

Preparedness and Response for the Control of COVID-19 in the Islamic Republic of Iran



Preparedness and Response for the Control of COVID-19 - the Islamic Republic of Iran



Islamic Republic of Iran
Ministry of Health & Medical Education

This document contains the main policies and strategies adopted by Islamic Republic of Iran to control COVID-19. It is aligned with WHO's novel coronavirus (2019-nCoV) strategic preparedness and response plan and supports the exchange of experience between different countries, national and international agencies, and other interested partners

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Islamic Republic of Iran
Ministry of Health & Medical Education

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for the Control of **COVID-19**
in the Islamic Republic of Iran

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Islamic Republic of Iran, Supreme Leader

“Paying attention to the Primary health care network”

“The primary health care network is so important that in case of viral reemerging, as It has been assumed an repeated, can help a lot in dealing with that situation. So it’s a great need to pay enough attention to the primary health care network”



President Rouhani

Time for multilateral cooperation to fight COVID-19

“Coronavirus pandemic proved how a disease can endanger health of all the people in the world regardless of their ethnicity and nationality. This is a serious warning to all countries. That the human is being exposed to threats such as destruction of the environment, global warming and natural threats such as the coronavirus. It is the time to replace pressure, economic and military terrorism with multilateral cooperation to fight common threats.”

Virtual summit of the Non-Aligned Movement (NAM).

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➔ foreword

Islamic Republic of Iran (I.R.Iran) has been hit hard by the COVID-19 outbreak with almost 107,603 confirmed cases and 6,640 deaths as of 10 May 2020. After the outbreak in mid-February, the government adopted a range of measures to limit the spread of the virus, including stopping flights from epicenters, closing schools, public places, universities, malls, markets and key religious sites, banning cultural and religious gatherings, releasing a high number of prisoners to fight contagion in prisons, and warning Iranians against travelling. On 25 March 2020, President Rouhani announced a partial lockdown, closing businesses and government offices for two weeks and banning travel between different cities. However, concerned about the economic damage from the outbreak, the government has subsequently ordered a step-by-step reopening of businesses that are considered low or average risk in terms of spreading the virus.

The strategic preparedness and response plan described in this document contains the main policies and strategies adapted by Islamic Republic of Iran to control COVID-19. It is in line with WHO's novel coronavirus (2019-nCoV) global strategic preparedness and response plan and supports the exchange

of experiences and lessons learned between countries, national and international agencies and different embassies.

The plan outlines the context-specific public health, diagnostic, laboratory and curative measures implemented in our country and aims to translate our knowledge regarding 2019-nCoV into strategic actions based on what we have learned so far.

This document also shows how we have scaled up our country preparedness and response operations, including an epidemiological overview and forecasting of further spread and human-to-human transmission, strategies to optimize production and supply chain management, risk communication activities, COVID-19 lockdown measures and stepwise re-opening strategies. The national campaign to combat COVID-19 has benefited from the strength of Iranian primary health care, intersectoral collaboration and community engagement, which are addressed in this document.

It is worth noting that, despite the unilaterally imposed United States sanctions, and based on the available evidence, Islamic Republic of Iran has not experienced any shortages in the basic prerequisites to manage COVID-19, and has been totally self-sufficient in some areas and will soon be exporting personal protective equipment (PPE) to other countries in need. We owe this self-sufficiency and social resilience to the adoption of a whole-of-government and whole-of-society approach and a nationwide commitment to engage, contribute and coordinate with the government.

Islamic Republic of Iran would have been unable to reach this point in the control of COVID-19 without the ultimate support of the Supreme Leader Ayatollah Seyyed Ali Khamenei, President Rouhani and the Supreme Council for National Security, which has been essential for our achievements in managing the disease.

Dr Saeed Namaki

Minister of Health and Medical Education
Islamic Republic of Iran



→ Preface

The aim of this document is to share the experience of Islamic Republic of Iran in combatting and managing COVID-19 with other countries, United Nations agencies and partners. In addition, it is hoped that documenting how the country has mobilized and organized for the common goal of fighting 2019-nCoV will be useful for responding to the epidemics and pandemics that are likely to occur in the future.

The strong support of the Supreme Leader Ayatollah Seyyed Ali Khamenei, President Rouhani and the Supreme Council for National Security, within the framework of a whole-of-government and whole-of-society approach, allowed the Ministry of Health and Medical Education (MOHME) to implement a national campaign involving full community engagement and resource mobilization. One of the major successes of the campaign was the use of the strong primary health care infrastructure and stepwise referral system.

As of 10 May 2020, there are 107,603 positive cases and 6,640 deaths in the country, while 86,123 people have recovered. The frequency of deaths per day is now in two-digit figures, the latest being 51 on 10 May 2020, while there were 158 deaths on 4 April 2020. Community transmission is now controlled

through the national campaign and smart physical distancing. The fatality per million is going down, which may indicate improving care over time. So far, almost 60% of positive cases are in the elderly and 28% have at least one underlying disease.

In the national campaign initiated on 5 March 2020, more than 78 million people were screened by phone or self-screened online over a period of 6 weeks during the first phase, using primary health care services and the referral system. In the national plan, frontline health workers screen their catchment population and then refer cases with signs and symptoms for further investigation to the designated 16- or 24-hour health centers, which are equipped with testing facilities. So far, 2.5 million people have been followed up and 1.17 million people have visited primary health care centers, with 5.14% being referred to hospitals. This stepwise protocol has dramatically reduced the burden on intensive care units (ICUs) and hospital admissions so that there are now empty ICU beds across the country; however, the country remains vigilant for a likely second peak in cases.



➔ Introduction

Since the start of the COVID-19 outbreak in Wuhan, H.E. Dr Saeed Namaki, Minister of Health and Medical Education (MOHME), has mandated several committees to oversee public health measures, laboratory diagnostic procedures, logistics, surveillance and information, public relations, international affairs, epidemiological studies, security, finance and administration, and hospital management.

The first cases of laboratory-confirmed COVID-19 in Islamic Republic of Iran were detected in Qom province on 19 February 2020. Immediately after, the surveillance system scaled up its case detection activities throughout the country.

Apparently, during the incubation period and the clinical presentation, the disease, which was very similar to H1N1 influenza virus, spread locally. After

the detection of the first cases, strict public health measures were put in place, laboratory facilities were scaled up and arrangements were made in hospitals in all provinces, particularly in “hot” zones. Even more importantly, a “whole-of-government” and “whole-of-society” approach was adopted at the national and provincial levels.

As of 10 May 2020, there are 107,603 positive cases and 6,640 deaths in the country, while 86,123 people have recovered the frequency of deaths per day is now in two-digit figures, the latest being 51 on 10 May 2020, while there were 158 deaths on 4 April 2020. Community transmission is now controlled through the national campaign and smart physical distancing. The case fatality rate (CFR) is going down, which may indicate improving care over time.

In the national campaign initiated on 5 March 2020, more than 78 million people were screened by phone or self-screened online, using primary health care services and the referral system. In the national plan, frontline health workers screen their catchment population and then refer cases with signs and symptoms for further investigation to the designated 16- or 24-hour health centers, which are equipped with testing facilities. So far, 2.5 million people have been followed up and 1.17 million people have visited primary health care centers, with 5.14% being referred to hospitals. This stepwise protocol has dramatically reduced the burden on intensive care units (ICUs) and hospital admissions so that there are now empty ICU beds across the country; however, the country remains vigilant for a likely second peak in cases.

The strong support of the Supreme Leader, President Rouhani and the Supreme Council for National Security, within the framework of a “Whole-of-government” and “Whole-of-society” approach, allowed the Ministry of Health and Medical Education to implement a national campaign and benefit from the military’s resources and many other facilities, such as sanatoriums, where discharged patients and suspected cases have been admitted for isolation

and treatment and to cut viral transmission. However, due to the impact of the national campaign and the high level of family support for individuals in home isolation, these have not been fully utilized.

At the same time, the government has provided a special package for the poor and marginalized populations, as well as economic protective measures, particularly for small businesses. According to International Health Regulations 2005 (IHR 2005), normal trade between countries should be maintained; to do this Islamic Republic of Iran has developed additional environmental health measures at its borders, although these require World Health Organization (WHO) support for better implementation.

The Minister of Health and Medical Education has been fully authorized by the President to develop the necessary national plans and orders. Since the start of the epidemic, several public health measures have been taken, such as the closure of schools, universities, mosques and public places, while during a phase of “smart physical distancing” and the reopening of businesses, 2.3 million small businesses and shops have been registered in a database so that their compliance with health protocols can be measured and enforced. Furthermore, several clinical trials and more than 1,000 research projects are underway, while various start-ups are being supported to meet local needs. The Government of Islamic Republic of Iran.I.R.Iran believes that combating COVID-19 pandemic requires global solidarity in action and international cooperation in practice. This is a time for solidarity not exclusion, as rightly pointed out by the United Nations Secretary-General António Guterres and echoed frequently by Dr Tedros Adhanom Ghebreyesus, Director-General of WHO. Islamic Republic of Iran has strongly urged the removal of United States sanctions against affected countries.

➔ Epidemiological overview

The first cases of COVID-19 in Islamic Republic of Iran were identified on 19 February 2020, when real-time polymerase chain reaction (PCR) tests of four

cases who died in Qom turned positive for COVID-19. The surveillance system immediately scaled-up its case detection activities throughout the country. Samples were collected from all suspected cases referred to hospitals and tested for COVID-19 in the national reference laboratory at the Pasteur Institute of Iran in Tehran. Within 10 days of reporting the first case of death in Islamic Republic of Iran, COVID-19 cases were detected in 19 out of 31 provinces of the country. The system has now detected confirmed cases in all provinces of Islamic Republic of Iran. By 10 May 2020, the number of laboratory-confirmed cases detected by the national surveillance system had reached 107,603 cases with 6,640 deaths and 86,123 recovered cases. The diagrams below show the trend of confirmed cases of COVID-19 and confirmed deaths from the disease over the course of the epidemic in Islamic Republic of Iran.

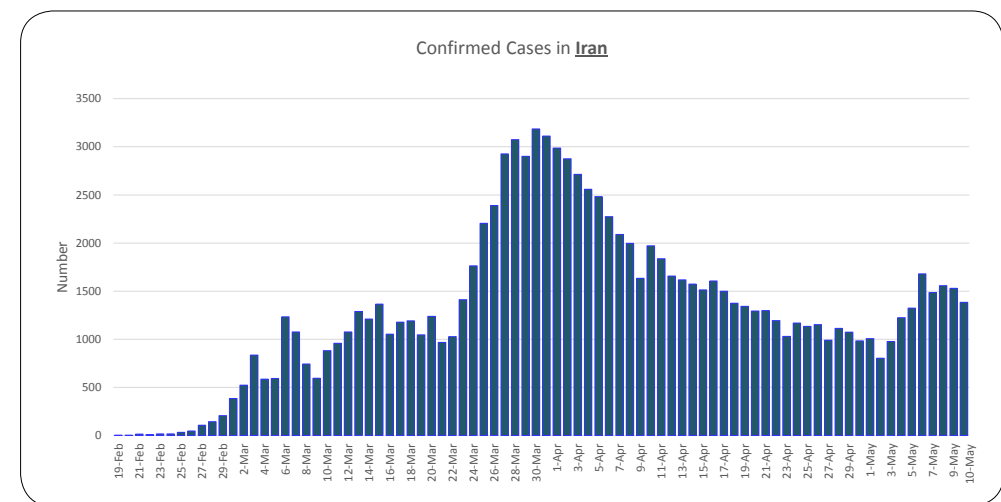


Figure 1. Confirmed COVID-19 cases in Islamic Republic of Iran (up to 10 May)

* A few identified cases in the early stage of the epidemic might be partly due to limited testing capacity in that period. Islamic Republic of Iran enhanced its testing capacity soon after the onset of the epidemic. This was achieved through launching provincial laboratories under the supervision of the reference laboratory, as well as enhancement of testing capacity within the reference laboratory itself.

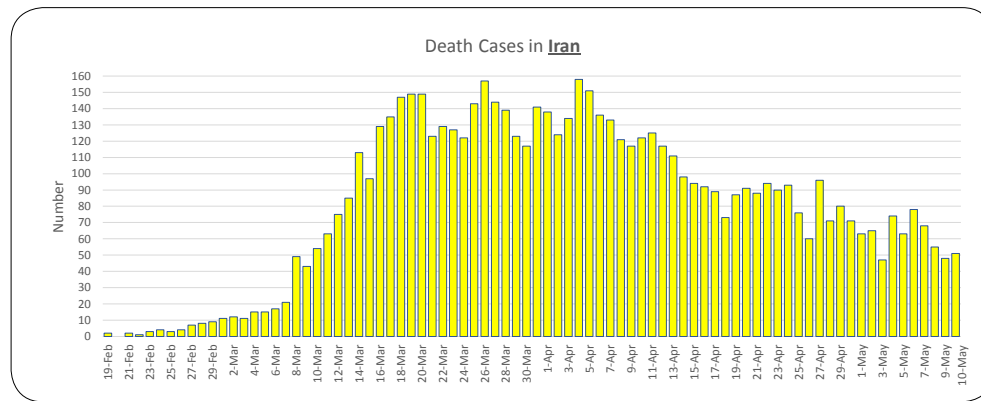


Figure 2. Confirmed deaths in Islamic Republic of Iran (up to 10 May)

It seems that in almost two thirds of the provinces of the country, there is community -based transmission of the disease. In provinces with a lower incidence of the disease, mostly the southern provinces of Fars, Khuzestan, Kerman, Bushehr, Sistan-Baluchistan, Hormozgan, Chaharmahal-e-Bakhtiari, Kohgiluyeh-Boyer-Ahmad and Kermanshah, the transmission seems to follow a cluster pattern. Although the first cases were reported from Qom city, we can almost be certain that the epidemic in Gilan province started concurrently. While there is some evidence that these first cases in Qom and Gilan provinces were briefly linked, it is likely that the main sources of infection in these two parts were largely independent and imported directly from outside the country. Neighboring provinces also witnessed infections in the early stages of the epidemic. This includes Markazi, Alborz, Tehran, Zanjan and Isfahan provinces, and are mainly linked to the cases in Qom city and to some extent Gilan province. Currently, there is no strong evidence of direct virus transmission from China to other provinces. This area requires further investigation. It seems that Mazandaran province, and in the next stage, Golestan province, received the infection mainly from Qom, and clusters of disease formed in these provinces.

Estimation of the number of COVID-19 hospitalized new cases

Five scenarios were considered in which different levels and durations of intervention led to different isolation rates (see Figure 3). In each scenario, the number of COVID-19 hospitalized new cases per day between 21 January and 19 June 2020 is modeled.

Scenario 1 (no intervention): No intervention by the government and the public is assumed, leading to zero isolation. This would yield an exponential growth of the number of hospitalized new cases, reaching to a peak in 19 June 2020 with 13,600 hospitalized new cases/day (95% uncertainty level [UL]: 4,900–26,000 new cases/day). The cumulative number of hospitalized new cases will be about 966,000 (95% UL: 467,000–1,700,000 new cases/day).

Scenario 2 (only public attention): This would lead to 10% isolation, persisting uniformly throughout the 21 January and 19 June 2020 period. This would result in a gradual increase in the daily number of hospitalizations until 3 May up to 6 May, 2020 with 2,900 new cases of hospitalization/day (95% UL: 1,100–5,700 new cases/day). The growth rate will then gradually decrease, leading to 2,300 new cases of hospitalization/day by 19 June 2020 (95% UL: 600–5,400 cases/day). In this scenario, the cumulative number of hospitalized new cases will be about 280,000 (95% UL: 119,000– 528,000 new cases/day).

Scenario 3 (minimum-level of governmental intervention): Community education by the government is assumed, leading to 10% isolation during 21 January to 20 February, 15% isolation during 20 February to 10 March, and 20% isolation from 11 March to 20 June 2020. In this scenario, the peak number of hospitalizations/day would occur in 7 April up to 10 April 2020, with 1,600 new cases of hospitalization/day (95% UL: 600–3,000). Then the growth rate would gradually slow down till 19 June, when an average number of 650 new cases of hospitalization/day would occur (95% UL: 100–1,800). In

this scenario, the cumulative number of hospitalized new cases will be about 147,000 (95% UL: 56,000– 293,000 new cases/day).

Scenario 4 (intermediate-level of governmental intervention): More intense interventions introduced by the government include social distancing, closure of sports, cultural and religious events, universities and schools, and the restriction of human mobility. The interventions lead to 10% isolation during 21 January–20 February, 15% isolation during 20 February–10 March, and 30% isolation from 11 March to 20 June 2020. In this scenario, peak number of new cases of hospitalization/day would occur on 11 March, with 1,400 new cases/day (95% UL: 700–2,300). Then the growth rate would slow down till 19 June 2020, when an average number of 200 new cases of hospitalization/day would occur (95% UL: 15–700). In this scenario, the cumulative number of hospitalized new cases will be considerably reduced and reach about 99,000 (95% UL: 38,000–196,000 new cases/day).

Scenario 5 (high-level of governmental intervention): Interventions are more intense than scenario 4, but still lack military intervention. The added interventions include ban of within/between city transportation, city quarantine, and the isolation and contact tracing of suspected cases. The interventions lead to 10% isolation during 21 January to 20 February, 15% isolation during 20 February to 10 March, and 40% isolation from 11 March to 20 June 2020. In this scenario, the peak number of new cases of hospitalization/day would occur on 11 March, with 1,400 new cases/day (95% UL: 700–2,300). Then the growth rate would slow down till 19 June, when an average number of 70 new cases of hospitalization/day would occur (95% UL: 3–270). In this scenario, the cumulative number of hospitalized new cases will be considerably reduced and reach about 75,000 (95% UL: 29,000–147,000 new cases/day), which is the lowest of all the outlined scenarios.

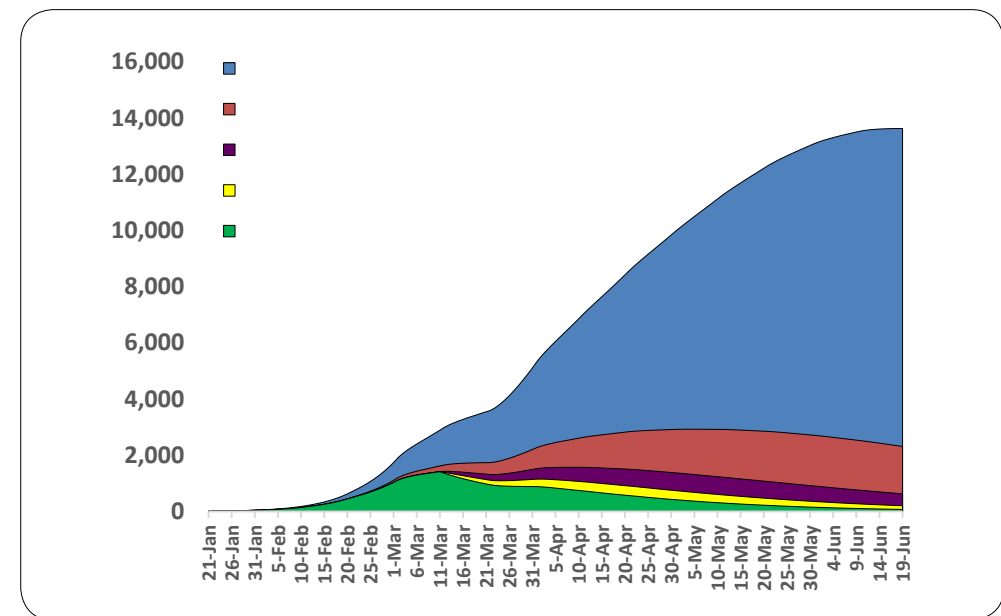


Figure 3. Different scenarios for COVID-19 cases in I.R.Iran from 21 January to 19 June

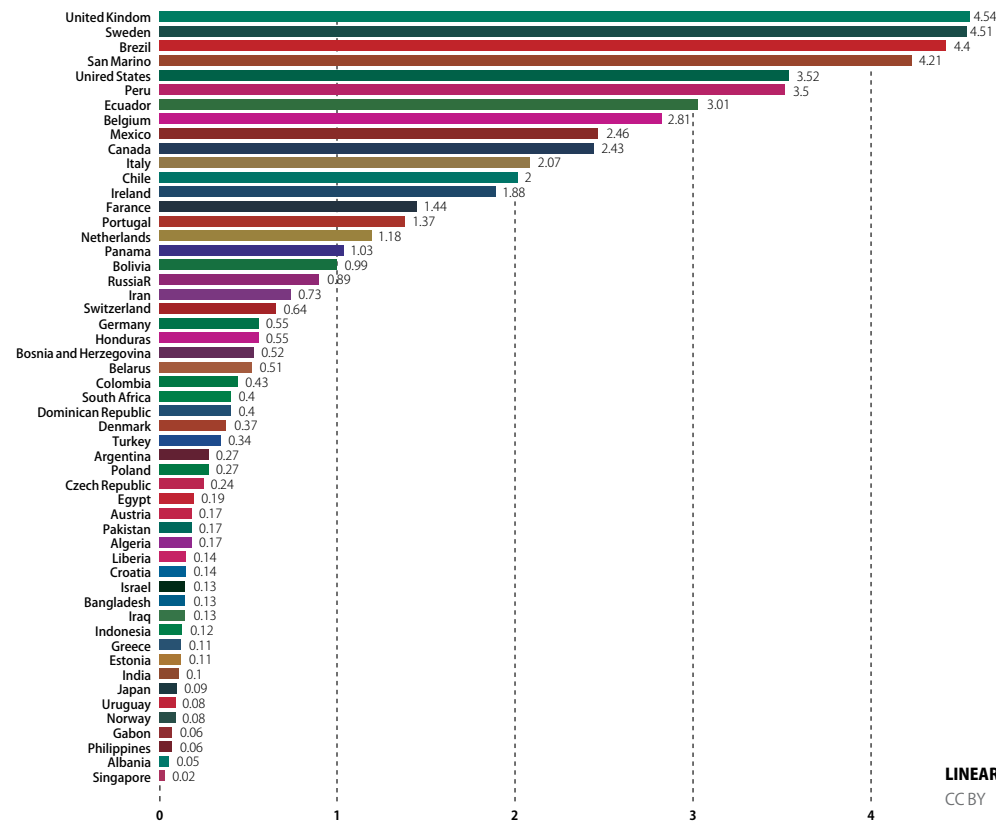
➔ COVID-19 case definition in Islamic Republic of Iran

Suspected case

- ➔ History of dry cough, chills or sore throat with shortness of breath, with or without fever, that cannot be justified by other etiological factors.
- ➔ Patient with fever or respiratory symptoms (with any level of severity) that:
 - has been in close contact¹ with probable/confirmed COVID-19 case, 14 days prior to symptom onset;
 - is a health care worker.

¹Definition of close contact:

Nosocomial contact with COVID-19 patients, including care and treatment of probable/confirmed COVID-19 cases, or contact with confirmed COVID-19 health care workers;
Family members that are taking care of the suspected/probable/confirmed COVID-19 case;
Being the colleague or classmate of a COVID-19 patient or having any job-related contact with a COVID-19 patient in a common closed space (contact closer than 2 meters for 5 minutes);
Being in a car with a COVID-19 patient.



Source: European CDC-Situation Update Worldwide-Data last updated 25th May, 11:25(GMT+01:00)

Figure 4. shows daily confirmed COVID-19 deaths per million people, May 25, 2020; where I.R of Iran ranks 20 in a comparison between different countries.

Probable case

- Any suspected case whose radiological manifestation strongly suggests COVID-19, based on the radiologist's opinion, such as unilateral or bilateral multi-lobe infiltration, especially peripheral infiltration in the CT scan or chest X-ray results and ground-glass presentation in the CT scan result (this is considered a clinically-confirmed COVID-19 case).
- Patients with pneumonia whose clinical condition does not respond to routine therapeutic interventions and aggravates in a rapid and unusual manner or leads to death of the patient (this is considered a clinically-confirmed COVID-19 case).
- Cases with an inconclusive test result, whose laboratory test result is not confirmed as positive or negative.

Confirmed cases

- Cases with a positive COVID-19 test result, with or without clinical symptoms or close contact with patients.

Risk assessment and effectiveness of current preparedness and response measures

Public awareness and rumors, misconceptions and misinformation, and how to overcome their impact

The COVID-19 pandemic occurred while as-yet unknown medical features of the novel coronavirus, caused the rapid spread of misinformation, misconceptions and rumors.

In order to tackle the fake news, rumors and misconceptions within the country, a committee headed by the Minister of Culture and Islamic Guidance was established and public awareness campaigns were implemented in which people were encouraged to be accountable and to break the chain by stopping the spread of rumors through three easy steps: finding trusted

sources of information, sharing information from trusted sources and discouraging others from sharing information from unverified sources. In addition to community engagement to prevent the spread of myths and rumors, the police were vigilant in identifying and arresting those spreading fake news.

Up to now, Islamic Republic of Iran Broadcasting (IRIB) has played a successful leading role in disseminating clear instructions and sharing real-time data with the community.

Testing policies and strategies

Before detection of the first case, the testing strategy was to test hospitalized cases with epidemiological links suggestive of COVID-19. These cases were very few and therefore a centralized approach seemed to be sufficient. However, a couple of days after confirming the first cases from Qom city, it was realized that a much higher testing capacity was needed in other cities. Since the main burden of disease was observed among critically ill patients, the priority was to test these cases. By expanding the laboratories in the country, and after stabilization of the number of hospitalized patients in the first month, the testing of outpatients and their contacts became a second priority. After implementing a pilot intervention in Zanzan province in the first week of April, the strategy was expanded to other provinces, especially those that had not experienced their first peak of infection. Health care workers were identified as a third testing priority in April 2020. Since the lifting of the partial quarantine situation is of great economic and social importance, the next target group is those employees who need to return to their jobs. Based on these priorities, tests were chosen that would have the greatest impact. In the first phase of response to the outbreak, as national testing capacity was limited, and based on evidence collected by laboratories, the country decided to rely on molecular testing of just one viral gene (the E gene).²

² The E gene identifies SARS-like viruses, including SARS-CoV-1, MERS-CoV and the current SARS-CoV-2.



After the expansion of laboratories across the country, the tests were swiftly switched to two target tests (mostly for the N³ and Orf1ab genes). In the fourth phase of the process, much more testing capacity is necessary, so there are plans to install more automated systems in laboratories and for alternative sample collection procedures, such as more samples at different levels.

Despite the fact that the immune response to the course of this infection is not yet clear and the quality of tests based on this response is unknown, serologic tests are now more available and the country is evaluating them to find reasonable indications for their use in mass testing.

³ The N gene detects any strain of coronavirus present in the sample submitted.

Role of the scientific committee and development of treatment protocols

At the start of the outbreak, a scientific committee was formed to provide scientific support for the clinical management of the COVID-19. This committee consists of four deputy ministers of health, infectious diseases specialists, epidemiologists, pulmonary disease specialists, public health experts and researchers. The Deputy for Curative Affairs has been directing the committee.

As COVID-19 has an unpredictable pattern, the committee reviews the latest international scientific guidelines to identify the best treatment, diagnosis and care and to guide national clinical trials.

So far, the committee has held 10 formal meetings and some subcommittee meetings which have resulted in developing and revising the 6th edition of the National Care and Treatment Guide and more than 60 instructions and circulars that have been disseminated to all universities of medical sciences and health services countrywide.

The main activities of the committee are to produce reports and policy briefs for decision-makers at the national level and develop and update guidance on:

- Clinical diagnostic methods and clinical signs/symptoms of the disease based on existing evidence;
- Para-clinical diagnostic methods (laboratory and serology tests);
- Treatment regimens including multi-drug and single-drug regimens;
- Rehabilitation services;
- Clinical trials at the national level (a multicenter research trial with 1,000 cases led by the Curative Affairs Committee is underway);
- Safe working conditions for health care workers;
- Conditions for returning to work for recovered patients.



→ Production and logistics of medicines and medical equipment, including PPE

Local production strategy

By establishing a committee responsible for the production and logistics of medicine and PPE, priority was given to the equitable supply and distribution of the medical products that are a prerequisite for national treatment protocols through local production or the importing of declared items.

The committee, at the initial stage and on an immediate basis, ensured the provision of three medicines (tocilizumab, favipiravir and remdesivir) from the countries that produce them. Islamic Republic of Iran is participating in clinical trials on the effectiveness of these drugs in the treatment of COVID-19.

Efforts have been made for local production to increase the resilience of the health system and support self-sufficiency. The provision and production of

medical products used in the treatment of COVID-19, such as intravenous immunoglobulin (IVIG), serum/plasma and antibiotics, are monitored and supervised by the relevant committee at the MOHME. It is important to note that during the last few months there was no shortage of these products. The committee has also developed strategies to meet potential requirements for recommended medicines in the coming months, as there may be another peak during the autumn.

Face mask and coverall equipment

In order to meet the demand for (preferably) cloth non-industrial facemasks, a committee was established, with membership including the National Medical Device Directorate, Association of Iran Textile Industries and Tailor's Union, to produce non-industrial facemasks. It was decided to use all production lines and mobilize all relevant organizations to produce facemasks and distribute them across the country.

The provision of 200 tons of PPE raw materials from the petrochemical industry facilitated production of the required face masks, and aerobic and anaerobic fabrics. Aerobic fabrics are being produced for the first time in the country. The outcome was the production of 600,000 protective gowns at much lower cost and better quality than imported ones.

Achievements included increasing the production capacity of 3-ply facemasks from around 300,000 to 2 million pieces per day, N95 facemasks from around 20,000 to 120,000 pieces per day, and protective gowns from around 20,000 to 125,000 pieces per day. In addition, at present, 40 advanced ventilators are manufactured daily in the medical equipment sector, which is three times more than before. One of the most important interventions was the establishment of a centralized PPE distribution network, using online platforms to monitor inventory and distribution. To ensure sustainability of PPE production, four knowledge-based companies were licensed for the production of coronavirus molecular detection kits.

Alcohol and other disinfectants

Alcohol-producing companies in the country were re-organized to control and monitor the amount of alcohol produced. These products are delivered directly to pharmaceutical manufacturers and companies that produce disinfectant solutions. To increase self-sufficiency and optimize the production of hand sanitizers and disinfectant solutions, and with the assistance of pharmaceutical and other relevant factories, the production lines became active in three-shift cycles. Repurposing the production lines of other companies also was valuable. PPE is now available in most pharmacies and supermarkets.

Logistic and supply chain management

Under the management of the Deputy Minister for Food and Drug Administration, a headquarters office examines the inventory of PPE and needed medicines on a daily basis in several provinces of the country. A special hotline has also been set up for universities of medical sciences and health services.

A subcommittee to plan, monitor and manage the distribution of PPE and medicines has been established that examines problems in provision and distribution and takes the necessary remedial action immediately. Another important task given to this subcommittee is to review the experiences of other countries and make plans to improve the storage, local production and fair distribution of PPE and medicines.

The subcommittee has achieved the fair distribution of medicine and PPE, including oseltamivir, chloroquine, hydroxychloroquine, ribavirin and Kaletra (lopinavir/ritonavir). As a result, inpatient wards have not faced shortages in these medicines. The government has also revised the alcohol import regulations to facilitate the production of disinfectants.

Tracking stockpiles of PPE and sanitizers

The distribution of PPE and sanitizers has been centralized during the COVID-19 epidemic and the following items have been distributed throughout the country:

- 2.5 million liquid and gel hand sanitizers in different packs and volumes;
- More than 37 million 3-ply face masks;
- More than 3.5 million N95 face masks;
- More than 3 million protective gowns;
- More than 30,000 glasses and shields to health and medical facilities.



⇒ Response strategy

Main strategic objective

The main strategic objective was to ensure early detection, early isolation, and early treatment and an appropriate follow/up mechanism. To meet this challenge, local production of testing kits was initiated, laboratory facilities were expanded to over 110 laboratories across the country, and the availability of CT scans was ensured in all districts. Isolation wards were established/equipped at hospitals and specified hospital beds or even entire hospitals were dedicated to patients in need of hospitalization. Using national treatment protocols, all physicians and nurses were trained locally for care of



patients, including treatment of severe patients in need of admission to ICU. The primary health care system was used to follow up positive cases discharged from hospital, test the first level of contacts (contact tracing) and increase awareness among those taking care of positive cases. The four main strategies adopted to control COVID-19 are described below.

National campaign to fight against COVID-19

To break the virus transmission chain a well-defined and target-oriented national campaign was organized, and by 5 March 2020 more than 220,000 volunteers had been recruited to assist in disease control and contact tracing, environmental health and safety, screening at city points of entry, and community education. In the campaign, 1020 (16- and 24-hour) health centers were activated to increase equitable access by the community to COVID-19 services and prevent hospitals from being overwhelmed. Testing services are now available at more than half (529 out of 1020) urban and rural COVID-19 designated comprehensive health care centers.

Physical distancing

On 19 February 2020, at 12:00 noon, right after identification of the first cases, the national COVID-19 Management Committee was established by the President and fully authorized under the Ministry of Health and Medical Education. Subsequently, similar committees led by the governor have been established since 26 February 2020 at the provincial level countrywide.

In order to reduce person-to-person transmission, a set of rules and regulations that restrict travel and the presence of people at mass gathering places, markets and shopping centers were imposed. These have been reduced using a “step-by-step” strategic pathway based on WHO advice, as the disease incidence has flattened.

Accordingly:

- business places and shops have been divided into three groups according to the risk for viral transmission and their re-opening is planned according to basic needs of the community;
- Office working hours were reduced and re-scheduled from 07:00 to 14:00;
- Public places have been kept closed until further notice;
- Since 26 February 2020, Friday (Islamic) prayers have been suspended in public to prevent viral transmission due to mass gathering, and holy and sacred places have been closed;
- Screening checkpoints were set up at the entrance of cities on 26 February 2020 and were intensified two days later;
- A remote working policy was implemented from 28 February 2020, and working from home proposed for two thirds of government staff, recently decreased to one third;
- Schools and universities have been closed since 15 March 2020 and education has been provided virtually via the Internet, TV and other devices since 28 February 2020.

Expansion of laboratory facilities

At the start, due to the lack of sufficient kits, testing was limited to those patients admitted to hospital and tests from across the country were analysed by the Pasteur Institute in Tehran. After this, diagnostic capacity was expanded to over 110 laboratories by the training of laboratory technicians and provision of diagnostic materials and technical help to public and private laboratories. Primary health care facilities were added as testing centers to provide equitable access to testing services for the whole community.

Contact tracing

The primary health care system in Islamic Republic of Iran was established four

decades ago with an enhanced presence in both rural and urban settings. The “health house” is the first level of contact in rural areas, covering around 1,000 people and staffed by two community health workers (behvarz). In urban areas, a “health post” covers a population of 10,000 with four health experts (each with 2,500 people or 600 households). Rural and urban health centers are staffed with medical doctors, nurses and paramedics, who provide a monitoring and supervisory role to the health houses and health posts. The response to COVID-19 has benefitted from this infrastructure of 39,000 health facilities and more than 78 million people have been screened by phone, with the first level of contacts of probable and positive cases being traced and screened.

⇒ Governance



Leadership, planning structure and plan

In February 2020, the National Headquarters for COVID-19 Management was established by a decree of the National Security Council and with the Supreme Leader’s approval. This headquarters is headed by President Rouhani. The following are its members:

- Minister of Health and Medical Education as the Secretariat;
- Minister of Industry, Mine and Business as head of the logistics committee;
- Minister of Roads and Urban Development as head of the contamination prevention committee in the transport fleet, including different modes of transport, and passenger collection centers, including terminals and airports across the country;
- Minister of Interior as head of the social and security committee;
- Minister of Cultural Heritage, Handicrafts and Tourism as head of the supervisory taskforce for pilgrimage centers, Holy Shrines, sport facilities and touristic places;
- Minister of Education as head of the education committee;
- Minister of Culture and Islamic Guidance as head of the information-sharing committee;
- Head of the Haj and Pilgrimage Organization as head of the supervisory committee for religious institutions;
- Minister of Foreign Affairs as head of the international relations and partnerships committee.

After the report of the first positive case, and the death of four people on 19 February 2020, and following a meeting of the MOHME’s senior officials on 1 February 2020, it was decided to form the following committees within the Ministry: Intersectoral Coordination; Prevention; Treatment; Laboratory; Epidemiology; Statistics and Information; Procurement and Logistics; International Relations; Public Relations; Security and Safety.

The Deputy Ministers of Public Health, Curative Affairs, FDA, Statistics and Information Technology, and Development and Resource Management, have national responsibility for the macro-management of the response to COVID-19 and will support these committees. All decisions related to necessary measures are made by the National Headquarters for COVID-19 Management. Its first meeting was held soon after the detection of the first cases. Important decisions have included:

- Establishment of a scientific committee to develop and share national guidelines for COVID-19 management;
- Forming an action-oriented management team and organizing meetings related to diagnosis, prevention, treatment, environmental health and the provision of the required supplies and equipment;
- Facilitating intersectoral collaboration for development of 20,000 sanitarium beds by the army;
- Developing more than 75 guidelines and standards for environmental health in public places;
- Planning and implementation of a national campaign for active screening and case finding, disinfecting public places and screening checkpoints at the entrances of cities;
- Planning and implementation of a physical distancing strategy and, subsequently, a smart physical distancing strategy for the step-by-step reopening of public places as advised by WHO;
- Developing a decree for people who conceal their COVID-19 positive status;
- Disinfecting of public places and implementation of environmental health measures by the army, fire brigade, municipalities and volunteers;
- Suspending all Iranian New Year holidays for medical and other key staff of relevant organizations/ministries;
- Forming eight technical subcommittees and provincial headquarters for COVID-19 management;

Table 1. Stepwise Main Decisions Made by the National Headquarters to control Covid-19, I.R of Iran

Imposed restriction in flights from China	21 – 31 Jan
Screening passengers at Tehran International Airport	
Establishment of the National Covid-19 Headquarters	31 Jan to 10 Feb
Raising community awareness and promoting behavioral changes	
Strategic direction to stockpile and optimize supply of PPE	
Strengthening LAB infrastructure	10 – 19 Feb
Activating Hospitals' preparedness plan	
Follow up of people with Respiratory symptoms (hospitalized or ambulatory)	
Detecting the first cases in Qom, Tehran, Mazandaran and Gilan provinces	20 – 29 Feb
Rapid spread to other provinces	
Advocating and raising community awareness at national level	29 Feb – 10 March
Starting the National campaign to combat COVID -19	
Closure of sport facilities, Cinemas and public gathering places	
Taking on time managerial steps to control epidemic in high risk areas	10 – 19 March
Closure of offices, mosques and initiation of physical spacing	
Initiating active case finding at PHC facilities	
Restrictions and entry bans during New Year (Norouz)holidays	20 – 29 March
Strengthening the national campaign and promoting public- private partnership through engagement of 220,000 health Volunteers	
Addressing hospitals to reduce over-whelming	
Rapid production of LAB Kits	29 March – 8 April
Strengthening the disease management capacity all over the country	
Addressing economic consequences of COVID-19 through high level decision making	
Step by step implementation of Smart Physical Spacing strategy (re-opening of some of the economic centers)	8 – 19 April
Strengthening and supporting active case finding all over the country	
Epidemiological investigation in Epi Centers	From 20 April onwards
Keeping people sensitized through raising community awareness	
Providing equitable access of all Non-COVID 19 Patients to proper treatment and medical procedures	

- Developing strict protocols for the protection of medical staff and extension of insurance coverage for all patients without insurance under the health transformation plan (the recent comprehensive reform of the country's health system);
- Approving the facilitation of the return of Iranians living abroad and providing COVID-19 diagnostic and treatment services to non-citizens;

Table 2 shows the main stepwise lockdown and re-opening decisions made by the National Headquarters for COVID-19 Management:

Table 2. Main lockdown and re-opening decisions of the National Headquarters for COVID-19 Management

S#	Decisions	Date
1	Postponement of the political/religious Friday (Islamic) prayers and other public mass gatherings in affected provinces	26 Feb
2	Restrictions at points of entry of all touristic and historic cities	
3	Closure of all cultural mass gathering venues, such as cinemas or concerts, ban on supporters entering stadiums and the continuation of sport competitions without spectators	
4	Establishing a new hotline called 4030 dedicated to COVID-19	28 Feb
5	Three days closure of schools	29 Feb
6	Closure of all schools and universities, and postponement of Masters and PhD entrance exams	05 March
7	Establishment of sanatoriums (isolation care centers)	
8	Initiation of national campaign for control of COVID-19	
9	Removal of all customs clearance and import restrictions, and applying tax-free status, for all equipment and medicines related to COVID-19 management and all donations from the United Nations, international agencies and countries to MOHME	12 March
10	Initiation of virtual education and training of students via the Internet/ TV, etc.	

11	Provision of food packages for households (especially disadvantaged and marginalized households and those without fixed wages) and economic protection measures for small businesses through a targeted subsidy budget plan	13 March
12	Initiation of testing of suspected mild and outpatient cases at the primary health care level in 13 highly-affected provinces (epicenters)	26 March
13	Prohibition of leaving Tehran for unnecessary reasons	
14	Formation of an investigative working group to combat rumors and fake news and prevent the spread of misinformation and misconceptions	28 March
15	Expansion of health insurance coverage for all, including those without health insurance	31 March
16	Initiation of a smart physical distancing plan, phase 1 (step by step opening of low risk businesses and monitoring of outcomes)	11 April
17	Continuation of smart physical distancing plan, phase 2 (step by step opening of moderate risk businesses and monitoring of outcomes)	19 April

Note: On 11 March 2020, the COVID-19 outbreak was declared a pandemic by the WHO as cases spread to at least 114 countries.

It should be noted that at the end of March, President Rouhani announced around 10% of gross domestic product (GDP) in COVID-19 relief and recovery measures.

Key measures included:

- A moratorium on tax payments due to the government for a period of three months (7% of GDP);
- Subsidized loans for affected businesses and vulnerable households (4.4% of GDP);
- Extra funding for the health sector (2% of GDP);
- Cash transfers to vulnerable households (0.3% of GDP);
- Support to the unemployment insurance fund (0.3% of GDP).

Islamic bonds (Sukuk) and the National Development Fund will provide part of the financing.

In addition, the Central Bank of Islamic Republic of Iran:

- Announced the allocation of funds to import medicine;
- Agreed with commercial banks to postpone the repayment of loans due through February 2020 by three months;
- Offered temporary penalty waivers for customers with non-performing loans;
- Expanded contactless payments and increased limits for bank transactions in order to reduce the circulation of banknotes and the exchange of debit cards.
- Injected US\$ 1.5 billion in the foreign exchange market to stabilize the Iranian rial.

Adapt strategies based on risk, capacity, and vulnerability

The National Headquarters for COVID-19 Management as the responsible body for strategic direction and united operational decisions adopt all strategies based on the latest national and international evidences and expertise.

Epidemiologic committee has been responsible to identify risks in disease increase rate in each province so that all the strategies of the provincial committees were adopted based on the risks and the people's compliance. In this regard, with the community engagement, high risk crowded places, including prisons, military barracks, nursery homes, schools, universities, day cares, shopping malls and other high risk jobs had been shot down and are in the process for smart risk-based re-opening.

Considering risk was an important factor for data driven and evidence informed decisions, i.e. in provinces such as Gilan and Qom that were highly affected, or in border provinces due to the proximity to other affected countries, more strict measures were in place. The response capacity

regarding the human resources and equipment also was another factor for the tactical decisions made. Resilience, community engagement, social trust and people's compliance to the preventive measures were among other important factors for adopting strategies.



Intrasectoral and intersectoral collaboration

As mentioned above, establishment of national headquarters and provincial management for COVID-19 headed by President Rouhani and governors at all provinces brought together all relevant sectors to act as a team with common goal, clear tasks and responsibilities for each sector and lead to unified deliverables. The extra ordinary community engagement and partnership across the country, was the benefit to this framework. All actions and progresses were monitored and reported to the national headquarters on

periodic intervals. The President and Minister of Health were in touch through Video Conference with all governors and even with head of the big hospitals to be informed regarding development of plans and interventions and its outcomes.

The health care interventions were largely supported by using the capacity of non-governmental organizations (NGOs) in advancing programs, implementation of physical distancing plan, smart physical distancing strategy for re-opening of the public places and other instructions and standards communicated to the provinces. The security of public places is under control and monitored on a regular basis. Promoting social satisfaction in accessing health services including access to PPE that soon lead to mass production put Islamic Republic of Iran in a place that is ready to export PPE to the other needy countries in a few weeks' time.

Within the MOHME in addition to supervision and monitoring of actions implemented by all the 63 Universities of Medical Sciences, the public health, mental, occupational and environmental guidelines and standards have been developed and disseminated. Besides the scientific committees of treatment which is responsible for preparation of updated treatment protocols, and Committee of Epidemiology at the MOHME as well as at the provincial level which is responsible for epidemiological interpretation of the trends and developing the models/ scenarios for COVID-19 predication based on the intensity of interventions, another committee also has been established to document all inputs, achievements, challenges, best practices and lessons learned based on available evidences.

Policies on travel

As a result of the COVID-19 pandemic, many countries have imposed quarantines, entry bans, or other restrictions for citizens of or recent travelers to the most affected areas. Although in Islamic Republic of Iran we have not enforcing complete border closures to foreigners, meanwhile a range of

measures have been adopted to limit the spread of the virus, including screening check points, the necessity of issuing COVID-19 health certificate for passengers, and testing for travelers from Epi-Centers including US, UK, Germany, France and Italy.

In this regards, more than 56 free flights (without passengers) and 6 sea travels were provided to return Iranian citizens back to the country.

Entry bans was not limited to international points of entries and also was imposed to the entrance and exit border of touristic cities, i.e. when the number of COVID-19 cases began to skyrocket, several provinces, including Gilan, Mazandaran, Booshehr and Tehran, took the unprecedented step of setting up border checkpoints to early detect those who might be carrying the virus and stop the non-residents. In this case only native residents of each city were allowed to enter, and others were requested and or enforced to turn back to their hometown. Fortunately, the social compliance was good and besides city entry-bans, warning the community against traveling, reduced the ADT (Average Daily Traffic) during the lockdown period.



Managerial support from the Deputy Minister for development and resource management

- Getting permission to use about one billion EURO from Islamic Republic of Iran' National Development Fund for COVID-19 management;
- Injecting more than 17,000 billion rials (country currency) to public hospitals to use as a compensation or for purchasing equipment or consumables until 6 April;
- Issuing two types of Corona bond using crowd funding approach at Islamic Republic of Iran' stock market and accumulating more than 200 billion rials (country currency);
- Emergent hiring of more than 3,000 nurses to work at referral hospitals of COVID-19;
- Setting-up a website to absorb volunteers and registration of more than 19,000 medical staffs with a broad range of skills;
- Several amendments on the rules and regulation to use medical staffs more efficiently;
- Prepare and equip more than 81,000 hospital beds for COVID-19 patients before the outbreak;
- Prepare more than 16,000 hospital beds as a reserve for possible lacks; and
- Provision about 19,000 recovery beds at different geographical regions.

Effective disease surveillance and response measures

Limit human-to-human transmission

Early case finding

Early case finding was among the most important strategies adapted by the Islamic Republic of Iran; however due to lack of LAB kits from 19 February (onset of disease) the active case finding was not so prominent.

The first LAB kit has been reached Islamic Republic of Iran by WHO only for 200



tests on 20 February 2020. At the initial stage, the testing was only provided at hospitals with limited availability for ambulatory cases at private LAB. Soon after, the Institute Pasteur trained LAB experts at provincial level and supported to equip around 110 laboratories with daily 15,000 testing capacity that are scattered all over the country with equitable access for all.

Recently, in order to reduce the workload of the hospitals, we decided to expand testing to the 16/24 hourly primary health care facilities that are now functional at more than 1/2 (529 out of 1020) urban and rural COVID-19 designated Comprehensive Health Care Centers (CHCs). The primary health care facilities are also proactive for contact tracing (probable and positive cases and screening members of family who are in contact with suspected or positive cases).

At the moment, Islamic Republic of Iran is among the countries, which is capable and self-sufficient in making diagnostic kits for COVID-19, and the first consignment of COVID-19 diagnostic kits (including 40,000 kits) manufactured by an Iranian knowledge-based company has been exported

to Germany. The above mentioned diagnostic kits has obtained both the national and European CE⁴ license.

So far, Turkey, Ecuador, Brazil, and Spain are among the countries that have applied to buy Iranian kits to diagnose COVID-19.



Social and physical distance strategy

After expansion of the outbreak to the provinces of Qom, Gilian and Mazandaran the National Headquarters for COVID-19 Management has enacted restrictions on mass gathering, transportation, closure of schools and universities in order to reduce person-to-person transmission. This was shared with all provinces to implement in a coordinated manner.

The Iranian new year (21 March) was another risk of high transmission as people tend to travel and respect the cultural mores, therefore the Government decided to strengthen the restrictions. This was effective as the number of new cases has declined on the day 15 after New Year. As a result, the Government started to unlock the cities with low incidence from 11 April step-by-step, monitoring the epidemiological trend and moving towards the next step as advised by the WHO.

⁴certification mark that indicates conformity with health, safety, and environmental protection standards

Main rules and regulations/ restrictions to limit contact

Soon after establishment of the National Headquarters for COVID-19 Management by a decree of the National Security Council and the Supreme Leader's approval, the headquarters put some restrictions in movement in the affected provinces. Six days after detection of the first case and its expansion to three provinces, all political-religious Friday (Islamic) praying ceremonies and other public mass gatherings in the affected provinces were postponed. Restrictions were applied to the travelers and tourists and to the touristic areas. Sport completions and mass gathering were stopped and soon all restrictions extended to all provinces. As mentioned in a matrix title "stepwise main decisions made by the National Headquarters COVID-19 Management" several restrictions put in action to prevent person-to-person transmission and educated people via national TV channels.

On 6 April 2020, the Headquarters for COVID-19 decided to implement "Smart Physical Distancing" in 2 phases.

The first phase was started since 11 April 2020, in which the low risks businesses were reopened, the medium risk businesses were partially reopened and the high-risk businesses were kept closed as shown in the below table. The second phase started on 19 April 2020, after assessment of the incidence of disease based on the number of new cases in each province.



Table 3. Risks of different business centers

The businesses that should be kept open ●	The businesses that should be kept closed ●	The businesses with limited activation (Partially reopened) ●
Big supermarkets and groceries for food and beverage	Mosques, shrines, schools, kindergardens and universities	Post offices
Fruits and vegetable shops	Malls and shopping centers	Police offices
Diary shops	Exhibitions	Judiciary offices
Pharmacies and drug stores	Dry cleaning, toy shops	Banks
Butchers and shops selling meat, seafood and poultrys	Restaurants and coffee shops	Money exchange offices
Bakeries	Wedding halls	Hotels
Gas stations	Pools and sport facilities	Bus and train stations
Health centers	Theaters, cinema and museums	Airports
Restaurants (only takeaway and home delivery services)	Photography stores and Publishing shops	
Car maintenances and workshops	Tailors, hairdressers and beauty saloons	

→ Community engagement and role of the CBOs/NGOs

Community engagement and mobilization to combat COVID-19 has started in different ways and means soon after detection of the first case and its expansion to other provinces. Community actions/interventions were based on local needs and coordinated at neighborhood level.

Some of the examples of public-private partnerships and community engagement are:

- Participation in disinfecting the cities;
- Voluntary contributing of the neighborhood community in production of face masks and gowns, accompanying screening teams for the home visits and coordination in collection and distribution of financial support and food packages to the poorest members of the community;



- Donations for procurement of ventilators, ECG and other required hospital equipment;
- Women's groups within neighborhoods initiated tailoring the hospital gowns on volunteer basis, buying, packing and distributing juice and fruits to the hospital staff and patients;

The presence of volunteers was so prominent at primary health care level and when follow up of suspected cases were required. Communities were also ensuring implementation of physical distancing rules and regulation.

Local health development through "Each House A Health Post" initiative

Before COVID-19 outbreak, Islamic Republic of Iran was piloting a very useful intervention known as "Each House a Health Post" in four provinces: Qazvin,

Hamadan, Semnan and Kashan. Due to the achievements of the pilot phase, it was supposed to scale up this intervention all over the country by Mid-March that was not possible due to COVID-19 outbreak. The main objective of this initiative was to train ONE of the household's members who can have influence on the others on preventive measures, primary care, first aids and rehabilitation of chronic patients and elderly relatives at home. It was proposed to train 20 million health messengers based on this initiative in the nearest health facilities across the country.

The evidence from four pilot provinces shows that in the areas where the project is implemented the screening speed was twice more than other areas, the health messengers contributed a lot in their neighborhood' cleaning, mask production, assistance to the poor and more importantly the smart physical distancing were taken much more serious due to presence of many messengers in the locality.

Dr Saeed Namaki, Minister of Health and Medical Education, the designer and pioneer of this project said: "I wish we had 20 million health messengers before COVID-19, and then you would have seen a difference in outcomes!!"



➔ Risk communication

Risk communication for COVID-19 as a critical public health intervention and a science-based approach for communicating effectively is the process of informing community about the potential risks to their daily life, job, education, trade, travel, relationships and future. This two-ways dialogue includes basic information about COVID-19, advices for risk reduction behaviors, staying at home and keeping social distancing, new methods of communicating with families and friends, and feedbacks given by the community in the preparedness, readiness and response phases.

Primary health care network, health volunteers, official and public media including audio-visual programs, press conferences and printed newspapers, official websites (i.e. webda.behdasht.gov.ir), social media, IEC materials, and different hotlines (i.e. 4030 and 190) are the main channels used for transparent, rapid and regular risk communication for COVID-19 in Islamic Republic of Iran.

Under the supervision of the National Headquarters for COVID-19 Management, the public relationship and community engagement committee developed a communication plan for providing trustworthy and timely information about 2019-nCoV. Based on this plan, a series of simplified messages and reminders was prepared and sent to the community, in order to tackle the rumors and misconceptions, also different surveys were done to receive the appropriate feedback, find the favored communication channel and address the challenges in the earliest time.

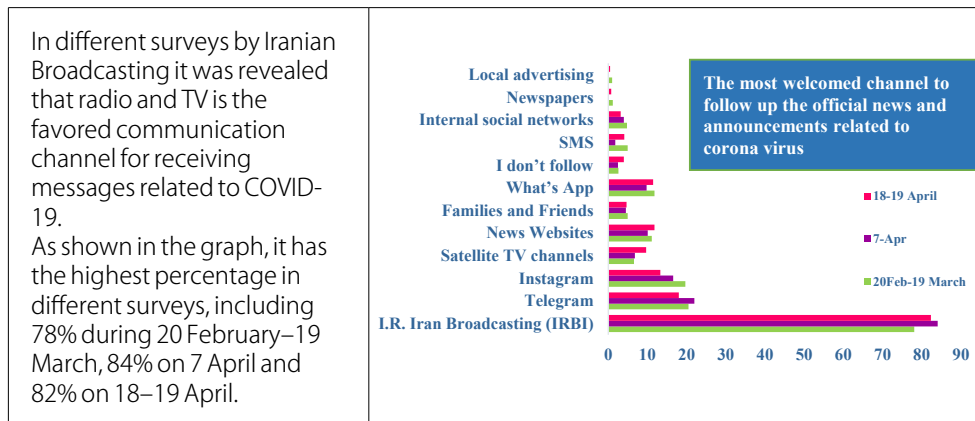


Figure 5. The favored channel to follow official news and announcements on COVID-19

In this regard, a special studio and a section of the news has been devoted to COVID-19 and Minister of Health and Medical Education, the deputy ministers or the head of public relationships in the MOHME, clarifies the burden of disease, including the number of confirmed new, dead and recovered cases on a daily basis, also each night one of the policymakers or scientific committee members is invited to a live TV program to determine the roles and responsibilities of different sectors including the community as the main role players to combat COVID-19.

The “Staying at Home Campaign” which was started through community engagement and enforced by the national headquarters for COVID-19 management, also was noted in the communication plan.

Based on the authority delegated by the presidency to the MOHME, the public private partnership and the risk communication and community engagement, steps are taken towards overcoming the current epidemic.



➔ Scale up country preparedness and response operations (National Campaign)

Impact & effectiveness of the primary health care network

To ensure community access to affordable, accessible and acceptable essential health services, a primary health care network was formed four decades ago and today covers more than 98% of the rural population and 93% of urban communities.

During the COVID-19 outbreak, primary health care facilities play an important role in active screening and symptom-based case finding. 17,800 health houses and more than 5,600 rural and urban health facilities and 5,500 urban health posts were directed to call their catchment population and screen them for signs and symptoms of COVID-19. In a 45 days period, more than 78 million people were contacted and screened by phone through primary health care facilities. Annex 3 shows COVID-19 screening pathway in Islamic

Republic of Iran.

Suspected cases were directed to the nearest COVID-19 designated 16- and 24-hours daily operating CHCs and in case of necessity referred to the hospitals. The below screen shot from the electronic health record shows that till 10 May 2020 more than 78 million people were traced and screened for COVID-19 by primary health care facilities via phone call at rural and urban areas.



Figure 6. The schematic view of SIB website, Golestan (2,072,729) and Khorasan-e-Razavi (4,498,844) (provinces not include in this portal)

Around 1020 COVID-19 designated CHCs have been activated in urban and rural settings to ensure easy access to diagnostic, counseling, and therapeutic services and to prevent overwhelming of the hospitals. Testing is also available recently at 529 out of 1020 urban and rural COVID-19 designated CHCs. The second phase of screening targets high risk people including pregnant mothers and people with chronic diseases like diabetics, cardiovascular, cancers, immunity defective cases, who will not only screened for COVID-19 but receive advice and care for their chronic diseases.



Contact tracing and follow-up measures

Community health workers and Center for Disease Control and Prevention (CDC) teams, along with a representative of the BASIJ voluntary group, visit families who have had positive, probable or dead cases, screen close contacts for early detection, disinfect their homes and follow-up their treatment.

In addition, COVID-19 patients who are discharged from the hospitals and have not yet passed the 14-day period since the time of illness onset, in case of need are referred to temporary designated isolation centers for further follow-ups.

Establishment of hotlines

One of the important responsibilities of the MOHME in respect to the community rights is to provide an infrastructure for citizen's voice to be heard.



For this purpose, before the onset of COVID-19, a 3-digit hotline named 190 was dedicated to providing information and receive views, interests and complaints in different areas related to health including emergency, public health, medical care, tariffs, and drugs.

The output of this system has undoubtedly been effective in finding people's real needs and demands to be addressed in future planning's. During the 2019-nCoV outbreak, in addition to expanding the current system and adding an extension to 115 (EMS) dedicated to COVID-19, extra free counseling hotlines including a four-digit hotline named 4030 was launched.

For responding to questions and provide general and specialized advice 2,200 operators are responsible for incoming calls and phone counseling, in which 1,000 operators are active per hour.

Operators are mainly volunteers (including doctors, nurses, medical students and paramedics) who are mobilized by BASIJ volunteer groups, the Red Crescent Society, Supreme Leaders Headquarters or MOHME.

➔ Extension of laboratory facilities

Early case finding

As mentioned above, although early case finding was among the most important strategies adapted by Islamic Republic of Iran, due to lack of laboratory kits in the early stages the active case finding was not so prominent.

By extension of laboratory facilities and engagement of primary health care facilities in early case detection in 16–24 hourly primary health care facilities the case finding has been improved significantly across the country. Nowadays, we have reached to 10,000 testing per day. From 3 April 2020 testing is available at primary health care facilities of 24 universities of medical sciences. So far, until 5 May 2020 about 91,587 COVID-19 sampling have been done for symptomatic people who referred to COVID-19 designated CHCs and people who had close contact with confirmed cases. Around 13,385 people had positive test results (14.6%). The primary health care facilities are also proactive for contact tracing (probable and positive cases and screening members of family who are in contact with suspected or positive cases).



Quality control

At present to ensure the quality of testing, the following measures are in place:

- Providing similar training to the labs and universities who are willing to establish COVID-19 test;
- Establishing a network of COVID-19 labs in the country. Technical consultation, guidelines, trouble shootings , etc., are facilitated through cyber meetings and rooms within the network;
- Evaluation, centralized purchase and supplying all labs of the network with validated test reagents;
- Providing External Quality Assessment Panels to the labs of the network, to monitor their proficiency and correct possible deviations in the testing quality.

→ Access to hospitals beds

Policies for allocation of special hospitals

To ensure equitable access to hospital care, the “Whole-of- government” and “Whole-of- society” approach, community engagement and Health by All for All has been put in place at both national and provincial levels. Therefore, in the first step, at least two hospitals in each province (one public and one private) were completely dedicated to COVID- 19. By increasing the number of epicenters, more hospitals (636 hospitals) and 35% of all available beds (49,000 out of 140,000) were allocated to COVID-19 patients.

Equitable access to diagnostic, counseling and therapeutic facilities such as CT scanning, ICU, etc.

Immediately after detection of the first cases, MOHME, declared an emergency, sent the activation announcement to all health care centers, implemented strict public health measures, scaled up the laboratory facilities, and called back all leavers and interested retired medical and paramedical

staff, to utilize the health sector full capacity to combat COVID-19.

The health system also has expanded its counseling and triage hotlines for informing, screening and finally monitoring COVID-19 patients. Evidence informed and data-oriented resource allocation and distribution in accordance with home isolation for mild cases is among the other strategies taken to provide equitable access to those who are in real need.

The stepwise protocols and referral system through the extensive primary health care infrastructure has dramatically reduced the load of ICUs and hospital admissions to the fact that we had free ICU beds across the country. Evidence shows among the 2.5 million cases who were followed-up, 1,190,000 were visited in health facilities and just 5.14% were referred to the hospitals and that only 961 out of 6,500 ICU beds were occupied by COVID-19 as of 5 May 2020. It should be noted that the above-mentioned data, only includes the screening of probable cases approached to the primary health care facilities however, the cases who approached directly to the hospitals are not included.



Clinical management of severe acute respiratory infection

Inpatient and outpatient diagnostic and treatment guidance for COVID-19 has been developed and updated on a regular basis. Based on the currently available clinical expertise and national protocols, more than 80% of COVID-19 cases are mild or moderate who should do the self-quarantine and stay away from others for at least two symptom-free weeks, 15% are severe and need hospitalization and 5% are critical cases who need ICU admission. Annex 1 shows COVID-19 diagnostic and treatment algorithm in patients visiting health care centers.

In order to implement a step-by-step re-opening strategy, MOHME has developed an instruction entitled "Eligibility for Going Back to Work". The guide is based on capability for working, resolution of fever and respiratory symptoms and days passed from the onset of disease, which shown in the flowchart at Annex 2 and screening pathway shown in Annex 3.

Quarantine and isolation policies (including home care and convalescent care facilities)

For around 80% of COVID-19 patients with mild or moderate symptoms, hospitalization may not be required unless there is a special concern. For this cases home isolation and self-quarantine should be considered. Patients who no longer require hospitalization, do not have access to the hospitals or are not reluctant to be hospitalized are other indications for home isolation.

In cases which home isolation does not meet the safety criteria, sanatoriums should be considered. Quarantine suspected incoming travelers from other countries, such as Iranian students who came back from Wuhan and Italy and continuing of care for post-discharged patients are other indications for using sanitariums. Military commodities, some hotels and shopping malls were equipped with medical staff and other necessary requirements as COVID-19 sanitariums within the country, although due to the impact of the national campaign, most of the dedicated capacities were not used.

➔ The performance of Iranian midwives during the COVID-19 pandemic

Since the outbreak of COVID-19, midwives have served in three different areas, including primary health care health facilities, hospitals and call centers.

Primary health care level

Collaborating with other health care workers, 15,754 midwives have served at various levels of rural and urban primary health care facilities, district health center, and maternity facility centers. In addition to routine pregnancy care and routine tasks, working in 16 hourly health care centers, they have participated in telephone screening for COVID-19 for more than 78 million people. They have screened 500,392 pregnant mothers in two rounds of telephone, face screening, and have done follow-up of 4,256 suspicious cases.



Hospital level

About 17,576 midwives work in hospitals across the country; they are working in the labor, post-partum, high-risk maternity, neonatal and NICU wards. As all hospitals have been accepting, pregnant mothers unconditionally so all midwives have been involved during the current epidemic and 5,270 of these midwives (30%) have been active in COVID-19 referral hospitals during the first two months of outbreak. Nearly 1,269 midwives have also volunteered to help other health staff at referral hospitals. Since the beginning of the outbreak, 72,971 pregnant mothers were visited in referral and 223,079 in non-referral hospitals (inpatient and outpatient cases) who 885 out of the total visited cases were suspicious to COVID-19. In addition to the routine tasks of midwifery including performing vaginal delivery, and post-partum care, they have also taken care of mothers who were considered as suspicious or confirmed cases of COVID-19 during labor time and after that.

Telephone-based midwifery service

At the same time, telephone-based midwifery service or midwife consultant started working from the beginning of the outbreak; they were active in answering inquiries and concerns of people, especially pregnant and lactating mothers, with the aim of reducing unnecessary visits to the health centers, increasing people's awareness and knowledge and reducing the level of stress and anxiety. Faculty members and other alumni staff provided necessary technical advices 24 hours a day throughout these services. So far, over 100,000 phone calls have been answered by 600 faculty members and 300 experts.

Number of infected midwives: Over 300 midwives were infected and three of them lost their lives due to COVID-19.

➔ Nursing services during COVID-19 pandemic

The year 2020 has been designated as the International Year of the Nurse and the Midwife by WHO. Since the onset of COVID-19 outbreak in 2020, nearly 200,000 nurses as the largest group of the health care providers have been on the frontline of fighting against COVID-19 in several hospitals of the country. Appreciations of the Supreme Leader and other officials of the country, as well as people, for their hard work have made the nurses' abilities practically known to the public.

The Iranian Nursing Organization and other scientific associations were also invited to assist in dealing with the recruitment and disseminating the volunteer nurses to the different hospitals and regions, in addition to participating in developing the required guidelines. Unfortunately, several of our beloved nurses and physicians lost their lives during this tragedy who were then dubbed as the martyrs of health care.



General measures

Some of the main activities during the current outbreak are summarized as below:

- Participation of more than 100,000 nurses in providing care for COVID-19 patients, providing care for 75,849 patients admitted in the coronavirus wards, providing intensive care nursing for 16,063 patients hospitalized in ICUs, and the triage of 401,697 acute respiratory distress syndrome (ARDS) patients in the hospitals affiliated to universities of medical sciences;
- Develop and disseminate a checklist to assess the preparedness of COVID-19 referral and, performing frequent field inspections from before the onset of the disease until now;
- Training and empowering the nursing managers, the education and infection control supervisors, the nursing school presidents, and the board chairmen of the Iranian Nursing Organization through several video conferences;
- Holding periodic video conferences in order to facilitate exchange of experiences between nursing managers of the universities;
- Training and empowering nursing groups and other service groups (patient transporters, staff, guard, etc.) in the form of 1,283 courses (4,802 hours) for COVID-19 by education and infection control supervisors at different hospitals;
- Telephone follow-up of 58,853 COVID-19 patients discharged from hospitals across the country;
- Conducting researches in various fields of nursing care provision for COVID-19 patients;
- Membership in various related committees such as technical and operational committee, scientific committee, Intersectoral coordination committee, etc.

Developing a guide for service delivery package

- Developing instructions and service standards for the care provision to patients with mild COVID-19 at home, and making efforts for the insurance coverage of these services;
- Participation of 405 home health care nursing and counseling centers with the aim of reducing hospital bed occupancy;
- Developing a draft guide for establishment of sanitariums for the mild COVID-19 patients discharged from the hospitals (nursing homes);
- Supervision and monitoring of care delivery and nursing management for the patients admitted in the hospitals, nursing homes and sanitariums;
- Participation in the development of guide for geriatric care during COVID-19.

Maintaining nursing staff and supplying PPEs

- Employing 1,073 individuals from faculty members, nursing schools' students, freelance and retired nurses as volunteer workforce in order to provide educational, counseling and clinical services in referral centers;
- Assigning 673 volunteer nurses for a hotline named "4030" for public education and counseling;
- Requesting universities to keep 10% of the available nursing staff as the reserve staff to be deployed under special circumstances even if needed in other provinces;
- Mobilizing nursing staff from private hospitals or non-COVID-19 hospitals to hospitals nominated for COVID-19 if needed;
- Supervising distribution of PPE among the nursing staff of referral hospitals, and reporting shortages to the relevant authorities at the central level;
- Hiring 4,500 nurses, obtained certificates of employment for 4,284 other nurses, as well as employed 3,195 nurses under short-term contracts;
- Asking universities to prevent involvement of high-risk nurses (suffering from NCDs, immune deficiencies) in direct care of COVID-19 patients.

➔ Response of the National Emergency Medical Organization and Iranian Red Crescent Society

National Emergency Medical Organization (NEMO) and Iranian Red Crescent Society (IRCS) play a critical role in managing incidents, natural and man-made disasters and large-scale emergencies across the country.

Since the announcement of the novel corona virus epidemic in Wuhan, China, based on the level of emergency, the Emergency Operation Center (EOC) within the MOHME has been started monitoring and reporting the epidemiologic pattern of ARDS (Acute Respiratory Distress Syndrome) patients within the country.

In the preparatory phase the emergency protocols was published and disseminated to EMS and Red Crescent staff all around the country and all the emergency medical services and IRCS bases were equipped with appropriate PPE and disinfectants, also the need assessments was performed based on the probable scenario's and requirements and shared within the International Relationship Department (IRD) to be reflected to United Nations agencies and other interested charities.



Just after identification of the first cases in Qom city, the EOC has become fully activated based on the incident command system and national response framework, and all the pre-hospital staff around the country received the notification for using PPE and considering the highest level of precautions during all pre-hospital missions.

In this phase, community engagement and taking advantage from the capacity of donors and charities, was very helpful in combating COVID-19.

Special emergency medical teams were activated for COVID-19 and NEMO played an important role in patient transfer to and within the hospitals. In addition, emergency medical services ambulances were used to transfer suspected cases to the dedicated laboratories to cut the transmission chain. Emergency medical services ambulances also were deployed at the points of entry and exit of all cities to rapidly transfer the suspected cases that were identified during screenings.

Adding a special extension to the emergency number 115 for COVID-19 patients, and using the capacity of volunteer medical staff, helped to triage the patients in advance and reduce the burden of emergency medical services system. Preparing the COVID-19 risk map based on GIS (Geographic Information System) and the emergency medical services app. with the ability to pinpoint the exact geographic location of ill COVID-19 patients, provide real-time trends and cumulative distribution of disease and the referral hospitals were among the initiatives of the NEMO to combat COVID-19.

The IRCS also has been fully activated and has played a great role in management, screening and custom clearance and distribution of international aids and consignments.

Establishing 851 temporary posts at the points of entry in city borders, airports and train stations, deployment of 9,371 person/day and 15,286 operating vehicle/day and screening 21,640,861 general population during the national screening campaign including, screening all passengers of 7,818,084 cars and identify and referring 14,302 cases with fever, daily production of 7–10

thousand facemasks and 10,000 hospital clothes by the IRCS textile company, contribution in preparing the temporary sanitariums, distribution of food packages for needy families and different public education campaigns for different target groups are among the achievements of the red crescent.

➔ Environmental and occupational health measures

Standards and guidelines development

The Ministry of Health and Medical Education has developed more than 125 standards and guidelines on working places, restaurants, health facilities, etc., during the COVID-19 epidemic. Environmental and occupational health experts were assigned to strengthen their monitoring and supervisory role all over the country, ensuring implementation of the guidelines. The guidelines have been prepared in two stages. First stage (from detection of the first cases in Qom city to implementing the re-opening strategy) including 46 guidelines and the second stage (from implementing the unlock strategy up to now) including one infographic and 86 guidelines⁵.



⁵available (in Persian) via: <http://markazsalamat.behdasht.gov.ir/>

The main topics are precautions for health care workers, funeral and burial instructions, disinfection of fruits and vegetables, extra precautions while exposing with positive cases, transportation facilities and fleet workers, train and bus stations, airports, parks, food shops, public places, swimming pools, patients in prisons, etc.

Monitoring food shops and public places

One of the main ways to prevent transmission of COVID-19 is to break transmission chain through strengthening environmental health measures and physical distancing, therefore, in Islamic Republic of Iran all health policies and decisions have been made based on this strategy. In order to control COVID-19, environmental health inspectors have continuously monitored the food supply and the distribution centers as well as the public places. For this purpose, special environmental health groups have been formed at each locality with the following tasks:

- ➔ monitoring the implementation of self-care precautions for the employees involved in food production/ processing facilities such as the use of personal protective equipment, respecting physical distancing strategy, proper and continuous hand washing and use of disinfectants;
- ➔ supervising food safety supply chain such as monitoring the raw materials, transportation, storage and cooking temperature, supply of food and disinfection of food packaging and supply of traditional food without proper packaging;
- ➔ monitoring disinfection of food-related surfaces, food delivery machines and food distribution;
- ➔ emphasis on the use of electronic ordering and encourage contactless payments for purchasing food productions;
- ➔ sealing and preventing the activities of units that do not comply with the health regulations.

The following is data on inspections by environmental health experts during the COVID-19 pandemic in Islamic Republic of Iran:

Table 4. Inspections to food shops during campaign

Activities	Number
Number of inspections to food preparation and distribution centers and public places	1,584,797
Number of food preparation and distribution centers which were closed due to violation	104,111
% food preparation and distribution centers that have complied with the disinfection protocols	80%
% food preparation and distribution centers that have installed posters on personal hygiene	79%

In order to closely monitor the observance of health rules and regulations in food preparation and distribution centers and public places, people can also report health violations to the MOHME/ universities of medical sciences in provinces through the complaint handling system or hotline (190), and inspectors will investigate and resolve the problem as soon as possible.

Besides informing and training the staff of the food preparation and distribution centers and public places, all above mentioned operators are required to register their information in the business centers' registration site to continue their activities during the epidemic of COVID-19 and to receive the health criteria related to their jobs from the system, otherwise they are not allowed to operate.

Disinfection activities

One of the important actions of environmental health is disinfection of contaminated surfaces to prevent the spread of COVID-19, which includes the following:

- Attracting participation and providing specialized training to the private sector, the armed forces (including the BASIJ and the army), religious students and NGOs to use the power of their equipment in the process of disinfection, such as public transport, passenger stations, busy centers, etc.;

Number of health inspection teams	Number of involved Basij volunteers	Number of disinfected areas
3,769	281,228	214,849

- Home disinfection for those suffering COVID-19;
- Provide training guidelines for proper use of disinfectants in different places and programs for waste transportation and maintenance centers;
- Continuous quality control, sampling and disinfection monitoring of drinking water;
- supervise the disinfection and disposal of wastes by emphasizing on hospital wastes;
- Supervision on disinfection process of suspicious and confirmed bodies with SARS-CoV-2.

Handling dead bodies

Provinces were advised to choose a suitable place for disinfecting the body before delivering it to the morgue or bathhouse or to place the body inside the transport bag and disinfect the inside and the outer surface of the bag with 0.5% sodium hypochlorite solution (5,000 ppm). It was also advised to dispose used personal equipment as infectious waste and compliance with hand hygiene instructions. At the time of burial, also it was instructed to prevent gathering, and observing the distance at the time of burial. The transfer of the deceased to mosques, holy places and houses for farewell or praying was strictly avoided.

Medical waste management in hospitals and health care centers

Waste generated in providing services to patients with suspected or confirmed COVID-19 is considered infectious waste and it is necessary to monitor their management. The waste is treated in hospitals using non-incineration systems and then transported and buried by the municipality in a

hygienic manner. Environmental health experts in the hospitals monitor this process. Following table shows, monitoring of medical waste management in hospitals and primary health care centers during COVID-19 outbreak from the detection of first cases up to May 3, 2020.

Table 5. Monitoring of medical waste management in hospitals and primary health care centers

Title	Number
Number of selected hospitals for admission of suspected, probable or confirmed cases of COVID-19	461
Number of selected hospitals with non-incineration treatment systems of medical waste	448
Number of selected health care centers for admission of suspected, probable or confirmed cases of COVID-19	905
Number of on-site monitoring visits performed at selected hospitals	11,500
Number of selected hospitals with environmentally sound management of medical waste	11,210
Number of on-site monitoring visits performed at selected health care centers	22,252
Number of selected health care centers with environmentally sound management of medical waste	21,157

➔ Vulnerability mapping (focusing on NCDs)

Many people must stay at home around the globe, while more than ever they need to stay physically active as it boosts immune system and enhances mental health. Therefore, to encourage people to do physical activities at home; MOHME in line with the WHO guidelines has developed three targeted guidelines for children, adolescents, and parents titled Physical Activity at Home. The guidelines make use of illustrations of simple exercises that can be practiced at home without any sophisticated instruments. The guidelines

have been shared with people living in the catchment areas of primary health care facilities by their staff via social media channels.



Special attention to people susceptible to severe COVID-19 in Islamic Republic of Iran

The crude fatality ratio for COVID-19 patients is much higher among those with pre-existing chronic medical conditions like cardiovascular diseases, diabetes, hypertension, chronic respiratory diseases, or cancers. In addition, they are more susceptible to becoming severely ill with the coronavirus.

To address the issue, MOHME in line with WHO guidelines developed a national protocol to make sure that, patients with NCDs, especially diabetic and hypertensive patients are receiving appropriate care and essential medicine during the COVID-19 pandemic with the least likelihood of exposure to the virus. Accordingly, in their catchment area the health care providers and community health workers regularly make phone calls to the NCDs patients not only to educate them for prevention and control of COVID-19 but

also to encourage them on adherence to treatment and self-care on NCDs. They also explore possibility of detecting suspected cases of COVID-19 among the patients and their family members; then, in case of need, the service providers would visit them at home. Based on latest available report, about 9 million people with pre-existing chronic medical conditions have so far received nationally recommended services.

Furthermore, MOHME has developed a guideline for COVID-19 prevention and treatment in patients with cancer. This guideline provides specific recommendations covering the precautions that should be taken by cancer patients and their families, as well as recommendations for the continuum of care in this group of patients including physician, nurses, managers and staffs of medical centers involved in cancer diagnosis and treatment. On March 3, 2020, the guideline was sent to all medical universities and is in the process of implementation.

Genetic services including marital, prenatal and neonatal screening following by genetic surveillance and prenatal genetic diagnosis were considered. Specific protocols were developed by the genetic department at the NCDs management office. The guidelines provide health workers in the primary health care with modified flowcharts of genetic services to screen targeted groups and to make sure people at risk are receiving care needed while practicing social distancing scheme. Guidelines are specific to target groups of each screening programme including Thalassemia in marital, metabolic diseases in neonatal and chromosomal disorders in prenatal screening programmes. With respect to the public education and the role of NGOs in this matter, educational videos and pamphlets were prepared to raise the public awareness about COVID-19 and cancer in the most accurate way.

Second phase of corona screening

A list of all registered patients in the SIB software and individuals who were reported diabetes, high blood pressure or heart disease in the first stage of

screening was provided to behvarz/community health workers. About 94% of patients with heart disease and hypertension have been tele screened. Those who are recognized uncontrolled cases were referred to the comprehensive health center.

Unregistered individuals who have been newly diagnosed with high blood pressure or diabetes during Corona tele screening were registered and kept under routine care.

Frequency ratio of COVID-19 among patients with non-communicable underlying disease

- About 28% of the COVID-19 cases had at least one underlying disease;
- About 68% of COVID-19 deaths were among patients aged over 60;
- About 26.1% of COVID-19 deaths were among patients with at least one underlying disease;
- About 78.3% of COVID-19 deaths were among patients aged over 60 or with at least 1 underlying disease.

(Source: Islamic Republic of Iran Epidemiology Journal No. 26).

Accelerating priority research and innovation

After detection of the first case, the undersecretary for research in the MOHME has formed a committee for planning and management of applied research to ensure implementation of the following main tasks:

- Technology development – utilizing the capacity and capability of more than 1,425 knowledge-based companies and 800 health technology cells in the hospitals;
- Diagnosis of COVID-19 through coordination of all universities with the Pasteur Institute to perform PCR;
- Epidemiological studies:

- Multicenter research – a project has been developed to strengthen infrastructure for research. The interested hospitals could join the trial by submitting clinical information of at least 200 positive patients;
- Identification and priority setting for COVID-19 knowledge gaps and research topics;
- Clinical trial for treatment with four medicines.
- Ethics in research-documentation of ethical interventions as research proposal, monitoring all related research to ensure ethical considerations are applied in all studies;
- Monitoring researches and dissemination of results – until first April totally 830 research projects out of which 248 research studies published in the local journals (208) and international journals (40);
- Established a Telegram site through which scientific papers and latest research studies are shared with the academia.



→ International partnership

Partnership with embassies at the initial stage of COVID-19 outbreak in Islamic Republic of Iran

Holding and participating in various meetings with UN agencies and foreign embassies in coordination with Ministry of Foreign Affairs(MoFA) ensuring them about capability of Iranian health system and identifying special hospital for foreigners residing in Islamic Republic of Iran. In this regard, following main activities can be mentioned:

- Addressing all foreign ambassadors in two meetings held by the MoFA about COVID-19 situation in Islamic Republic of Iran, public health measures, the ways of collaboration with United Nations, policies of national headquarters of COVID-19 management;
- Holding a meeting with all UN agencies, sharing the latest situation and assesses how each UN agency can contribute in control of pandemic in Islamic Republic of Iran;
- Trust building with foreign embassies located in Tehran through holding personal meetings with the ambassadors of Afghanistan, Azerbaijan, Austria, China⁶, Cuba, Hungary, India, Pakistan, Tajikistan and Uzbekistan;
- Special arrangements for foreigners who need medical care: designation of a special private hospital.

Consulate Affairs to prevent further international spread (close link with embassies and the Ministry of Foreign Affairs)

1. For Iranians abroad

In line with increasing number of affected countries particularly in Europe,

⁶ It is worth mentioning that strategic partnership between Islamic Republic of Iran and China, as two important countries and influential actors at continental and international levels continued during COVID-19 pandemic. According to a proposed framework, the two countries will cooperate in different novel projects including: clinical trials, producing medicines and pharmaceutical raw materials, medical equipment and supplies, medical technologies, and other strategic dimensions.

and other epicentres, Iranian compatriots were willing to return home country. To do this, a number of activities were organized by International Relationship Department (IRD) in close contact and complying with MoFA:

- Developing necessary protocols in coordination with Deputy for Public Health, which were revised appropriately during the time;
- Strengthening health posts for testing, observation, isolation and information provision at entry points;
- Regular meeting with Ambassadors of neighbouring countries;
- Visit and testing of all incoming passengers;
- Accommodation of Iranians in designated quarantines;
- Communicating with Ministry of Foreign Affairs, embassies and Iran Civil Aviation Organization to facilitate the return of Iranians.



2. For foreigners

Foreign nationalities, who were willing to return to their homes, were assisted through:

- Communication with Ministry of Foreign Affairs, ambassadors of foreign countries in Tehran and Islamic Republic of Iran ambassadors, to identify the number of foreign nationalities, pilgrims, students, tourists, and other foreigners;
- Submission of updated protocols to Ministry of Foreign Affairs and foreign embassies;
- Issuing “health cards” and other health measures for outgoing passengers at the exit border;
- Accommodate the pilgrims in safe quarantines if needed;
- Facilitate their crossing at ground borders;
- Facilitate visa problems for truck drivers in coordination with Ministry of Foreign Affairs;
- Communicating with Iran Civil Aviation Organization to facilitate the evacuation of foreign nationalities;
- Evacuation of 98,130 Afghan nationality, 8,201 Pakistanis, and 1,632 Indians in few weeks after the outbreak.

WHO and other UN agencies’ contribution and assistance

According to the leadership of WHO in Global Health emergencies, since the outset of COVID-19 epidemic in Wuhan, Islamic Republic of Iran MOHME made necessary coordination with WHO at country, regional offices and head quarter in various aspects:

Technical collaboration was one of the core strategies including:

- Sharing information;
- WHO mission to Islamic Republic of Iran;
- Telephone call between HE Minister and Dr Tedros Adhanom Ghebreyesus, WHO Director-General and Dr Al-Mandhari, WHO Regional

- Director for the Eastern Mediterranean;
- Daily reports by Director-General CDC according to IHR;
 - Daily informal discussions between Director-General IRD and Regional Director;
 - Weekly Tele Communications(TCs) between WHO Regional Office for the Eastern Mediterranean and Deputy for Public Health;
 - Provision of required COVID-19 goods, including diagnostic kits, PPEs, medical devices, and other consumables;
 - WHO has been assigned as the coordinator for COVID-19 items by Regional Committee;
 - A mediator for other countries financial contribution, including various donor countries and organizations, especially the World Bank Group and the Islamic Development Bank;
 - Active participation in WHO scientific and technical meetings including the Emerging Diseases Network, WASH and Clinical Network;
 - Considering NCDs as a major risk factor for COVID-19 morbidity and mortality, preparation for holding regional and global virtual meetings in collaboration with WHO and NCDs Alliance.



Other United Nations agencies

As for the responsibilities of International organizations and funds. As well as benefiting from their capacity to deal with COVID-19 and related issues, the following activities were conducted:

- In line with providing required items and support children, The United Nations Children's Fund (UNICEF) in accordance with its responsibility has taken outstanding actions including provision of personal protective equipment and medical devices;
- United Nation Population Fund (UNFPA): is also working to ensure all post-partum women who have COVID-19, or who have recovered, are provided with information and counselling on safe infant feeding and appropriate measures to prevent COVID-19 virus transmission.
- United Nations High Commission for Refugees (UNHCR): provided some of the required items to protect refugees and foreigners against COVID-19;
- Collaboration with UNICEF, WHO and United National Developmental Program (UNDP) to access necessary medicines and medical devices, which under the unilateral and unlawful sanctions are hard to reach;
- Submission of various notes, petition and bill against the unilateral and unlawful embargo on Islamic Republic of Iran in close collaboration with MoFA and the Presidential Office to Hague International Court of Justice, United Nations, WHO, etc.

Exchange of information between Member States and United Nations agencies

One of IRD's major tasks in COVID-19 pandemic was scientific dialogue between Islamic Republic of Iran and countries which were most affected, to share experience and providing technical assistance where needed, given the outstanding experience of Iranian clinicians and public health experts. The 'scientific dialogue' was conducted through:

- Participation and address by Minister of Health and Medical Education Dr

- Namaki in ministerial meetings by WHO/headquarters and WHO/Regional Office;
- Active participation in weekly meetings of the Clinical Network by WHO;
 - Scientific exchange virtual meetings with Armenia, Azerbaijan, China (few times), Germany, India, Indonesia, Pakistan, Russia, South Korea, Turkey (few times), Venezuela, and Viet Nam(ongoing process) ongoing process;
 - Submission of daily epidemiological reports to WHO, neighboring countries, Ministry of Foreign Affairs, Iranian embassies;
 - collecting all official COVID-19 reports by Iranian embassies;
 - Scientific exchange on COVID-19 in Economic Cooperation Organization (ECO⁷) and D-8⁸, where Islamic Republic of Iran is a member of the Monitoring and Implementation Committee;
 - Address by President Rouhani in virtual Non-Aligned Movement (NAM⁹) summit COVID-19;
 - Strengthening the COVID-19 exchange in the framework of G-5¹⁰;
 - urging medical universities to hold scientific dialogue with their counterparts in designated countries.

Participation in supply chain management

By order of Minister a committee with membership of IRD has been joined to monitor and supervise distribution of the items generated from inside and outside the country. In this regard following main activities can be highlighted:

- Investigating national requirements through different departments;
- consultation with relevant agencies/departments to ensure specifications and technical details of required items;

⁷ECO: Afghanistan, Azerbaijan, Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkey, Turkmenistan and Uzbekistan.

⁸D8: Bangladesh, Egypt, Indonesia, Islamic Republic of Iran, Malaysia, Nigeria, Pakistan, and Turkey.

⁹The countries of the non-aligned movement are nearly two-thirds of the United Nations' members and 55% of the world population.

¹⁰G 5: Afghanistan, Islamic Republic of Iran, Iraq, Pakistan and WHO Regional Office

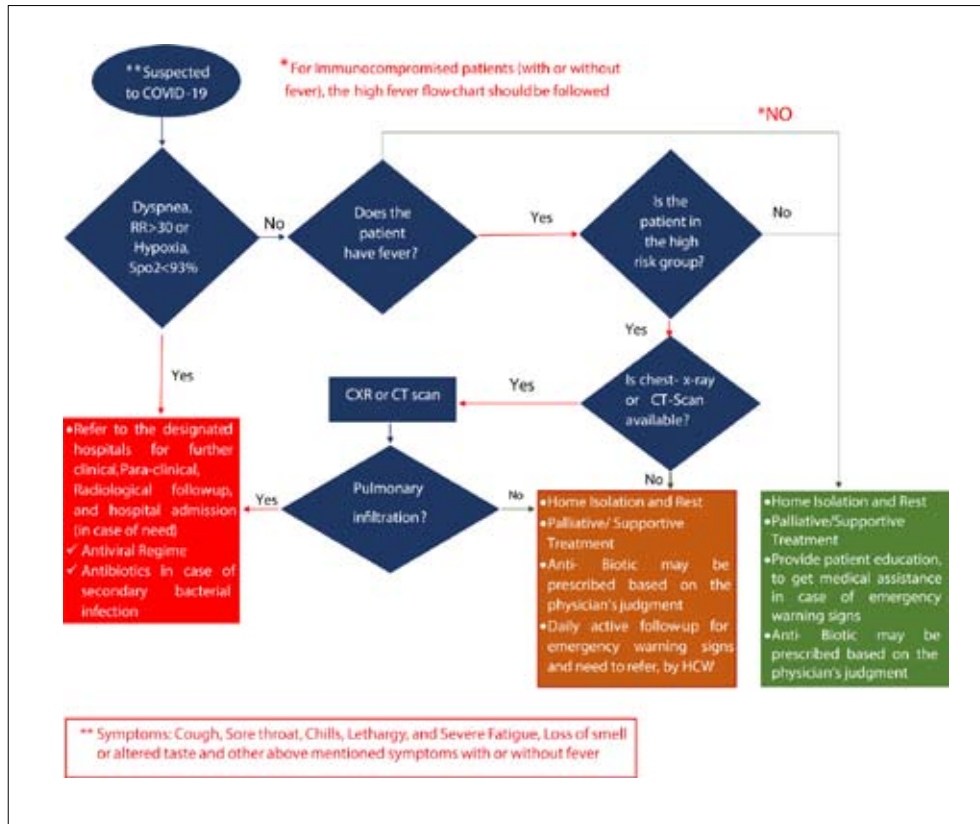
- Communication with UN Agencies, MoFA, Iranian Embassies and various institutions to provide required items;
 - Necessary arrangements to conduct clinical trials in coordination of the Scientific Committee of the COVID-19;
 - Communication with the custom for free discharge of donated items, temporary stock, and real time exchange of information on different ports;
 - Media coverage and appreciation of donations;
1. IRD is the Project Implementation Unit (PIU) of the World Bank Loan.

Cooperation with neighboring countries to accelerate travel and trade

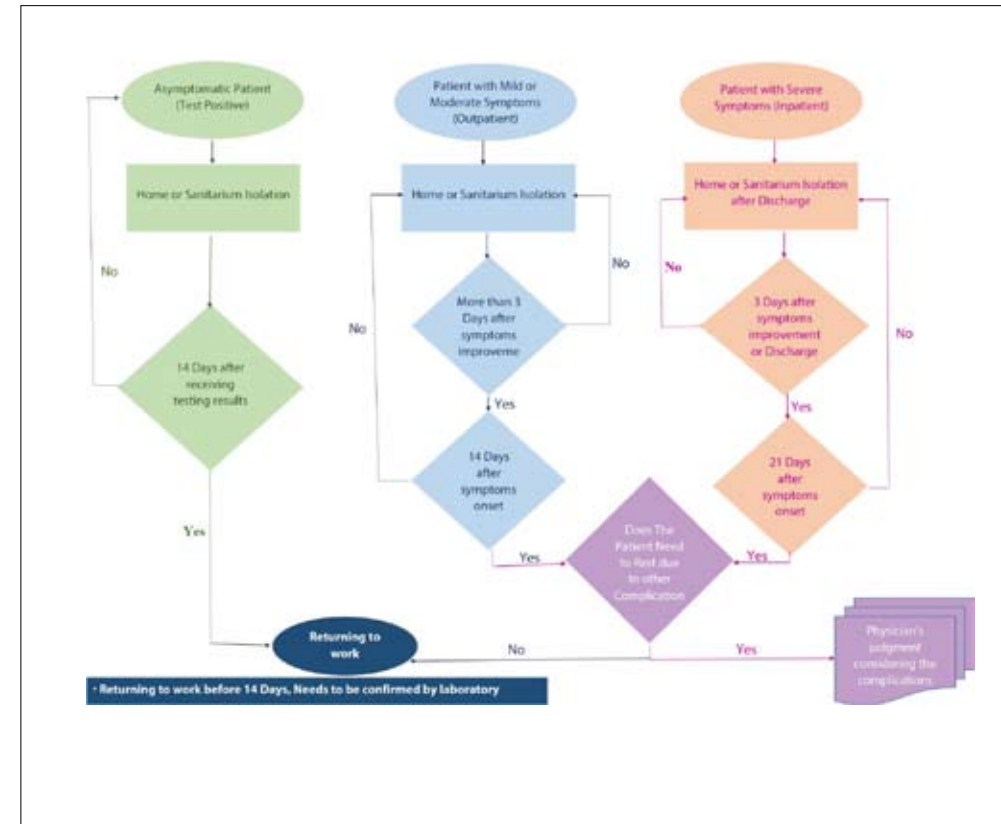
At the outset of COVID-19 outbreak in Islamic Republic of Iran, majority of border transportation was stopped due to health concerns by the neighbouring countries. To overcome these concerns, following strategies were implemented:

- Organizing various meetings chaired by the Minister with high officials from MoFA, Ministry of Interior, Customs, and Police, to identify target borders, public health measures, and priority for negotiations;
- Trust building measures at the borders, particularly air and ground borders;
- Virtual negotiations of Minister of Health and Medical Education of Islamic Republic of Iran with his counterparts in Iraq, Pakistan and Turkey to ensure all necessary public health measures are in place;
- Developing COVID-19 'Environmental Health' protocols for border transport by Environmental Health Department in MOHME;
- Developing Memorandums of Understanding for border transportation with neighbouring countries in collaboration with MoFA, Ministry of Road and Urban Planning, Ministry of Industry, Mine and Trade, and the Customs;
- Continuous virtual negotiations at Deputy Minister level with all neighbouring countries.

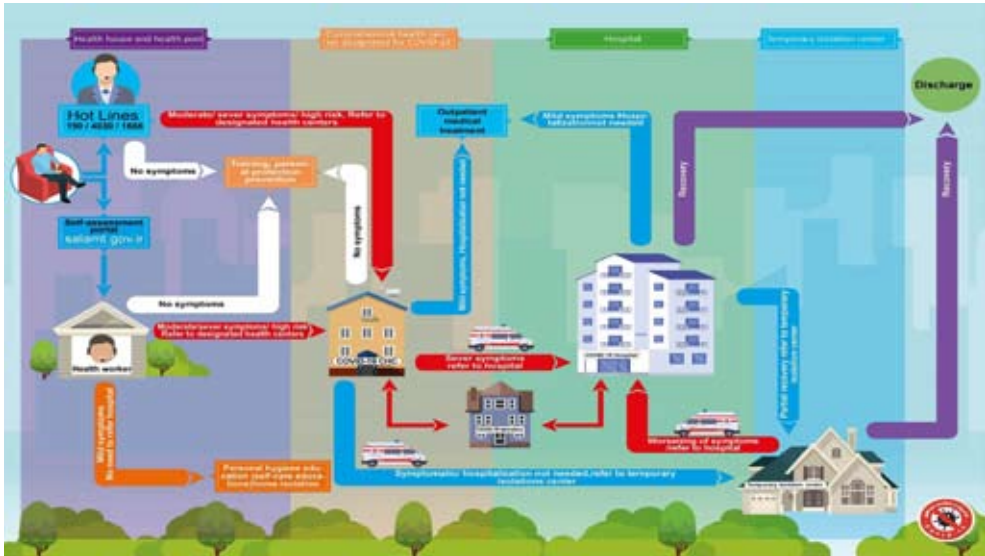
Annex 1. COVID-19 diagnostic and treatment algorithm in patients visiting health care centers



Annex 2. Flowchart for returning back to work



Annex 3. Screening pathway in Islamic Republic of Iran



Annex 4. Countries in different phases to combat Covid-19 epidemic: crossing picks of pandemic

Countries postion crossing pandemic picks

