country with a provincial breakdown. In addition, the government was daily monitoring ICU bed and ventilator occupancy and other relevant information on COVID-19. Below is a snapshot.

Table 4: Ventilator availability and utilized as of 1 July 2021							
Province	**District**	**# of Vents Available**	**# of Vents allocated for COVID-19**	**Vents Occupied by COVID-19**	**Vents vacant**	**% occupancy**	**# for potential use**
AJK	Mirpur	16	11	00	11	0%	02
	Muzaffarabad	25	19	01	18	5%	02
Balochistan	Quetta	145	82	00	82	0%	63
Gilgit Baltistan	Gilgit	28	13	00	13	0%	15
Islamabad	Islamabad	295	94	19	75	20%	201
KP	Abbottabad	61	22	00	22	0%	36
	Charsadda	20	19	00	19	0%	01
	Mardan	26	20	00	20	0%	06
	Nowshera	20	13	00	13	0%	07
	Peshawar	206	115	16	99	14%	45
	Swabi	27	17	00	17	0%	10
	Swat	36	26	01	25	4%	09
Punjab	Bahawalpur	103	50	09	41	18%	53
	Faisalabad	172	59	01	58	2%	77
	Gujranwala	73	44	03	41	7%	21
	Gujrat	50	16	00	16	0%	25
	Jhelum	08	06	00	06	0%	02
	Lahore	1,048	414	71	343	17%	429
	Multan	266	124	30	94	24%	97
	Rawalpindi	255	99	08	91	8%	114
Sindh	Hyderabad	87	66	00	66	0%	21
	Karachi	1,025	535	46	489	9%	624
Grand Total		**3,992**	**1,864**	**205**	**1,659**	**11%**	**1,860**

Table 5: Occupancy of Beds with Oxygen Facility allocated for COVID-19						
Province	**District**	**Beds with Oxygen**	**allocated for COVID-19**	**Occupied**	**% occupied**	**currently vacant**
AJK	Mirpur	188	120	01	1%	119
	Muzaffarabad	117	69	13	19%	56
Balochistan	Quetta	2,759	301	18	6%	283
Gilgit Baltistan	Gilgit	95	33	21	64%	12
Islamabad	Islamabad	3,451	663	84	13%	579
KP	Abbottabad	755	215	33	15%	507
	Charsadda	469	190	05	3%	274
	Mardan	518	286	11	4%	221
	Nowshera	503	152	04	3%	347
	Peshawar	2,839	985	129	13%	1,725
	Swabi	289	126	11	9%	152
	Swat	479	254	11	4%	214
Punjab	Bahawalpur	750	209	09	4%	200
	Faisalabad	1,543	802	92	11%	710
	Gujranwala	214	146	04	3%	142
	Gujrat	377	127	07	6%	120
	Jhelum	455	118	00	0%	118
	Lahore	4,558	1,463	161	11%	1,302
	Multan	552	315	51	16%	264
	Rawalpindi	1,335	527	97	18%	430
Sindh	Hyderabad	697	512	08	2%	504
	Karachi	2,619	1,865	475	25%	1,390
Grand Total		**25,562**	**9,478**	**1,245**	**13%**	**9,669**

The monitoring enables the government to timely and appropriately respond to the changing demands on the health system.

Plan for 2021-22

1. Continuously assess the management capacity of the health services networks to coordinate with various providers, and to ensure continuity of care

2. Continuously assess the human resources needs (skilled workforce). Take actions to grow workforce capacities
3. Continuously assess availability of biomedical equipment including oxygen source capacity and respiratory devices high flow, BIPAP, mechanical ventilation and associated consumables and accessories. Take actions to avoid unavailability of tools for work force
4. Continuously assess availability of essential medicines, including COVID-19-specific therapeutics (corticosteroids) to care for COVID-19 patients in either ambulatory or hospital settings. Take actions to avoid unavailability of tools
5. Review health care facilities using facility assessment tools for COVID-19 case management capacities including readiness to implement diagnostics, therapeutics, vaccines (see also Pillar 10) and other health products; use and availability of biomedical equipment for COVID-19 case management; identify and take action to remedy any gaps in capacity
6. Develop, monitor, and update operational plans and assign financial resources for health service delivery to ensure a timely response to the needs of COVID-19 patients
7. Continuously assess and update management processes to respond to the increased demands of COVID-19 patients
8. Continuously assess the burden on the local health system, and capacity to safely deliver primary health care services and other essential health services (see Pillar 9).
9. Define regulatory pathways for quality assurance
10. Ensure availability of and access to quality, safe and cost-effective pharmaceuticals, medical devices, oxygen, and other health technologies considered essential for the treatment of COVID-19, according to the level of care and context
11. Set up screening and triage areas at all health care facilities with capacity for isolation of suspected and confirmed cases; set up screening capacities in the community
12. Establish medical surge capacity according to the epidemiological scenario; establish mechanisms to request assistance and facilitate skills and knowledge transfer; establish dedicated COVID-19 treatment areas to effectively isolate and treat all COVID-19 patients
13. Integrate training packages developed for the management of sudden increased health needs into curricula for different occupations of health workers and managers
14. Strengthen capacities in the first level of care for detection and monitoring of COVID-19 cases in the community, ambulatory management of mild and moderate cases, and referrals (as per clinical guidelines). Emphasize the very limited need for antibiotics in mild and moderate disease and the importance of avoiding inappropriate use and exacerbating antimicrobial resistance. This includes care of patients after acute illness who may have

the Post COVID-19 Condition and who require a multi-disciplinary evaluation and management plan; ensure any management plan is carried out in a coordinated manner

15. Maintain routine and emergency health service provision for the population. † Participate in the WHO global clinical network knowledge exchange platform to aid in the clinical characterization of COVID-19, address challenges and share best practices in clinical care, and foster global collaboration (optional based on country capacity)
16. Contribute clinical data on hospitalized COVID-19 patients to the WHO Global COVID-19 Clinical Platform
17. Adopt international R&D Blueprint efforts and research protocols, such as: Monitored Emergency Use of Unregistered and Investigational Intervention protocol; the Solidarity trial for therapeutics; Unity sero-epidemiological studies to investigate epidemiological, virological, and serological characteristics (optional based on country capacity)
18. Focus therapeutics and roll out of response on interventions for which health work force is already trained such as oxygen therapy, use of dexamethasone
19. Make every effort, mobilize resources and partners to strengthen sustainable oxygen supply system
20. Monitor use of diagnostics, therapeutics, and vaccines in clinical trials, along the regulatory approval pathway, market authorization, and/or post-market surveillance, as appropriate
21. Monitor performance indicators at patient level to assess whether processes of care are improved. For example, did patients with severe or critical COVID-19 receive corticosteroids? If not, then explain why? Use this information to improve quality of care.

Pillar 8: Operational support and logistics, and supply chain

Background

NDMA is the operation and logistic arm of the National Control and Operation Cell. Through NDMA, the Government of Pakistan with support from partners provided the operational and logistic support to COVID-19 response. Specifically, the support was directed towards quantification of supplies, procurement and distributions of supplies and monitoring of the supply chain including stockouts. Below are some of the successes.

Key Achievements

Quantification of supplies

During the early stages of COVID-19, the government of Pakistan conducted modeling and projection of the possible evolution of COVID-19. The modelling framework covered predicative analysis on various short, medium, and long-term scenarios based on weak or strong intervention. The important parameters that were analyzed included the expected number of COVID-19 cases, cumulative mortality by treatment category for severe cases, health system requirements such as hospital resources (beds, ICU beds and ventilators), etc. See below projection maximum expected cases for 31 May and 30 June 2020. The projection was conducted on 30 April 2020. Figure 13 as a sample for quantification of health systems need See below figure 14 for the health system needs for June 2020. The prediction was conducted in April 2020.

Health System Needs in June 2020

	ICU	Isolation	Makeshift hosp./ Home
Beds	29,295	117,179	1.480,168
Ventilators	20,506 (70% of ICU)	-	-
Doctors	17,577	35,154	148,017
Nurses	29,295	70,307	296,034
Paramedics	10,986	35,154	222,025
Lab tech	2,929	7,812	49,339
Sanitary workers	5,859	11,718	98,678

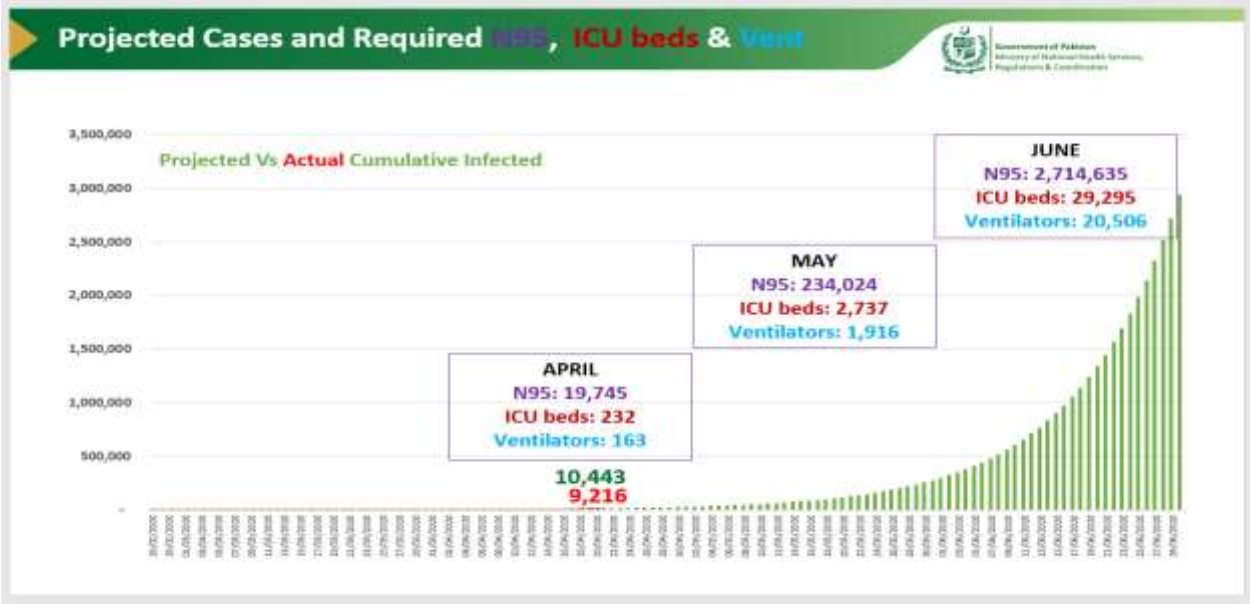
Assuming:
- ICU beds cases 2.5% of total cases;
- Isolation bed cases @10% of total cases;
- Remaining needs to be quarantined in makeshift hosp / home

Slow & delayed/ atypical pattern of epidemic factored in
Less number of reported cases may lead to wrong estimation

PPE	Required
N95	2,714,635
Tyvek suits	2,714,635
Surgical gowns	2,714,635
Nitrile gloves	24,898,639
Latex gloves	12,449,319
Disposable gowns	12,449,319
Goggles	1,357,318
Face shield	1,357,318
Disposable caps	2,714,635
Shoe covers	2,714,635
Gum boots	210,392
Surgical/ Medical Masks	16,949,319

+ 20% Buffer stock for all items

See figure 14 below is another sample for prediction for requirements for N95, ICU beds and ventilators.



Results obtained from the modeling guided response planning especially in quantifying resource requirement.

Procurement of COVID-19 supplies

Development partners also provided support for timely sourcing, procurement and distribution of quality essential diagnostic supplies, medical and personal protective equipment (PPE) required for the response. The requirements were source both global and local procurement. Through this support, the government was able to distribute multiple tranches of essential PPE, laboratory testing kits, medical supplies and ventilators to provinces and regions. Following commodity supports, received by the MoNHSR&C, Government of Pakistan, during COVID-19 pandemic:

1. World Bank has provided PPE, testing kits, medical and diagnostic equipment through UNICEF
2. ADB has also provided PPE, medical and diagnostic equipment through UNICEF
3. USAID has provided 200 Ventilators, one million Rapid Antigen Testing Kits, and PPE via Chemonics (more supplies in pipeline)
4. UNICEF has provided PPE, medical and oxygenation equipment and distributed among provinces
5. WHO has supported and distributed medical equipment and other supplies. These supplies include PPE, IPC, diagnostic equipment, emergency health kits, patients monitor among others
6. UNFPA has procured personal protective items and provided hygiene kits for vulnerable women and girls and persons with disabilities
7. CARE International donated 500k Face Shields

Relaxation of Public Procurement Regulatory Authority (PPRA) rules

The Federal Cabinet relaxed the Public Procurement Regulatory Authority (PPRA) rules to enhance procurement and importation of commodities both locally and internationally. This was applicable to products that has been approved by any of the reference regulatory authority or WHO pre-qualified. In absence of any such approval the applicant submits relevant data pertaining to safety, efficacy & quality of the drug product for evaluation & consideration by regulatory board on priority basis as per rule 30 (12) read with 29 (4) & 29 (6) of Licensing, Registration and Advertising (LR&A) Rules 1976.

As per standard operating procedures (SOP) of DRAP, about 20-30 days are required for evaluation and assessment of routine registration applications. However, evaluation time was reduced to 10-15 days based on the emergency use and in best interest of the public. To get

import permit documents like; Airway bill, Commercial or proforma invoices, packing list, certificate of analysis, lot release certificate from NRA of country of origin, product legalized certificate of pharmaceutical product/free sale certificate and GMP certificate would be required. Last three certificate/documents can be exempted if same can be verified by the official website of the relevant regulatory authority. There is also a system in DRAP that can monitor and investigate safety of emergency medical products and/or access to global pharmaco-vigilance information available as member of WHO-UMC Pharmaco-vigilance network. In relation to Emergency Use Authorization (EUA) of COVID-19 vaccines, so far, DRAP has given EUAs to five COVID-19 vaccines – AstraZeneca, Sinopharm, Sputnik, CanSinoBio and Sinovac.

Indemnity

In relation to indemnification/legislation for entering into an agreement to avail COVID-19 vaccine through COVAX or bilateral agreement, Ministry of Law and Justice put in place necessary indemnity and liability agreements. In this regard, the objective of the provisions related to indemnity and liability is to indemnify and hold GAVI and other donors, harmless against any claims and liabilities which may be made, filed, or assessed against GAVI or any donors to the COVAX AMC, on account of any bodily injury, illness, suffering, disease, or death caused by the use or administration of the approved vaccine, equipment, or supplies.

However, the indemnity would not be applicable to the manufactures, if a claim or liability associated with the approved vaccine results from (a) willful misconduct of the manufacturer: or (b) a defect in the approved vaccine due to non-compliance with the terms of marketing authorization; or (c) due to failure to comply with good manufacturing practices.

Monitoring of the COVID-19 commodity needs

The availability of an online platform the Logistics Management Information System (LMIS) enabled improved in-country coordination and much-needed visibility of supply/demand needs of COVID-19 related commodities, equipment and supplies coming to Pakistan at different levels to global actors. LMIS was initially deployed nationwide for public health supply chains including vaccine deployment, usage, and shortages. In coordination and support from USAID and ADB, Ministry of NHSR&C developed web-based COVID-19 LMIS that was deployed at the federal and regional levels to ensure transport and real time monitoring of stock indicators. Including stock positions, stock outs and consumptions trends for sustained supply of COVID-19 related supplies.

This data platform has been critical to inform national supply chain decisions, and updated global partners coordinating the allocation of key supplies, such as PPE and laboratory diagnostics etc. LMIS also offers batch management to maintain the First Expiry First Out (FEFO) process for

commodities during stock issue. Service delivery point data in LMIS across all the supply chain levels had a significant impact on maintaining COVID-19 commodity availability, and enhancing the quality of care, resulting in efficiency and effectiveness of COVID-19 commodity supply chain. COVID-LIMS integrates all supply chain functions and modules (See Figure-15 and 16).

Figure 15

Figure 16

The COVID-19 LMIS through its unique business intelligence tools helped in identifying commodities received through various funding resources and distributed to facilities at federal and regional levels. The system also helped in analyzing the storage capacities and constraints through proper inventory management control system along with the information pertaining to maximum and minimum stock levels. It remained a powerful analytic tool for forecasting and

supply planning, procurement processes and monitoring, and for distribution and transportation optimization in the high-risk pandemic crises.

Proposed activities

1. Engage with the key operation pillars and partners, particularly Laboratories and Diagnostics, Case Management, IPC, and Vaccination to provide estimates of supply requirements based on the 2021 Response Plan, and map/update available resources and supply systems in health and other sectors and conduct/update in-country inventory review of supplies. Identify central stock reserves, for COVID-19 case management
2. Establish the means to gather key monitoring and performance information, including key performance indicators (KPIs) monitoring of lead times, supply gaps and optimization (efficiency, consumption rates, loss rates, access to local markets)
3. Mobilize technical capacity to provide operation support and logistics (OSL) planning and implementation functions at national level should they be required. Implement supply chain control and management system (quality assurance, stockpiling, storage, security, transportation, and distribution arrangements) for medical and other essential supplies
4. Support national delivery and distribution of key COVID-19 supply efforts, as and when required, including review of operational plans, end-to-end logistics set-up, partner mobilization, to ensure the organized flow of supplies (vaccines, diagnostics, PPE, biomedical equipment, and therapeutics)
5. Facilitate access to information on improved health facility set up and technical designed in support of better patient care, IPC management including ventilation, reduced consumption of essential supplies and improved waste management
6. Support health facilities with improved access to oxygen-therapy options through ensuring provision of technical requirements for correct equipment, human capacity, maintenance options and the current state of infrastructure to support
7. Working with key humanitarian partners, establish playbook for who does what and ensure adequate technical capacity to provide operation support and logistics support role in the direct delivery of supplies, equipment, and services for people in hard-to-reach areas
8. Coordinate with supply management for regular health services and with humanitarian supplies and logistics where present, to identify possible integrated solutions for common challenges.
9. Document lessons learned and built on capacities strengthened during the response to improve operational support and logistics, including management of stocks within future

preparedness and contingency planning, for longer term preparedness and response functions

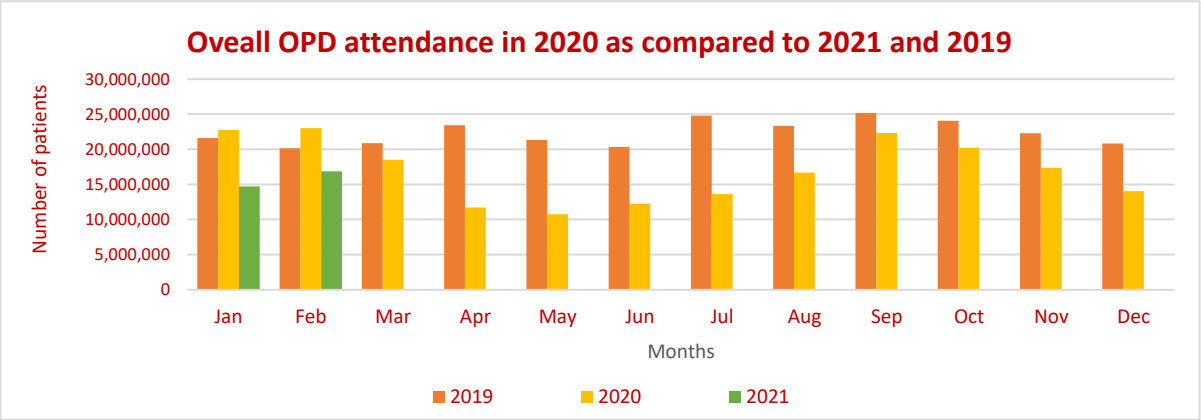
10. Conduct an Intra-Action Review (IAR) for operational support and logistics during the COVID-19 response for course correction and improvement
11. Refinement of supply planning tools including the Essential Supplies Forecast Tool (ESFT), Disease Commodity Package for COVID-19, critical items list. Provision of guidance and use-cases for supply interventions that inform need and demand
12. Based on forecasts and actual demand data, provide updated reports on financing gaps. Support to accelerate equitable access to new COVID-19 tools
13. Based on the CSCS review, plan and implement key recommendations, working closely with the regions to define priority actions, including ensuring correct capacity and resources are available for WHO/OSL regional management
14. Continue and improve multi-channel reporting on demand, procurement, shipping, and delivery and disseminate data on key bottlenecks and gaps
15. Provision of up-to-date market intelligence on availability, specification, quality assurance and potential procurement channels, opportunities for regionalization/localization. Ensure that allocation and prioritization is health response-led and is coherent with overall pandemic response strategy
16. Coordinate global network of stocks/inventory to enable quick access and shorter lead times to critical supplies. Put in place special financing mechanisms that enable rapid scale up and support immediate market access.

Pillar 9: Strengthening essential health services and systems

Background

COVID-19 pandemic challenged health systems the world over, disclosing weaknesses in service delivery and exposing their deficient capacities to deal with health emergencies. The situation being compounded simultaneously by lockdowns imposed to control the spread of the infection and the economic impact of the lock down on the country, society, and the individual. As the epidemic ravaged across borders, travel restrictions and closures of places that could perpetuate the spread of the infection including closure of outpatient departments of health facilities helped to reduce the spread. However, it also shook the confidence of the population who avoided accessing the health facilities even for essential health services that were acutely needed. Worldwide, it was noted that essential health services reported low uptake and utilization.

A mix of demand and supply factors were responsible for the decline in utilization. On the demand side, outpatient care attendance dropped precipitously with lockdowns limiting access and reduced affordability due to unemployment. On the supply side, the important factors were



closure of the outpatient departments and cancellation of elective surgical procedures during the initial phase of the pandemic. The human health resources were redeployed in many settings to provide COVID-19 relief and supply-chains were disrupted due to the suspension of cross border and within country transport and logistics.

As a matter of routine, the data from the primary and secondary health facilities is collated in the form of a Dashboard at the Health Planning, System Strengthening and Information Analysis Unit (HPSIU) of the Ministry of National Health Services, Regulations and Coordination (MoNHSR&C) with the purpose of ensuring effective monitoring of RMNCAH services. The team at Health Planning, System Strengthening and Information Analysis unit monitors data from the District Health Information System (DHIS) and the Lady Health Worker (LHW) Program and compared the service utilization in terms of antenatal care, delivery care, postnatal care, family planning services, immunization, iron supplementation of the current year with that of the past year 2019. Findings from the comparison of OPD attendance in 2020 as compared to 2019 revealed that the OPD attendance in 2020 especially for the months of April, May, June, July, and August was much lower than that of 2019. See figure 17 below for details.

Achievements in maintaining essential health services

The decline in utilization of essential health services was addressed through alternative approaches like development of SOPs for continuation of services delivery at health facilities, telemedicine, provision of home-based services, training of health care workers, recruitment of more health staff, provision of supplies and equipment for IPC etc. below are details of some of the achievements.

Assessments to inform planning: The Service Availability and Readiness Assessment (SARA) survey report, the health facility readiness assessment for COVID-19 report and the findings from

Health Resources and Services Availability Monitoring System in Balochistan contributed to providing information for planning for maintaining essential health services through revealing the status of health services availability and readiness which is an important aspect in the current COVID19 response.

Adaption of guideline on continuity of provision of health services: The government adapted COVID-19 related Guidelines for Pakistan for the continuity in provision of health services. The guidelines outline measures that must be implemented in various setting to curtail the spread of infection. The document was disseminated to the public and private health facilities through online platforms and physical address. Triage centres were established in all health facilities to provide initial syndromic screening of suspected cases. Suspects with symptoms were referred to fever clinics for further evaluation. This contributed to early detection of cases, the reduction of spread of the disease at health facilities and curtailed disruption of routine operation of health facilities.

Utilization of telemedicine: Telemedicine specifically for RMNCH services were deployed in collaboration with private sector in six facilities to cater for maternal, child and neonatal patients to replace in-person consultations. This was effective in reducing congestion at the health facility at the same time ensuring access to health care.

Continuation of provision of services to people on long term treatment: The COVID-19 outbreak negatively affected the continuous provision of medicines and care for people on long term treatment especially for people with diabetes, TB, hypertension, and HIV. This necessitated a change in dispensing approaches for medicines and monitoring of the health condition of the patient. To address the challenge, curia services were used to deliver medical supplies, medical stock were provided for 2 months instead of the usual 1-month supply and patients were monitored through phone to ensure adherence to medication and occurrence of side effects.

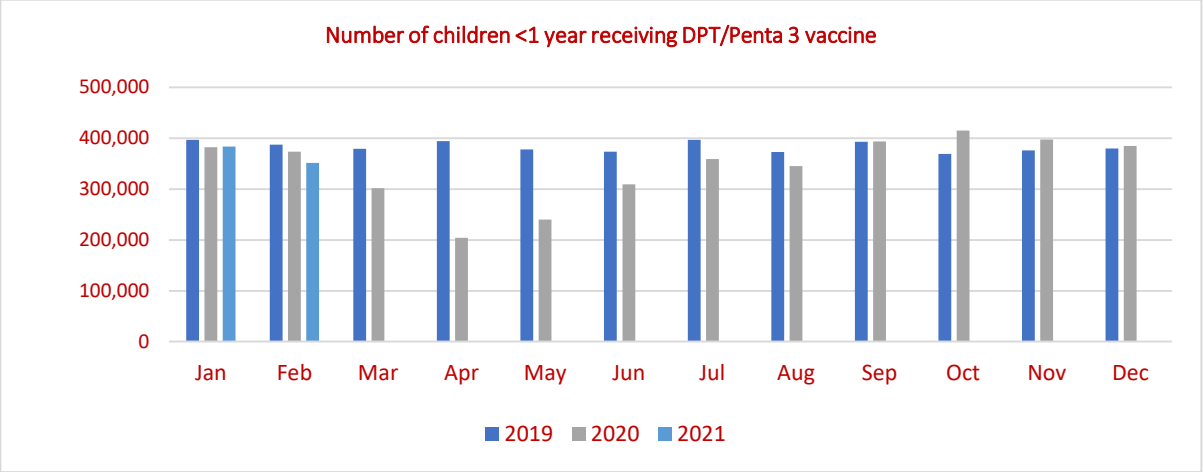
Family Planning: FP service delivery suffered initially due to the lockdown and disruptions in transport throughout the country. The commodities ran out quickly. The government through NDMA with support from partners responded by strengthening logistic supply chain management, IPC training and provision of PPE for community workers and midwives. Counselling services to dissipate fear of COVID-19 and continuation of FP advice were provided. Radio and TV campaigns were successfully run during the moths of April through June to promote the continuation of family Planning practices. Door-to-door delivery of various FP commodities, self-administration and counselling services were also provided.

Maternal and Neonatal Services: Although LHWs were redirected towards the mounting of TTQ (Test, Trace and Quarantine) response, community health workers were engaged for provision of delivery services at home due to closure of public health facilities and to prevent spread of infection. Designated tertiary care facilities for COVID-19 received most of the cases with complications and quick and smooth referrals were operationalized. Online trainings for healthcare workers replaced face to face interaction. Case Reporting Form (CRF) were developed to document and record cases presenting with COVID-19 to record the clinical effects of COVID-19 pandemic on the pregnant mother and the unborn child. This data collection fed into research activities that were aimed at an in-depth study of the effects of this Novel Coronavirus infection. Many helplines were set up which hosted a pool of health experts available through phone calls to provide medical assistance to women callers on family planning, maternal health, essential new-born care and reproductive health issues. Doctors also provided medical advice on how pregnant women can keep themselves safe against COVID-19 and gender-based violence, while for women in general, they advised how to ensure proper nutrition, contraception, and hygiene practices during this stressful time. The Ministry of Human Rights took the initiative of setting up a helpline (1099) for aiding victims of domestic violence. UNFPA reported having initiated Tele-psychosocial support services - Rozan Helpline for GBV survivors at national level responded to 3,468 calls during the month of June – August 2020 (https://rozan.org/rozan-counseling-helpline/)

Achievements under child health services: Immediately following the lock down in the country in March 2020, the outreach activities across Pakistan were halted and fixed-site service delivery in areas with complete lock down was also stopped and vaccination coverages dropped drastically especially the Penta 3 coverage dropped from 82% of Feb to 25% in April. Campaigns were stopped and field activities were limited to minimal. However, two weeks after the declaration of the lockdown, immunization services resumed with the necessary precautions like Standard Operating Procedures (SOPs) for continuing vaccination during COVID-19 Pandemic. Provinces were guided to resume regular activities ensuring physical distancing, infection prevention and control mechanism and safe injection delivery. Mass campaign on vaccination regaining community's confidence in visiting EPI sites were conducted as a result, immunization coverage picked up beginning from July 2020.

The government, with support from partners, implemented the Enhanced Outreach Activities (EOA) to vaccinate the missed and due children were conducted from June through September in 119 out of 154 districts with around 1 million targeted children under one year. About 8,150 vaccination teams were deployed in field, and outreach sites were established in community. The vaccinators were trained on Infection Prevention and Control (IPC), and provided with Personal

Protective Equipment (Medical masks and sanitizers). Around 13.6 million vaccine doses of all antigens were administered through EOA. About 800,000 children were vaccinated with Penta 3/OPV3/PCV10-3/IPV vaccines through this EOA and About 699,762 Zero Dose children were also accessed and vaccinated. During June through August the coverage of vaccination scaled up to the same level of the period before the Covid crisis. See figure 18 below for details.



Re-opening of schools: recommendations for schools before reopening was actualized and advised on how to ensure minimal transmission of infection among children attending schools when these were opened at the end of the first wave. Safe reopening of schools was also realized due to collaboration in development of Guidelines and the provision of training of several cadres in principles of Infection Prevention and Control (IPC). Several Pediatric units in tertiary care hospitals collaborated in providing online trainings on how to use Telehealth for consultations and for interaction among healthcare providers for seamless health service delivery.

Adolescent Health services including Gender-Based Violence (GBV): Referrals to Family Planning service delivery points, in peer-to-peer tele-education using mobile phones, WhatsApp and Facebook were implemented to ensure continuity of services. Messages on Sexual Reproductive Health, gender-based violence (GBV) and COVID-19 were broadcast through radio, TV, social media and displaying posters at community gathering places. Helplines on SRH including post-abortion care, providing information on GBV and services were disseminated through tele-consultation with service providers. Several online webinars and meetings were held to develop awareness among the population regarding how to seek help in cases of domestic violence and abuse.

Services for Aging populations: COVID-19 highlighted the vulnerability of aging population (>65 years of age) as being not only more susceptible to developing complications but also having higher prevalence of co-morbidities such as diabetes and hypertension. The International Old People's Day, therefore, gained prominence and a policy brief for integration of Care for

Elderly People in national/provincial policies, programmes and practices in Pakistan was endorsed by the TWG on RMNCAH&N.

Digital Health Tools as Service Delivery Strategy: COVID-19 pandemics has also brought to light the potential of Digital Health Services as one of the alternate methods of service delivery particularly for vulnerable populations such as the elderly including those who were disabled. The use of telehealth services during the period of lockdown led to the introduction of Telehealth departments in Medical Colleges all over the country with increase in the number of trainings and capacity building of healthcare professionals for prescribing treatment online. The number of websites providing information also rose as well as the tide of misinformation on social media led the government to start thinking about a national eHealth strategy.

Data Monitoring and Visualization for predicting pandemic trends Utilization of data and a set of indicators and visualizations to monitor and inform actions for strategies/roadmap/plans to address the indirect effects of COVID-19 on essential MNCAH services to understand the impact on the provision, access and use of essential services, medicines, and supplies and on health for vulnerable populations was accepted and endorsed as a useful strategy. It helped the government in predicting the need for ventilators, ICU beds and oxygen as the number of cases rose and fell during the pandemic.

Data was collected from the DHIS Dashboard housed at the MoNHSR&C (by the project) and the indicators for RMNCAH services extracted to compare data from the past year 2019 and the year 2020. The analysis showed the decline in service utilization and again the recovery in the trend that took place in the months of August and September, and it is expected that more than 90% of the decline in service utilization will be recovered by the end of the year. The information is also being used for mathematical modelling for the COVID19 pandemic trying to predict the number of individuals that were likely to be inflicted by the pandemic if the lockdown measured were withdrawn. It was estimated that the lives lost due to COVID-19 were in fact less than the lives lost due to deterioration of service utilization.

Challenges

Challenges encountered during COVID-19 pandemic to maintain essential health services for a country like Pakistan, with a huge population of 232 million and literacy levels hovering around 59%, the nation would have faced dire consequences if the population was not educated on the dynamics of the disease. For this, a risk communication strategy was adapted that engaged the media including television, radio, newspapers, and social media websites. Several mobile phone applications were introduced to apprise the common man regarding the precariousness of the

situation. A dedicated website www.covid.gov.pk was created that reported daily number of COVID-19 new cases, recovered cases and deaths. It also included guidelines for professionals engaged in all walks of life and prescribed specific measures for minimizing the spread of the infection.

The need for intensive care for the huge caseload of COVID-19 critical cases was realized by the government which led to procurement of ventilators from other countries as well as incentivized local production of this much-needed commodity. In addition, PPE kits, disinfectants, hand sanitizers, hand washing stations and other paraphernalia were procured and distributed all over Pakistan.

The pandemic also highlighted the deficiency of adequate numbers of medical personnel trained in the intensive care of patients. Online and in-person trainings were organized by the government and development partners as well the private sector hospitals for different cadres to upgrade their skills. These trainings not only targeted doctors, nurses, intensivists but also medical staff engaging with COVID-19 patients daily.

One of the main challenges in maintaining essential RMNCAH services during COVID-19 was ensuring provision of Family Planning services for the population compounded mainly because of non-availability of funds for procurement of contraceptives during the pandemic. This had the potential to lead to high abortion/miscarriage rates in the coming months as abortion is at times also used as a family planning method. Consequently, unsafe abortion services leading to high loss of maternal and perinatal deaths could be possible.

In addition, already high burden of nutritional deficiencies in the Pakistani population was further enhanced due to transport restrictions and lockdowns. This meant that that food product distribution was affected, and lockdown driven unemployment meant lack of capacity to pay for daily food intake especially among the most vulnerable. It is pertinent to mention that in Pakistan, nutrition problem is a long-standing issue which is evident by the high prevalence of stunting (40.25% according to National Nutrition Survey 2017-18 and 37.6% according to PDHS 2017-18) and wasting among under 5 children (7.1% according to PDHS 2017-18, 17.7% according to National Nutrition Survey). However, during the pandemic, the Government of Pakistan made renewed efforts to cater to the nutritional needs of the population by providing the poorest families with a cash award of Rs. 12,000 through the EHSAAS programme for 12,000 families living below the poverty line and these payments were made to only women so that they can make food available for their children. However, there is still a long way to go before the food security situation in the country reaches satisfactory levels.

Policies and strategies in response to above challenges

Before the pandemic, Family Planning commodities and supplies were short of the actual demand in Pakistan. The Government of Pakistan is tackling this issue using a multi-pronged approach. In the short term, efforts are underway to improve the Family Planning product availability and address stock outs during COVID-19 by developing a pooled procurement mechanism for supply and regulation of contraceptives. The major impediment is the lack of funds for purchase of commodities and supplies for Family Planning.

A Country Commodity Security Working Group (CCSWG) has been established to address the family planning commodity availability issues in the medium term. In this regard, the Government is coordinating with development partners like IPAS, UNFPA and others to facilitate the delivery of appropriate commodities, like Long-Acting Reversible Contraceptives (LARCs).

Nutrition problem: The Nutrition Wing in the MoNHSR&C is responsible for devising strategies customized for Pakistan's context. In view of the nutritional situation in Pakistan, PC-1 for "Nutrition Project" with Rs 350 billion has been conceptually approved by the GoP in the current month by federal and provincial governments but its implementation will take time. The nutritional interventions for this purpose are also included in the UHC Benefit package.

Recommended Future Strategic Actions: Digital strategy: The most innovative strategy that surfaced during the pandemic was the use of digital technology which has been found effective in improving the access and utilization of these services. Currently, the Ministry is in the process of developing a Digital Health Strategy which will pave the way for providing telehealth services improving access and utilization of health services.

UHC BP: The MoNHSR&C is engaged in developing a Universal Health Coverage Benefit Package that will provide costed intervention packages across 5 platforms; Community, PHC level, First level Hospital, Tertiary Level hospital and Population. These interventions include Sexual Reproductive Health (SRH) interventions that will improve access to all segments of the populations. This package is ready to be piloted in all provinces and areas in selected districts and will be instrumental in helping us keep our commitment to the Sustainable Development Goals (SDGs). Local production of FP Commodities: Improved capacities to produce Family Planning commodities and supplies can help the country in overcoming the obstacles that had to be overcome at the beginning of the pandemic. Trainings of healthcare professional in online Infection Prevention and Control and COVID-19 patient management in different settings (e.g., in Obs/Gynae and Pediatrics) need to be continued on a continuous basis that further prepares them for Health emergencies.

Proposed activities

1. Ensure dedicated budgets for national planning and activities for maintaining essential health services
2. Document adaptive responses (e.g., teleconsultation, integrated primary care, remapping of referral pathways) and incorporate capacity gains from the response into PHC strategies to improve system resilience and integration of health security planning within national health strategic plans
3. Coordinating primary care support, adjust hospital admission and discharge protocols to limit duration of inpatient stays as appropriate and appropriate and safe
4. Where safe and appropriate, limit face-to-face encounters by integrating services across disease programmes, redesigning chronic disease management, increasing self-management, and shifting encounters to digital platforms where appropriate, while ensuring access to necessary medications and supplies
5. Considering re-purposed facilities, concentrate 24-hour acute care services at designated first-level hospital emergency units (or similar), reorient referral pathways, and ensure public awareness of these changes
6. Establish outreach mechanisms and strengthen community-based health care, including increased availability of medicines at pharmacies, as needed to ensure delivery of essential services
7. Disseminate information to prepare the public for changes in service
8. Disseminate information to inform the public and guide safe care-seeking behavior
9. Ensure that minimum requirements for IPC, including implementation of standard precautions, are in place in all facilities throughout the health system and ensure adequate IPC supplies to guarantee the safe delivery of essential health services
10. Establish screening of all patients on arrival and mechanisms for isolation at all sites using the most up to date COVID-19 guidance and case definitions
11. Ensure acuity-based triage at all sites providing acute care
12. Establish clear criteria and protocols for targeted referral (and counter-referral) pathways among public and private providers
13. Schedule appointments, limit visitors and manage patient flows to ensure distancing, avoid crowding in waiting areas, and create unidirectional flow of patients and staff
14. Use multiple communication approaches, including social media channels, to build public confidence and encourage continued utilization of essential services during the outbreak
15. Engage with communities to inform the adaptation of services so they are more responsive to local needs

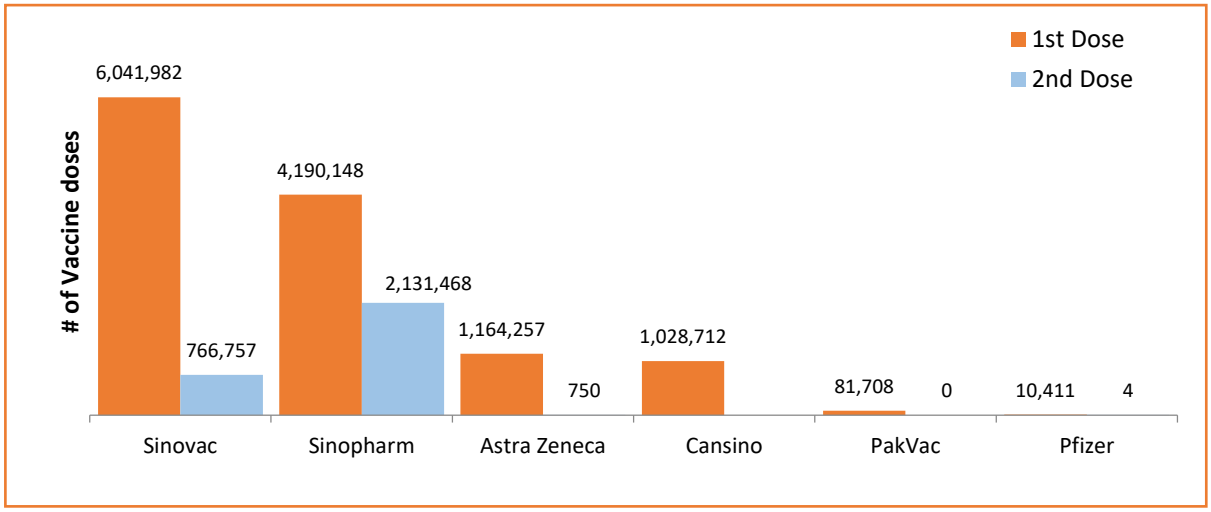
16. Identify information sources trusted by the public – such as primary care clinics, pharmacies, community health workers and leaders, and peer networks – and ensure these sources are kept up to date about changes in essential service delivery and about available resources, such as hotlines
17. Conduct an Intra-Action Review (IAR) for Maintaining core health systems functions and essential health services during the COVID-19 response for course correction and improvement
18. Assess and monitor utilization of essential health services and barriers, including financial, gender-based, geographical, and cultural barriers to utilization, and identify solutions in close collaboration with communities
19. Anticipate restoring suspended services based on changing needs as public health measures are gradually eased and address any new barriers to access
20. Where possible, integrate community-based reporting with facility-based health information systems to maintain a comprehensive approach to monitoring service delivery and utilization
21. Conduct rapid health facility assessments to monitor the evolving capacity to provide essential health services; assess disruptions, mitigation approaches, capacity for screening and triage, workforce capacity and the availability of essential medicines and supplies (including PPE)
22. Create a dedicated platform for monitoring inventory and stockouts of essential medications, equipment, and supplies, and for the coordination of re-distribution of supplies.

Pillar 10: Vaccination

Vaccination is one of the latest technologies approved by WHO in the COVID-19 response. Vaccination is a sustainable solution to overcome the crisis, bring back normalcy and save the economy. Therefore, a focused effort in vaccinating targeted population and our joint contribution in overcome vaccine coverage challenges is inevitable. Government of Pakistan target to vaccine up to 119 million people aged 18 years and above by December 2021. A total of 15,416,197 people has been vaccinated as of 30 June 2021, of which 12,517,218 had received the first dose and 2,898,979 had received 2 doses.

Achievements

Legal framework: The government issued the emergency authorization for use of the following vaccines Sinovac, Sinopharm, Astra Zeneca, CanSino, PakVac, Sputnik and Pfizer. See details of total dose administered as of 30 June 2021 in figure 19 below.



The Drug Regulatory Authority Pakistan (DRAP) with support from partners developed the legal framework for Pharmacovigilance and its sustainability for COVID-19 vaccination. Software and hardware for pharmacovigilance were installed. The Server was installed to strengthen Pakistan Integrated Regulatory Information System (PIRIM) of DRAP which maintains record of licensure and batches of medicines and vaccines.

Digitalization of Vaccination Data: Government of Pakistan digitalize the registration and vaccination process of COVID-19 in Pakistan through developing the National Immunizations Management System (NIMS) and COVID-19 Vaccine Inventory Management system (COVIM) applications. Over 10,000 vaccinators and data entry operators were trained on COVIM and NIMS database and Mobile apps; 5,130 vaccinators and data entry operators are trained on vaccine administration.

Procurement of Vaccine and Cold Chains: Government of Pakistan registered of seven (7) COVID-19 Vaccines (Sinovac, Sinopharm, Astra Zeneca, CanSino, PakVac, Sputnik and Pfizer) for emergency use authorization. Initially donation of 4.7 million doses received from government of China for vaccination of Health care providers and older citizens. Vaccine procurement is a priority area. In this regard multiple bilateral vaccine procurement agreements are in progress. As of 30 June 2021, over 19.5 million doses of COVID-19 vaccines have arrived Pakistan so far, and more are on the way. This includes 1.23 million doses received through COVAX. 15 Ultra Cold Chain (UCC) were established in major Cities of Pakistan. Government of Pakistan has started locally

producing the single dose Chinese CanSino vaccine branded with the name of PakVac with the coordination of NIH Islamabad.

Implementation of COVID-19 Vaccination Rollout: Ministry of National Health Services, Regulations and Coordination with the support of Federal EPI has developed the National Deployment and Vaccination Plan (NDVP) for COVID-19 vaccination in Pakistan. The guiding document of the Strategic Preparedness and Response Plan for COVID-19 explains planning and coordination, regulatory preparedness, population prioritization, financing, supply chain management, monitoring, surveillance, waste management, advocacy, communication, and social mobilization for the vaccine.

For planning and coordination, the Cabinet Committee is responsible for overall strategic leadership and supervision. National Command Operations Centre (NCOC) is the leading government body responsible for decision-making regarding the procurement of COVID-19 vaccines, administration and management of vaccine roll out. National Vaccine Task Force, Technical Expert Committee and Technical Sub-Committee are responsible for technical support and assistance in relation to COVID-19 vaccine roll-out.

Pakistan launched its COVID-19 vaccination campaign on 3 February 2021 by Prime Minister of Pakistan. As of 30 June 2021, 15,407,351 doses had been administered; with 12,509,672 and 2,897,679 having received 1st and 2nd dose respectively. These figures show that up to 12% of the eligible population of 125,853, 762 have received a dose of COVID-19 vaccine. This milestone is being significantly enhanced with the current trend of over 1 million people receiving vaccine every day.

Monitoring of Vaccine Safety: The Adverse Events following Immunization (AEFI) surveillance is key component of the vaccination program. To ensure, monitor safety and manage any AEFI due to COVID-19 vaccination; the government of Pakistan with support of Federal EPI and WHO has undertaken the following measures:

1. Training of national physicians and public health specialists to monitor the vaccine safety and conduct detailed investigations of any potential adverse events; over 323 health professionals were trained on AEFI Surveillance and serious case management.

2. Strengthening and empowering of the National AEFI review committee for classification of serious AEFI cases.

3. Follow ups of all AEFI reported cases from 1166-helpline and maintained line list. So far, responded 4,328 cases which were reported at 1166 Helpline. To strengthen the

monitoring of vaccine safety and AEFI data management at DRAP, Federal and WHO regularly reviewed and shared the AEFI cases on global database. See table 6 below

Side Effects/Reactions Reported	
Headache/Body aches/Flu	1,810
Injection Site Pain/Redness	3,109
Fever/Shivering	3,398
Nausea/Vomiting	777
Diarrhea	591
Skin Rash	372
Swelling on Lips, face, and body	38
Palpitations	29
Loss of smell and taste	3
Others: Vertigo, Cough, and chest pain etc.	41
Lower Limbs Paralysis	1
Cerebrovascular accident (CVA)	2
PCR Positive for SARS-Cov-2	10

Plan of Action

1. Ensure NITAG and associated working groups, or the equivalent are established and resourced to enable a policy recommendation/advice on the use of COVID-19 vaccines
2. Using NITAG prioritization recommendation, new epidemiological data and operationally define targets population that will be prioritizing for access to vaccine estimate the numbers and develop a delivery strategy for reaching these populations
3. Identify funding gaps in operational costs and if needed apply to multilateral back funding and in country donor funding
4. Plan for how to identify and reach high risk individual, the elderly, those with exacerbating underlying conditions, and health care workers (in private and public sectors), including in areas not under government control, as well as those in areas under government control who may be excluded or not covered by public health system (e.g., detainees, migrants and refugees, and stigmatized populations)
5. Ensure vaccination supports re-established of other essential health services without excessively diverting resource such that services are further disrupted
6. Refresher Training of essential staff of mass vaccination center and major COVID-19 vaccination centers of major cities

7. Involvement of LHWs/LHSs/Nutrition Supervisors/WMOs for sensitization and mobilization of the female population for vaccination
8. Enhanced the skills of vaccinators, doctors/district AEFI focal persons and stress counsellors on vaccine administration, AEFI management as well as case response, and psychosocial counselling respectively hiring of AEFI Focal Persons and stress counsellor for Major teaching hospitals of Pakistan for improvement in passive surveillance
9. Implementation of supportive supervision checklist through mobile Application
10. Strengthened social listening, reduced disinformation, and improved provincial crisis communication planning around COVID-19 vaccine and AEFI
11. Develop plan to provide for infrastructure needs, including for energy (primary and backup power, especially in cold chain), information technology/communication (internet connectivity)
12. Develop risk management plans for events according to available safety information and focus on passive surveillance
13. Strengthen the coordination between relevant stakeholders (NRA, Federal EPI, MAH, MoNHSR&C, WHO) for exchange of COVID-19 vaccine safety information, including relevant data system and information flow
14. Evaluate antivaccine perception in population and communicate appropriately to build vaccine acceptance and demand
15. Develop key messages and materials for public communication and advocacy in alignment with demand plan
16. Conduct Post-Introduction Evaluation (PIE) 6 months following introduction

Pillar 1 Coordination, Planning, Financing, and Monitoring: Activities and Budget					
#	**Activity**	**Output**	**Indicator**	**Implementing Agencies**	**Budget (USD)**
1	Review and update multi-sectoral coordination mechanisms at all levels to support COVID-19 emergency preparedness and response actions, including in cities and urban settings	Multi-sectoral coordination mechanism reviewed	Review report	All partners	220,000
2	Coordinate within and across other sectors and health pillars (inclusive of private sector, operational partners, and civil society)	Multi-sector coordination established	Minutes of multi-sector coordination meetings	All partners	120,000
4	Integrate and continue to promote a 'whole-of-society' approach to coordination, specifically to position the health sector response within the broader socioeconomic response and recovery	Health sector response prioritized in socioeconomic response and recovery	Health sector response included in all plans	All partners	120,000
5	Liaise and provide public health guidance to socioeconomic sectors for their business continuity planning and adoption of public health measures	Guidance provided to socioeconomic sectors	Business continuity planning adopt public health measures	All partners	200,000
6	Prepare for regulatory approval, market authorization and post-market surveillance of COVID-19 products such as diagnostics, therapeutics, and vaccines	Regulatory approval, market authorization and post-market surveillance of COVID-19 products conducted	Reports	All partners	600,000
7	Consult with neighboring countries, other countries and regional bodies on planning, information sharing, and COVID-19 preparedness and response across sectors, as well as strengthening collaboration and process harmonization though the EOC-NET supported by WHO and partners	Information shared on COVID-19 with neighboring countries and regional bodies	Reports	All partners	80,000
8	Conduct simulation exercises to examine country response plans and procedures and reinforce COVID-19 readiness and response capacities as relevant to country context and technical area	Simulation exercises conducted	Report	All partners	160,000

9	Monitor coordination across humanitarian, development, peace, and government actors, inclusive of civil society and communities, for conflict-sensitive pandemic response management.	Coordination across humanitarian, development, peace, and government actors monitored	Reports	Government	140,000
10	Conduct regular reviews (i.e., operational reviews and intra-action reviews (IAR), all hazard risk assessments) to assess implementation success and failures and impact on the epidemiological situation, adjust operational plans as necessary, and share good practices and lessons learned with other countries	Intra-action reviews (IAR), conducted	Report	All partners	800,000
11	Document experience to inform longer term preparedness and all hazard risk management, and guide emergency risk management within the health system to promote resilience; use this as input for the revision of National Action Plans for Health Security and their integration in national policies and plans	Experience and lessons learnt document	Report	All partners	80,000
Sub-total					**2,520,000**

Pillar 2 Risk Communication, Community Engagement, and Info-demic Management: Activities and Budget					
#	**Activity**	**Output**	**Indicator**	**Implementing Agencies**	**Budget (USD)**
1	Conduct rapid assessments of target populations behaviors, barriers, and access to services	Analyses of target populations behaviors, barriers, and access to services conducted	Assessment report	MoNHSR&C, PHD, UN	300,000
2	Establish social data, behavioral insights, and dashboard within M&E mechanism to guide decision making and inform RCCE interventions	COVID-19 RCCE response developed as per M&E framework.	Dashboard	MoNHSR&C, PHD, UN	200,000
3	Revised COVID-19 RCCE coordination mechanisms established at Federal and provincial levels	COVID-19 RCCE coordination mechanisms reviewed at all levels	Minutes of meetings	MoNHSR&C, PHD, UN	350,000
4	Revised Federal and provincial plans for the COVID-19 RCCE response	Federal and provincial plans for the COVID-19 RCCE response revised	Federal and provincial Plan	MoNHSR&C, development partners	200,000

5	Strengthened capacity in COVID-19 RCCE of community-based workers	- Regular advocacy meetings conducted with leaders of governmental, civil society, and private sector organizations to engage them on COVID-19 RCCE. - Cadre of master trainers on COVID-19 RCCE trained to deliver training across Pakistan. - Technical support for the re-establishment of a properly staffed health and education communication units at the federal and provincial levels.	Training packages on COVID-19 RCCE Digital training package on COVID-19 RCCE RCCE units at federal and provincial levels	MoNHSR&C, NDMA, PDMA, WHO and UN	1,000,000
6	Strengthened health education and communication units at the federal and provincial levels	Advocated and provided support to re-establish staff at health and education communication units at the federal and provincial levels.	Reports	MoNHSR&C, Provincial Departments of Health	140,000
7	Develop content that addresses emerging questions, concerns, and disinformation in coordination with partner organizations, networks, and local influencers	Content that addresses emerging questions, concerns, and disinformation developed in coordination with partner organizations, networks, and local influencers.	- RCCE content report - RCCE messages reach reports - COVID-19 RCCE viewer message reports - COVID-19 RCCE radio messages reports - COVID-19 RCCE messages reach report	MoNHSR&C, Provincial Departments of Health WHO, UN and other development partners	3,000,000
Sub-total					**5,190,000**

Pillar 3 Surveillance, Epidemiological Investigation, Contact Tracing, and Adjustment of Public Health and Social Measures: Activities and Budget					
#	**Activity**	**Output**	**Indicators**	**Implementing Agencies**	**Budget (USD)**
1	- Notification of surveillance Task Force / committees at National and Provincial levels - Biannual meetings at National and Provincial levels - Monthly meetings of Disease Surveillance and Response Units (DSRU) at provincial level to streamline the response, data sharing and coordination mechanisms - Provision of logistic support to the DSRUs to respond to all public health events - Provision of electronic gadgets and systems for timely alerting of health emergencies/outbreak/epidemic (Supplies annexure)	Strengthened Coordination mechanism at National, Provincial level and with stakeholders for surveillance	- Task Force/Committees notified at federal and provincial levels - Monthly meetings of provincial Taskforce convened - Logistics support provided to DSRU - Equipment and systems in place for epidemic alert	MoNHSR&C, NIH, Provincial Health Department, District Health Team and District Administration	2,542,288
2	- Develop/update Action Plan for coordinated surveillance activities for Test Trace and Quarantine (TTQ) at all levels (Federal, provincial and district level) - Develop/adapt training manuals for trainings of health care workers on TTQ - Training of national, provincial HCWs and staff involved in TTQ process. - Provision of logistics support (PPE, transport, tools) for contact tracing	Strengthened surveillance (TTQ) mechanism up to health facility level in case of an outbreak	- Action Plan for coordinated TTQ activities developed - Training manuals developed - HCW trained. - logistics for contact tracing provided - lab testing or sample transportation mechanism supported - Quarantine and Isolation center at district level identified and equipped	MoNHSR&C, NIH, PHD, DHMT	2,778,027

	- Provide sample collection and transportation supplies for lab testing of samples from the field - Identify and equip quarantine and Isolation center at district level in case of public health emergency of national and international concern - Stockpile medicine and commodities at district level		- Stockpile of medicine and commodities prepositioned		
3	**IT activities**				
	- Identify staff, and equipment (IT Servers and other equipment), the provincial DSRU and link it with the districts and with national Hub at NIH - Provide android phones or pads to all-health facilities and link them with respective districts. - Install DHIS-2 app at health facilities - Provide HR and IT, train workforce at provincial and district level - Link all districts on the same platform (DHIS-2) and operationalize the data collection - Identification, listing, strengthening of data reporting sites. - Development of linkages of Laboratory Information and Management System (LIMS) with DHIS-2 - Develop provincial dashboard for reflection of the data of relevant districts and link with the national dashboard	Establishment/ Strengthening of IT hub to digitalize the surveillance	- Provincial Data Centers at DSRUs established and linked with NIH - IT servers and other electronic equipment provided at provincial level - Android phones or pads including DHIS-2 app provided at health facilities and district levels - IT staff recruited - IT, HR trained - Infrastructure and logistics support provided to newly hired staff - Consensuses build on existing surveillance tools and mechanisms	MoNHSR&C, NIH, PHD, DHMT	1,822,743

	- Consensus on existing IDSR tools and mechanisms				
	- Purchase of Mobiles for Health Facilities and Field Staff - Launch of Mobile Application for Health Facilities and Field Investigation	Mobile Application developed	- Mobiles/Tablets installed and placed in each health facility - HR trained on the usage of Mobile Application	MoNHSR&C, NIH, PHD, DHMT	189,894
	Installation of Cloud based IDSR instance at each province to run separate instances for each province	IDSR instances installed at each province	DHIS-2 instances Installed at provincial level - Complete Testing and Debugging of the system - Integration of Provincial IDSR instance with the Federal IDSR Instance	MoNHSR&C, NIH, PHD, DHMT	192,598
	- Development of certificate and trainings for IT personnel as part of their continued professional development - Trainings for IT personnel	IT Personnel trained and certified	- Capacity enhancement of current staff	MoNHSR&C, NIH, PHD, DHMT	189, 894
4	- Monitoring implementation of all IDSR components, including surveillance, response, data repository, IT system, risk communication at national and provincial level - Monitoring the IDSR functions of timely detections, reporting and response to alerts and outbreaks - Maintaining regular overview of the implementation of activities, according to the required objectives of the JEE recommendations	Monitoring and Evaluation strengthened	- Data repository established at national and provincial level - # of alerts / outbreak detected and report with 48 hours - # of alerts/outbreak responded within 48 hours - Evaluation report on Data Security and Safety	MoNHSR&C, NIH, PHD	713,381

5	Continuous regular trainings and refreshers for capacity building of all staff in different components of IDSR	Staff capacity enhanced in IDSR	- # of refresher trainings - #of new staff rained	MoNHSR&C, NIH, PHD	437,998
6	- Develop SOPs and guidelines for event capture, verification, confirmation, and reporting, at provincial and district level - Training of health care workers on outbreak investigation and response - Provision of PPE and logistics support for the safe transfer of suspected case/ patients with potential infectious disease to the isolation centers - provide equipment and supplies for safe disposal of infectious waste - Train the surveillance staff on IPC - Weekly conferencing between FDSRU, PDSRU and DDSRU staff	Cluster identification, investigation, and response (Event-based surveillance) strengthened	- SOPs and guidelines developed - # of HCW trained on outbreak investigation, response, and IPC - Logistics provided for investigation and response team - # of weekly conference between FDSRU, PDSRUs and DDSRU staff	MoNHSR&C, NIH, PHD DHMT, FDSRU, PDSRU, DDSRU	10,510,471
7	- Establishment of data repository hubs at provincial and regional level and link with national repository hub at NIH - Provide HR for data analysis and train them - Develop an agreed upon policy of data sharing between provinces and national level to fulfill the IHR requirements - Regular dissemination of surveillance data for analysis and interpretations to all levels - Provision of data collection tools to all reporting sites	Data repository hubs established	- Data repository hub at provincial and regional level established - HR trained - Data sharing policy developed and implemented - Surveillance data analyzed and disseminated - Data collection tools to all reporting sites provided	MoNHSR&C, NIH, PHD	198,671

8	- Deploy experienced data analysts at provincial DSRUs to extract and analyze the data and manage the trouble shooting - Provide periodic trainings and refreshers for HR on data retrieval, analysis, interpretation, and onward transmission - Provision of data collection tools to all reporting sites. - Develop and implement data quality improvement and control mechanism	Existing reporting mechanism strengthened at all levels	- Data analysts at provincial DSRUs provided - # data analyst trained - Data collection tools provided - Data quality control mechanism in place	MoNHSR&C, NIH, PHD, DHMT	505,376
9	- Identify more health facilities to expand SARI/ILI sentinel surveillance - Training of SARI/ILI sentinel site Focal Persons /HCW on surveillance of respiratory pathogens (ILI/SARI/COVID-19 and other respiratory pathogens) - Recruit and deploy Surveillance Officers at district/ divisional (43 Officers) - Notify Rapid Response Teams (RRTs) at tehsil/ district and provincial level - Trainings of the RR Teams on case investigation, outbreak detection, contact tracing and response - Develop/adapt training curriculum for SARI/ILI/COVID-19 surveillance	Surveillance mechanism for respiratory pathogens strengthened	- # of SARI/ILI/COVID-19 sentinel surveillance sites reporting - # of HCW trained on respiratory pathogens (ILI/SARI/COVID-19 and other) surveillance - # of RRTs notified at Tehsil, district, provincial levels - # of Rapid Response Teams trained - Surveillance officers hired at provincial and district level	MoNHSR&C, NIH, PHD, DHMT	4,414,336
10	- Facilitation of routine reporting of cases of disease, including through notifiable diseases surveillance systems (IDSR), sentinel surveillance, laboratory-based surveillance	Indicator-based surveillance (scaling up IDSR implementation) strengthened	- Routine reporting of cases facilitated and improved - # of health facilities sharing weekly and monthly reports - # of districts implementing IDSR	MoNHSR&C, NIH, PHD	4,006,029

	- Identification of 15 more districts for implementation of IDSR - Training of HCW on IDSR - Provide IDSR reporting to facilitate weekly reporting		- # of HCW trained on IDSR - Reporting tools provided		
Sub-total					**28,491,794**

Pillar 4 Point of Entry, International Travel and Transport, Mass Gathering and Population Movements: Activities and Budget					
#	**Priority Area**	**Activity**	**Indicator**	**Implementing Agencies**	**Budget (USD)**
1	Infrastructure	- Establish (infrastructures, equipment, and HR) health check posts at critical land borders, air, and seaports	- # of prefabricated fully equipped health post established - Availability of screening equipment - # of trained HR	- NDMA - GoP - Partners/ Donors	5,000,000
2	Quarantine facilities	- Establish 2-3 bedded facility for immediate isolation of suspected travelers arriving at the PoE	- # of Quarantine facilities established	- MoNHSR&C - Donor support	2,000,000
		- Strengthen medical and quarantine facilities at all PoE	- # of basic equipment available at Quarantine facilities	- MoNHSR&C - CHE - Donor support	5,000,000
3	Data digitalization	- Strengthen data management system at PoE - Establish live dashboard for real time data entry	- # of monthly reports generated for real time data reporting - Central data hub software developed with peripheral linkage and networking (19 Po - Functional electronic interface	- Donor Support	5,000,000
4	Strengthen surveillance at PoE	- Improve efficiency of data management system through: - Laboratory testing at PoE - District level contact tracing	- # of Real time monthly reports submitted - # of PCR samples tests - # of Rapid testing kits performed	- CHE - MoNHSR&C - District Administration	1,760,000
5	Capacity building for development of skills of PoE staff (health and non-health)	- Staff trainings for efficient response to PH events and emerging infectious diseases - (ToTs to implement EMRO training package)	- # of PoE staff trained on EMRO modules - # of hands-on practice sessions conducted	- CHE - Donor support	400,000
6	Emergency contingency plan for PoE	- Update emergency contingency plan for management of infectious diseases at PoE (consultations, printing & drills/SME)	- Contingency plan developed - Guidelines and SOPs available	- MoNHSR&C - WHO - CDC	2,000,000
7	Strengthen provision of first aid, essential health services and referral at major PoE	- Procurement of 14 ambulances to strengthen referral with major local hospitals	- # of MoU with hospitals - # of well-equipped ambulance deployed	- MoNHSR&C - Donor support	5,000,000

			- # of triage and isolation established at PoE		
8	Regional coordination & collaboration	- Establish cross border linkages for information sharing and collaboration	- Digital tools developed and endorsed for - contact tracing and cross border communication	- CHE - MoNHSR&C - FIA immigration - MoFA	5,000,000
9	PoE rules and regulations updated for IHR compliance	- Review and update PoE rules and regulations in line with IHR compliance - Disseminate revised rules - Develop SOPs and train PoE on the revised rules	- Revised rules endorsed and disseminated - # of PoE staffs trained on revised rules	- CHE PC-1	250,000
Sub-total					**31,410,000**

Pillar 5 Laboratory and Diagnostics: Activities and Budget					
#	**Priority Areas**	**Activities**	**Indicators**	**Agency**	**Budget (USD)**
1	Update and implement a national testing strategy with clear links to defined public health and social measures	A communication plan for stakeholders and communities to inform when to test	Plan developed and disseminated	NIH	200,000
2	Special considerations for fragile, conflict-affected, and vulnerable settings, including humanitarian settings	Assess the potential impact of increasing COVID-19 testing capacities on diagnostics for other diseases in the country, (TB, HIV, viral hepatitis, and antimicrobial resistance).	Develop/implement structured assessment tools	NIH, WHO	2,000,000
3	Adopt and disseminate standard operating procedures for specimen collection, management, and transportation for COVID-19 diagnostic testing	Review and update existing SOPs through consultative process (Initial desk review followed by workshop)	SOPs reviewed and updated National guidance developed on sample referral and transport	NIH	258,000

4	Sample referral and transportation to provincial and national reference PHLs	Provision of support for sample referral and transportation to provincial and national reference PHLs	# of sample referred to reference PHLs	NIH, WHO	3,000,000
5	Establish access to a designated international COVID-19 reference laboratory	Already in place Review global reference labs and existing collaborations	# of Int'l labs engaged	NIH	200,000
6	Identify hazards and perform a biosafety risk assessment at participating laboratories; use appropriate biosafety measures to mitigate risks	Review and update the biosafety risk assessment tool at facility level Capacity building of provincial labs	WHO standard tools reviewed and shared with provinces for implementation # of lab persons trained	NIH, WHO	1,000,000
7	Adopt standardized systems for molecular and antigen based (POCT) testing, supported by assured access to reagents and kits	Review and adapt the EDL in country context with special focus on infectious disease diagnostics and provide recommendations to DRAP/regulatory meetings with DRAP/HCCs	EDL reviewed and adapted through consultative meeting of NLWG/partners	NIH, WHO	1,000,000
8	Identify gaps in human resources and use to develop and implement training for the laboratory workforce, particularly those involved in specimen collection, transport, and testing.	Conduct a TNA Develop training materials, SOPs) Implement training of MTs and cascade training	Training needs assessed and training plan developed for priority areas # of trainings conducted	NIH	20,300,000
9	Develop a SARS-CoV-2 sequencing strategy with specific goals, such as surveillance for variants or targeted populations and identify national, regional or international capacity for sequencing, and leverage existing networks such as GISRS. Ensure timely sharing of genetic sequence data through open access platforms such as GISAID. See WHO interim guidance	Establish a national consortium Develop ToR Develop sequencing strategy Share genetic sequence data and virus materials according to established protocols for COVID-19	Consortium notified ToR and Strategy developed Series of consultative meetings (Face-to-face & virtual) to formulate national strategy for genomic surveillance of pathogens of public health concern	NIH	2,500,000

	on SARSCoV-2 genomic sequencing for public health goals				
10	Develop and implement plans to link laboratory data with key epidemiological data for timely data analysis	Develop and implement sample referral and sequencing timelines with surveillance teams, sample selection with epidemiological metadata, response actions, etc.	Consultative meeting with surveillance /PH teams to implement genomic surveillance guidance and timelines for response	NIH, DoH, WHO	12,000,000
11		Implement sustained genomic surveillance /sequencing with identified lab network, availability of variant detection and sequencing kits, for weekly updates on the emerging SARS-CoV2 variants	# of weeks variant data reported # of labs reporting variant detection data # of weeks sequencing data # of response activities conducted based on variant data	MoNHSR&C, NIH, Provincial DoH, WHO, PHE	30,000,000
12	Develop and implement surge plans to manage increased demand for testing; consider conservation of lab resources in anticipation of potential widespread COVID-19 transmission	Develop a surge plan for national PHL and template for provincial PH labs	National and provincial PHL surge plan developed	NIH, WHO	300,000
13	Conduct an Intra-Action Review (IAR) for Laboratories and diagnostics during the COVID-19 response for improvement.	Conduct Interim review of Lab response to COVID19	AAR conducted, lessons documented, and recommendations shared	NIH, WHO	200,000
Sub-total					**72,958,000**

Pillar 6 Infection Prevention and Control, and Protection of Health Workers: Activities and Budget					
#	**Priority Areas**	**Activities**	**Outcome Indicators**	**Implementers**	**Budget (USD)**

1.	Strengthen IPC strategic framework (governance and functionality)	- Disseminate updated national IPC guidelines - Develop provincial operational plans from national IPC strategic framework - Advocate and support functional IPC structures at all levels - Consultation for developing national legislation	- Provincial plans/PC1s developed - # of IPC units, teams & committees reporting on monthly basis	MoNHSR&C, DoH, WHO, Implementing partners	100,000
2.	Conduct assessment of IPC capacities at all levels of health care	- Conduct rapid IPC assessment - Develop improved plan based on need /findings - Regular audits including HH and WASH	Assessment reports	MoNHSR&C, Provincial Health Department, NIH, WHO	75,000
3	IPC training and education for competent HCWs	- Review and update training manuals on IPC core competencies - Formal agreements with academia for institutionalizing HCWs IPC training - Refresher trainings of HCWs on safe IPC practices - Prepare plans and conduct cascade/trickle down trainings for all cadres of HCWs	- # of IPC master trainers (National/Provincial) - # of trainings conducted - # of certificate courses in different cadres	MoNHSR&C, DoH, WHO, HCC, Implementing partners	350,000
4	Establish monitoring of HCWs for COVID-19 and infections	- Engage regulatory bodies/HCC for development of IPC audit and monitoring plan with indicators (COVID-19/other infections) - Review and update protocols for HCAI, COVID-19 and related occupational hazards - Record, report, and investigate cases of (HCAIs) at selected HCFs - Hardware and software support to develop IT application, rollout and piloting for HCAIs - Regular reporting of HCWs for occupational hazards at selected sites	- # of COVID-19 infections in HCWs - # of HCAI recorded and reported - Data on occupational hazards	DoH, HCC, WHO, Implementing partners	100,000

5.	Engage trained staff with authority and technical expertise to implement IPC improvement plans based on risk assessment and local care-seeking patterns	- Conduct IPC leadership courses - Develop IPC improvement, annual M&E Plan - Engagement of trained IPC staff in facility improvement plans - Develop IPC SOPs for COVID-19 and other infectious disease case management in ICU and HDU - Facilitate procurement and provision of critical care supplies	# of facilities with improved plans	DoH, HCC, WHO, Implementing partners	100,000
6.	Develop IPC stewardship	- Development IPC national and local antibiograms - Accreditation of microbiology labs on WHO prequalification with trainings on QMS and national standards - Conduct trainings on AMS and AMR stewardship in selected facilities	- National antibiogram developed - Progress reports - # of Laboratories with ISO 15189 or WHO Prequalification	DoH, HCC, WHO, Implementing partners	100,000
7	Evaluate IPC capacity in public places and HCFs with high transmission risk to prevent community transmission	- Develop check list and conduct risk assessment of IPC measures in communities - Conduct IPC advocacy through developing, printing and dissemination of IEC - Develop disinfection policies for public spaces, urban slums, congested areas, markets - Improve functionality of CSSD and autoclaves trainings, repair & maintenance in HCFs	- # of risk assessments done in high burden communities - # of IEC material developed and distributed - # mapping of CSSD facilities	MoNHSR&C, DoH, District Governments, WHO, Implementing partners	250,000
8	Develop surge plans for PPE, IPC and COVID-19 supplies standardization, quality assurance and rational use	- National/provincial stakeholders' consultations for development of surge plans for PPE, IPC supplies - Availability and standardization of supplies with QA and rational use	National plan developed	MoNHSR&C, DRAP, NDMA, DoH, WHO, other stakeholders	50,000

		- Update and share standardized IPC procurement list with NDMA, DoH and Health facilities			
9	Procurement of standardized PPEs & IPC supplies	- Procurement and provision of IPC critical care supplies	- Availability of need based quality PPEs and IPC supplies	MoNHSR&C, DRAP, NDMA, DoH, WHO, other stakeholders	565,000
10	Implement triage, early detection, and infectious-source controls, administrative controls, and engineering controls	- Support strict screening, surveillance, and detection protocols - Integrate IPC into educational material and IEC for healthcare facilities and public places - Display IEC material for visitors and attendants at HCF's and POE - Encourage respiratory etiquette through public service campaigns	- Assessment - Number of POE, health facilities, public places, and other place with visibly displayed IEC material	MoNHSR&C, NIH, DoH, WHO, Implementing partners	250,000
11	Support access to water and sanitation for health (WASH) services	- Technical and financial support to conduct WASHFit assessment - Implement Health facility preparedness and Readiness Assessment - Develop support plan for improving WASH and IPC waste management	Number of functioning WASH facilities increased at high-risk places	MoNHSR&C, DoH, NIH, Mo CC WHO, UNICEF, etc.	175,000
12	IPC in one Health	- Selection of hospitals network for detection of priority pathogens and AMR profiles on One Health - Develop and implement certificate courses/ trainings on detection of pathogens detection, assay, genotyping, phenotyping, biosafety, and biohazards	- Progress reports - Number of academic institutions enrolled - Number of trainings for One Health stakeholders		500,000

Sub-total	2,615,000

Pillar 7 Case Management, Clinical Operations, and Therapeutics: Activities and Budget					
#	**Priority Areas**	**Activities**	**Indicators**	**Implementing Agencies**	**Budget (USD)**
1	Continuously assess the management capacity of the health services networks to coordinate with various providers, and to ensure continuity of care	management capacity of the health services networks to coordinate with various providers assessed	Assessment report	MoNHSR&C	125,000
2	Continuously assess the human resources needs (skilled workforce). Take actions to grow workforce capacities	Human resource needs assessed	Assessment report	MoNHSR&C	100,000
3	Continuously assess availability of biomedical equipment including oxygen source capacity and respiratory devices high flow, BIPAP, mechanical ventilation and associated consumables and accessories. Take actions to avoid unavailability of tools for work force	Availability of oxygen source capacity and respiratory devices high flow, BIPAP, mechanical ventilation assessed.	Assessment report	MoNHSR&C	150,000
4	Review health care facilities using facility assessment tools for COVID-19 case management capacities including readiness to implement diagnostics, therapeutics, vaccines (see also Pillar 10)	Health care capacities assessed	Assessment report	MoNHSR&C	150,000
5	Develop, monitor, and update operational plans and assign financial resources for health service delivery to ensure a timely response to the needs of COVID-19 patients	Updated health facility operation plan developed, and finance allocated	Updated operational plan	MoNHSR&C	1,000,000
6	Continuously assess and update management processes to respond to the increased demands of COVID-19 patients	Management process to respond to increased demand assessed	Management assessment reports	MoNHSR&C	100,000

7	Continuously assess the burden on the local health system, and capacity to safely deliver primary health care services and other essential health services (see Pillar 9).	Burden on local health systems assessed	Assessment report on the burden on the local health system	MoNHSR&C	1,150,000
8	Define regulatory pathways for quality assurance	Regulatory pathways for quality assurance assessed	Regulatory pathway assessment report	MoNHSR&C	200,000
9	Ensure availability of and access to quality, safe and cost-effective pharmaceuticals, medical devices, oxygen, and other health technologies considered essential for the treatment of COVID-19, according to the level of care and context	Availability and access to quality, safe and cost-effective pharmaceuticals, medical devices, oxygen, and other health technologies assured	Monitoring reports	MoNHSR&C	30,000,000
10	Set up screening and triage areas at all health care facilities with capacity for isolation of suspected and confirmed cases; set up screening capacities in the community	Screening and triage areas at all health care facilities established	Monitoring visit reports	MoNHSR&C	30,000,000
11	Establish medical surge capacity according to the epidemiological scenario; establish mechanisms to request assistance and facilitate skills and knowledge transfer; establish dedicated COVID-19 treatment areas to effectively isolate and treat all COVID-19 patients	Medical surge capacity established	Report from the surge capacity	MoNHSR&C	20,000,000
12	Integrate training packages developed for the management of sudden increased health needs into curricula for different occupations of health workers and managers	Training packages developed for the management of sudden increase in health needs into curricula for different occupations of health workers and managers	Developed training package	MoNHSR&C	500,000
13	Strengthen capacities in the first level of care for detection and monitoring of COVID-19 cases in the community, ambulatory management of mild and moderate cases, and referrals (as per clinical guidelines). Emphasize the very limited need for antibiotics in mild and moderate cases	Capacities for first level care for detection and monitoring of COVID-19 cases in the community, ambulatory management of mild and moderate cases, and referrals strengthened	Activity report	MoNHSR&C	1,000,000

14	Maintain routine and emergency health service provision for the population.	Emergency health service provision for the population maintained	Hospital reports	MoNHSR&C	4,000,000
15	Participate in the WHO global clinical network knowledge exchange platform to aid in the clinical characterization of COVID-19, address challenges and share best practices in clinical care, and foster global collaboration (optional based on country capacity)	Participated in clinical network knowledge exchange platform	knowledge exchange platform report	MoNHSR&C	150,000
16	Contribute clinical data on hospitalized COVID-19 patients to the WHO Global COVID-19 Clinical Platform	clinical data on hospitalized COVID-19 patients contributed to the WHO Global COVID-19 Clinical Platform	Pakistan data incorporated in WHO Global COVID-19 Clinical Platform	MoNHSR&C	100,000
17	Adopt international R&D Blueprint efforts and research protocols, such as: Monitored Emergency Use of Unregistered and Investigational Intervention protocol; the Solidarity trial for therapeutics; Unity sero-epidemiological studies to investigate epidemiological, virological, and serological characteristics (optional based on country capacity)	International R&D Blueprint efforts and research protocols adapted	Adapted R&D Blueprint	MoNHSR&C	1,000,000
18	Monitor use of diagnostics, therapeutics, and vaccines in clinical trials, along the regulatory approval pathway, market authorization, and/or post-market surveillance, as appropriate	Use of diagnostics, therapeutics, and vaccines in clinical trials monitored	Monitoring reports on the use of diagnostics, therapeutics, and vaccines in clinical trials	MoNHSR&C	1,500,000
19	Monitor performance indicators at patient level to assess whether processes of care are improved. For example, did patients with severe or critical COVID-19 receive corticosteroids? If not, then explain why? Use this information to improve quality of care	Performance indicators at patient level assessed	Report on performance indicator	MoNHSR&C	1,000,000
Sub-total					**92,225,000**

Pillar 8 Operational Supports and Logistics, and Supply Chain: Activities and Budget					
#	**Activity**	**Output**	**Indicator**	**Partners**	**Budget (USD)**
1	Engage with the key operation pillars and partners, particularly Laboratories and Diagnostics, Case Management, IPC, and Vaccination to provide estimates of supply requirements based on the 2021 Response Plan, and map/update available resources and supply systems in health and other sectors, and conduct/update in-country inventory review of supplies. Identify central stock reserves, for COVID-19 case management	Supply requirement for 2021 available and inventory reviewed	Report	MoNHSR&C, PDMA, Partners	500,000
2	Establish the means to gather key monitoring and performance information, including key performance indicators (KPIs) monitoring of lead times, supply gaps and optimization (efficiency, consumption rates, loss rates, access to local markets)	Key performance indicators (KPIs) for monitoring of lead times, supply gaps available	Indicator report	MoNHSR&C, PDMA, Partners	150,000
3	Mobilize technical capacity to provide operation support and logistics (OSL) planning and implementation functions at national level should they be required. Implement supply chain control and management system (quality assurance, stockpiling, storage, security, transportation, and distribution arrangements) for medical and other essential supplies	Technical capacity for operation support and logistics (OSL) planning mobilized	Operational plan	MoNHSR&C, PDMA, Partners	500,000
4	Support national delivery and distribution of key COVID-19 supply efforts, as and when required, including review of operational plans, end-to-end logistics set-up, partner mobilization, to ensure the organized flow of supplies (vaccines, diagnostics, PPE, biomedical equipment, and therapeutics)	National delivery and distribution plan for key COVID-19 supply available	Plan	MoNHSR&C, PDMA, Partners	3,000,000

5	Facilitate access to information on improved health facility set up and technical designed in support of better patient care, IPC management including ventilation, reduced consumption of essential supplies and improved waste management	Access to information on improved health facility set up and technical designed available	Report on improved health facility set up and technical designed	MoNHSR&C, PDMA, Partners	500,000
6	Support health facilities with improved access to oxygen-therapy options through ensuring provision of technical requirements for correct equipment, human capacity, maintenance options and the current state of infrastructure to support	Access to oxygen-therapy options provided through provision of technical requirements for correct equipment, human capacity, maintenance options and infrastructure	Technical report	MoNHSR&C, PDMA, Partners	2,000,000
7	Working with key humanitarian partners, establish playbook for who does what and ensure adequate technical capacity to provide operation support and logistics support role in the direct delivery of supplies, equipment and services for people in hard-to-reach areas	who does what conducted and updated	who does what report	MoNHSR&C, PDMA, Partners	500,000
8	Coordinate with supply management for regular health services and with humanitarian supplies and logistics where present, to identify possible integrated solutions for common challenges.	Supply management for regular health services and humanitarian supplies and logistics coordinated	Reports on coordination mechanism	MoNHSR&C, PDMA, Partners	200,000
9	Document lessons learned and built on capacities strengthened during the response to improve operational support and logistics, including management of stocks within future preparedness and contingency planning, for longer term preparedness and response functions	Lessons learned documented and capacities strengthened	Report on the lessons learned	MoNHSR&C, PDMA, Partners	300,000
10	Conduct an Intra-Action Review (IAR) for operational support and logistics during the COVID-19 response for course correction and improvement	Intra-Action Review (IAR) conducted	IAR report	MoNHSR&C, PDMA, Partners	300,000
11	Refinement of supply planning tools including the Essential Supplies Forecast Tool (ESFT), Disease Commodity Package for COVID-19, critical items list.	Supply planning tools for Essential Supplies Forecast Tool (ESFT), Disease Commodity Package for	Refined ESFT tool	MoNHSR&C, PDMA, Partners	100,000

	Provision of guidance and use-cases for supply interventions that inform need and demand	COVID-19, critical items list refined			
12	Based on forecasts and actual demand data, provide updated reports on financing gaps. Support to accelerate equitable access to new COVID-19 tools	Updated reports on financing gaps based on forecasts and actual demand data, provided	Reports on financing gaps based on forecasts and actual demand data	MoNHSR&C, PDMA, Partners	200,000
13	Based on the CSCS review, plan and implement key recommendations, working closely with the regions to define priority actions, including ensuring correct capacity and resources are available for WHO/OSL regional management	Key recommendations from CSCS implemented	Implementation report	MoNHSR&C, PDMA, Partners	500,000
14	Continue and improve multi-channel reporting on demand, procurement, shipping, and delivery and disseminate data on key bottlenecks and gaps	Improve multi-channel reporting on demand, procurement, shipping, and delivery and disseminate	Report	MoNHSR&C, PDMA, Partners	1,000,000
15	Provision of up-to-date market intelligence on availability, specification, quality assurance and potential procurement channels, opportunities for regionalization/localization. Ensure that allocation and prioritization is health response-led and is coherent with overall pandemic response strategy	Market intelligence on availability, specification, quality assurance and potential procurement channels, opportunities for regionalization/localization available	Market intelligence report	MoNHSR&C, PDMA, Partners	500,000
16	Coordinate global network of stocks/inventory to enable quick access and shorter lead times to critical supplies. Put in place special financing mechanisms that enable rapid scale up and support immediate market access	Global network of stocks/inventory available	Stock inventory	MoNHSR&C, PDMA, Partners	200,000
Sub-total					**10,450,000**

Pillar 9 Strengthening Essential Health Services and Systems: Activities and Budget

#	Activity	Output	Indicator	Partners	Budget
1	Ensure dedicated budgets for national planning and activities for maintaining essential health services	Dedicated budget earmarked	Budget paper	MoNHSR&C, PDMA, Partners	50,000,000
2	Document adaptive responses (e.g., teleconsultation, integrated primary care, remapping of referral pathways) and incorporate capacity gains from the response into PHC strategies to improve system resilience and integration of health security planning within national health strategic plans	Adaptive response documented and incorporated capacity gains in the PHC strategy	Report	MoNHSR&C, PDMA, Partners	200,000
3	Coordinating primary care support, adjust hospital admission and discharge protocols to limit duration of inpatient stays as appropriate and appropriate and safe	Primary care support coordinated	Report	MoNHSR&C, PDMA, Partners	300,000
4	Where safe and appropriate, limit face-to-face encounters by integrating services across disease programmes, redesigning chronic disease management, increasing self-management, and shifting encounters to digital platforms where appropriate, while ensuring access to necessary medications and supplies	Services integrated across programmes and face to face contacts limited	Reports	MoNHSR&C, PDMA, Partners	400,000
5	Considering re-purposed facilities, concentrate 24-hour acute care services at designated first-level hospital emergency units (or similar), reorient referral pathways, and ensure public awareness of these changes	Reorient referral pathways	Reports	MoNHSR&C, PDMA, Partners	3,000,000
6	Establish outreach mechanisms and strengthen community-based health care, including increased availability of medicines at	Outreach services established and community-based care services	Reports	MoNHSR&C, PDMA, Partners	2,000,000

	pharmacies, as needed to ensure delivery of essential services				
7	Disseminate information to prepare the public for changes in service	Information disseminated	Reports	MoNHSR&C, PDMA, Partners	1,000,000
8	Disseminate information to inform the public and guide safe care-seeking behaviour	Information disseminated	Reports	MoNHSR&C, PDMA, Partners	1,000,000
9	Ensure that minimum requirements for IPC, including implementation of standard precautions, are in place in all facilities throughout the health system and ensure adequate IPC supplies to guarantee the safe delivery of essential health services	Minimum requirements for IPC	Report	MoNHSR&C, PDMA, Partners	2,000,000
10	Establish screening of all patients on arrival and mechanisms for isolation at all sites using the most up to date COVID-19 guidance and case definitions	Mechanism for screening of all patients on arrival establish	Report	MoNHSR&C, PDMA, Partners	1,000,000
11	Ensure acuity-based triage at all sites providing acute care	Acuity-based triage established	Report	MoNHSR&C, PDMA, Partners	500,000
12	Establish clear criteria and protocols for targeted referral (and counter-referral) pathways among public and private providers	Criteria and protocols for targeted referral pathways established	Report	MoNHSR&C, PDMA, Partners	500,000
13	Schedule appointments, limit visitors and manage patient flows to ensure distancing, avoid crowding in waiting areas, and create unidirectional flow of patients and staff	Systems for scheduled appointments, limit visitors and manage patient flows established	Report	MoNHSR&C, PDMA, Partners	500,000
14	Use multiple communication approaches, including social media channels, to build public confidence and encourage continued utilization of essential services during the outbreak	Public confidence on continued utilization of essential services during the outbreak build	Report	MoNHSR&C, PDMA, Partners	5,000,000

15	Engage with communities to inform the adaptation of services so they are more responsive to local needs	Communities engaged on adaptive services development	Report	MoNHSR&C, PDMA, Partners	1,000,000
16	Identify information sources trusted by the public – such as primary care clinics, pharmacies, community health workers and leaders, and peer networks – and ensure these sources are kept up to date about changes in essential service delivery and about available resources, such as hotlines	Communities kept up to date about changes in essential service delivery	Reports	MoNHSR&C, PDMA, Partners	1,000,000
17	Conduct an Intra-Action Review (IAR) for Maintaining core health systems functions and essential health services during the COVID-19 response for course correction and improvement	Intra-Action Review (IAR) conducted	Report	MoNHSR&C, PDMA, Partners	500,000
18	Assess and monitor utilization of essential health services and barriers, including financial, gender-based, geographical, and cultural barriers to utilization, and identify solutions in close collaboration with communities	Utilization of essential health services and barriers assessed and monitored	Reports	MoNHSR&C, PDMA, Partners	120,000
19	Anticipate restoring suspended services based on changing needs as public health measures are gradually eased and address any new barriers to access	Restoring suspended services based on changing need conducted	Reports	MoNHSR&C, PDMA, Partners	200,000
20	Where possible, integrate community-based reporting with facility-based health information systems to maintain a comprehensive approach to monitoring service delivery and utilization	Community-based reporting with facility-based health information systems integrated	Reports	MoNHSR&C, PDMA, Partners	2,000,000
21	Conduct rapid health facility assessments to monitor the evolving capacity to provide essential health services; assess disruptions,	Health facility assessment conducted	Reports	MoNHSR&C, PDMA, Partners	500,000

	mitigation approaches, capacity for screening and triage, workforce capacity and the availability of essential medicines and supplies (including PPE)				
22	Create a dedicated platform for monitoring inventory and stockouts of essential medications, equipment, and supplies, and for the coordination of re-distribution of supplies	Inventory and stockouts of essential medications, equipment, and supplies monitored	Reports	MoNHSR&C, PDMA, Partners	200,000
Sub-total					**72,920,000**

Pillar 10 Vaccination: Activities and Budget					
#	**Priority Strategies**	**Indicators***	**Sub-Activities**	**Implementing Agencies**	**Budget (USD)**
1	CVC	Dedicated HR, Dedicated supplies	Nominating required Human resource, Ensure provision of supplies for vaccination and AEFI kits	MoNHSR&C, Federal EPI, Provincial EPI Provincial Health Department	10,000,000
2	Enhancement Of COVID-19 vaccination by mobilizing female population	Dedicated HR and Trainings	Lady Health worker, Supervisors and Lady Health Visitors and Female Medical Officer involved in awareness raising activities for female vaccination	MoNHSR&C, Federal EPI, Provincial EPI Provincial Health Department	3,000,000
3	Capacity building of Essential Staff	Training and on job facilitation of Staff, AEFI Surveillance	Training of vaccinators and Data entry Operators and AEFI Focal Persons Training	MoNHSR&C, Federal EPI, provincial EPI	2,279,000
4	Vaccine digital monitoring and management	NIMS development, registration	Deployment testing, trouble shooting	NCOC, MoNHSR&C, EPI NADRA,	3,000,000
5	Storage and logistics temperature, temp monitoring	2-8 O C capacity	Presence of ILR, Cold boxes, Vaccine monitoring vials	MoNHSR&C, Federal EPI, Provincial EPI	3,000,000

6	Storage and logistics temperature ultracold chain, temp monitoring	-20 O C or -70 O C	Presence of – 20 Deg C freezers, Availability of Dry ice, Presence of - 70 Deg C freezers,	MoNHSR&C, Federal EPI, Provincial EPI	3,871,000
7	Supply of Vaccines	Identify needs, apt forecasting, supply as needed	Preventing delays unallocated dose Targeted delivery	MoNHSR&C, Federal EPI, Provincial EPI	17,000,000
8	Targeted vaccination	Healthcare HR Elderly 50-60 Elderly 60+ Spreader 40-50	CNIC recording, NIMS registration, Certification	MoNHSR&C, Federal EPI, Provincial EPI	3,000,000
9	Risk communication	Risk communication to the Target population	Campaign for vaccination, Mass population, Helpline for queries, IEC material, National guideline	MoNHSR&C, Federal EPI, Provincial EPI, UNICEF	5,000,000
10	M&E mechanism	Vaccine consumption, AEFI reports, daily operations, Monitoring Reports	Supportive Supervision visits and share the feedback through Mobile application. Monitoring daily vaccine usage, demand forecast, rollout, AEFI. wastage	MoNHSR&C, Federal EPI, Provincial EPI	4,000,000
	Sub-total				**54,150,000**