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Measures of Preventing Covid-19 Transmission

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ABSTRACT

Limiting the spread of coronavirus requires individual, social and international efforts. Even though the virus is highly contagious, simple measures like hand washing with Soap for 20 seconds or with alcohol-based Hand Sanitizer kills the virus. Masks act as a barrier to prevent inhalation of droplets. Similarly, gloves are also protective barriers, and these gears are called Personal Protective Equipment's (PPE). Though personal protection is essential, it is not enough. Hence, others measures are required like social distancing, quarantine facilities, prohibiting international as well as Local travelling, mandatory screening of suspected cases and screening those who have a recent travel history from a corona affected region. With the countries trying hard to recover the loss from the pandemic, The Schools, Colleges, Malls, Theatres, Religious places and all the places where mass gathering occurs are shut down. According to the 30th of June 2020, almost 10.1 million covid-19 cases are almost 50 thousand deaths. Indians are the Italians of Asia & vice versa & now it's among the countries leading with 2,15,239 cases of active & the number is still increasing. India adopted a multi prolonged surveillance strategy. Nowadays as unlock 1 is being proceeded in India commonly used in India is a Walk-Through disinfectant Tunnel for covid-19 prevention, it has 1% Sodium hypochlorite. From mask to gloves to PPE, all are protective barriers. Other measures: Quarantine, mandatory screening of recent travel history from a corona affected region, with the countries trying hard to recover the loss from the pandemic. Then recently WHO says that pandemic is from over as daily cases hit a record high with the countries trying hard to recover the loss from the pandemic & New Zealand ends and it's COVID free.

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INTRODUCTION

"Prevention is better than cure" best fits the current situation of Coronavirus infectious disease pandemic. As we know, Covid-19 has no cure or any vaccine, treatment is mostly symptomatic, and hence prevention of transmission remains the primary aim at curbing the spread and limiting the morbidity. Coronavirus spreads majorly through air droplets and surface contaminations, focusing at measures that help stop these modes of spread is of utmost importance. Responsibility of preventing the transmission lies in every individuals' hand, which are wearing masks, maintaining hand hygiene, maintaining social distancing, Sanitizing/ disinfecting

frequently touched surfaces, avoiding travel and following government's guidelines. One of the essential aspects of health care reform is it initiates to highlight the concept of prevention. The Indian government took proactive steps on the 24th of March 2020, by implementing a complete strict lockdown for a whole three weeks. It was the most significant mass movement restriction done by a country to fight Coronavirus spread. The main aim behind this Mass movement restriction was to flatten the curve of Covid-19 cases and decreasing the burden, which was going to come over the health care system (WHO Western Pacific, 2020).

Measures Of Preventing Covid-19 Transmission

Measures of preventing Covid-19 transmission means stopping or limiting the contraction of Coronavirus infection from one individual to another or from one region to another.Covid-19 originated from Wuhan province of China and became pandemic; the virus belongs to the Human Coronavirus family and is named SEVERE ACUTE RESPIRATORY SYNDROME WITH CORONAVIRUS 2 or Covid-19. It spreads through airborne droplets, and surface contamination and simple measures can prevent the transmission. (Antonovics, 2017).

Figure 3: Arogya Setu App and Covid 19 Social Distancing

Figure 1: Primary Care Centers

Figure 2: Arogya Setu App and Covid 19 Social Distancing

Figure 4: Handwashing Steps

Figure 5: How Long The New Coronavirus Can Live On Surfaces

Figure 6: 6pc Kit And How To Wear A Medical Mask Safely

Figure 7: 6pc Kit and How To Wear A Medical Mask Safely

Figure 8: Steps to Put on and Off Ppe

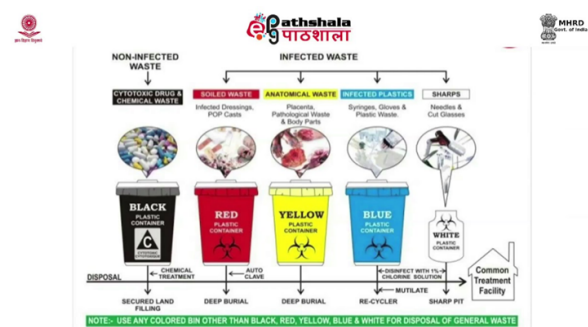**Figure 9: Steps to Put on and off Ppe**

Figure 10: Infected Waste

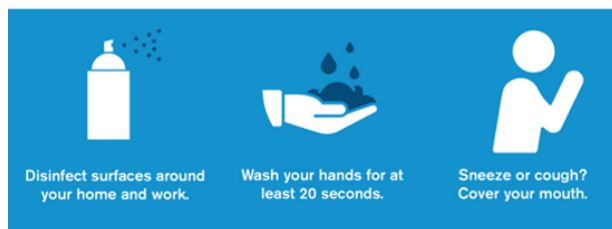**Figure 11: Covid 19 Handle With Care and Coronavirus Safety**

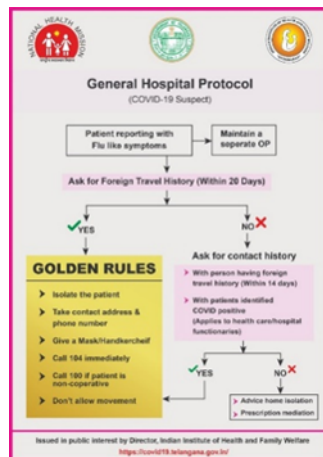**Figure 12: Covid 19 Handle With Care and Coronavirus Safety**

Figure 13: General Hospital Protocol

The levels of prevention can be

Monitoring And Controlling Measure

Case detection-testing-isolation or quarantine (García-Basteiro *et al.*, 2020).

Health Care System Measurements

Designated hospital for COVID patient-clinical management in primary care-health care services-prevention and control guidelines-emergency service.

Community And Social Measures

At schools, workplaces, theatre, public places, malls, parks, hospitals. Social distancing lockdown in high-risk areas. Phone monitoring with AROGYA SETU APP (Güner *et al.*, 2020).

Personal Care

Handwashing-sanitizing and disinfecting-having immunity booster drinks and taking proper diet-wearing personal protective gears to prevent transmission on community levels like masks, gloves, goggles, hair cover, face shield, shoe cover, body cover and maintaining personal hygiene.

Border Control Measure

Border restrictions-at inter-district level-at inter-state level-at international levels-temperature screening-travel advisories-special pass or E-pass provided for travelling.

Waste Management

To prevent prevention from spread through waste products like- masks, gloves. At community level-at hospital level.

Mortuary Management

Laws And Guidelines should be generated and imposed to prevent.

Network Analysis of covid19 in districts, states, Maharashtra, India, the world should be maintained to follow up on confirmed cases, recovery rates, death rates.-different modes used for prediction of covid-19 spread by researchers for developing countries.

Hospital Protocol for handling patients-for nurses, staff, students-training health care professionals-upgrading building and capacity for COVID patients.

Monitoring and Controlling Measure-

Case detection-testing-isolation or quarantine

Case Detection

National Centre for Disease Control under Indian Directorate General of Health Services MOHFW, Govt. of India, New Delhi, updated case definitions.

Suspected Case

Any individual with fever and any of the sign/symptom of a respiratory disease like breathlessness, cough and a history of travel to or from an area in a country or territory with local transmission of COVID-19 disease 14 days before symptom onset.

Lab Confirmed Cases

Nasopharyngeal does laboratory confirmation of COVID-19 infection, and Oropharyngeal swab tested by real-time PCR and is not done based on whether

the person has symptoms or not. Close contact with the infected patient is the inclusion criteria. Affected countries instituted various case-finding activities using WHO case definition or a modified version, Malaysia, South Korea & UK incorporated COVID-19 testing for SAR1 & IL1 (influenza-like illness) surveillance (Abraham *et al.*, 2020).

Testing

NCDC (National Centre for Disease Control) Delhi has a testing facility with an RT-PCR Corona kit. (NIV) National Institute of Virology, Pune has testing facilities all across India, increasing the number of laboratories (Abraham *et al.*, 2020). Apart from RT-PCR National Institute of Virology (NIV), also introduced serology based rapid detection test like Enzyme-Linked Immunosorbents Assay (ELISA) with a capacity to give results within two and a half hours with 90 samples being processed at a time.-Initially testing was done only for those who have Travel History or High-risk groups or those who had contact with covid-19 lab-confirmed case. From the 20th of March, the government decided to take the cases of pneumonia, regardless there is travel or contact, so it shows a sharp rise in cases in April (Burki, 2020).

Isolation and Quarantine

ISOLATION is keeping the infected individual in complete isolation away from non-infected individuals until the infected person becomes clear of coronavirus. QUARANTINE means keeping any individual with a history of travel from the affected area for a period more than the maximum incubation period, in case of COVID-19 it is 14 days (Wilder-Smith and Freedman, 2020). The incubation period is the duration from the point of contact until the appearance of signs/ symptoms, so it is necessary to quarantine for a duration more than the maximum incubation period because it will ensure proper delineation between infected and non-infected individuals.-The Quarantine facility though is an ancient concept and for many years as part of Airport security System. Still, now the whole world is experiencing the same, trapped in our house with the fear of contracting the infectious virus and bringing it home and putting the life of the loved ones at risk (Zhu *et al.*, 2020).Yet being quarantined is better than being in an ICU and having an endotracheal tube placed in your throat (Rothe *et al.*, 2019).

Health Care System Measurements

Designated hospital for COVID patients should be authorized to prevent transmission of COVID from patients to patients who are not suffering from COVID and to prevent transmission at community levels. Zone wise hospitals should be allotted in different areas to cover maximum cases coverage.

Health care services should be upgraded to manage the crisis in a pandemic situation. Increase number of testing, increase testing centres, upgrade the hospital beds, ventilators, ICU, train the health care professionals for the pandemic crisis, the hospital should accommodate emergency patients only in the hospital to prevent, the transmission of disease from COVID patients to non-COVID patients, the hospital should have isolation wards, quarantine centres, lab-testing centres, emergency services should be given to patients who are not suffering from COVID (Ferrara and Albano, 2020).

*Clinical management in primary care cent*re (Figure 1) Has helped us to know about primary health centres like the family physician, health officers, midwives, registered nurses, community pharmacist, social workers, health promoters. All should take sufficient precautions at their level to prevent transmission and should spread the right information in villages to prevent spreading of wrong information in the community and to avoid the generation of panic mode. They should inform in government allotted hospital if any suspected case is detected as soon as possible, and should be isolated to break the chain of virus transmission in the community (Garg *et al.*, 2020).

Community And Social Measures

At school, colleges, workplaces, theatre, public places, malls, parks, hospital, parties, funeral, social events or gathering, wedding, tourist places, markets, shops, restaurants (Güner *et al.*, 2020). Maintaining social distancing wherever you go, with masks compulsory on, is made a new norm to prevent community-level transmission. Time limits should be given to open shops, and social distancing should be maintained (Figure 3). Help us to know about maintaining the protocol of social distancing helps us to reduce the spread of infection. Minimum members should be allowed in social gatherings like weddings of 50 people and funerals of 20 people. It should be allowed keeping in mind that everyone is wearing their masks and have sanitizers with them, and maintaining proper distance with each other. AROGYA SETU APP (Figure 2) helps us to know the features of the app. must be downloaded in every mobile phone, Bluetooth enabled proximity indication used to detect any contact with either laboratory-confirmed/high-risk individual by this application, it is an application developed and promoted by govt. Of India and gets updated on covid-19 cases zone wise daily. Toll-free 24 x 7 All India National Helpline Number for COVID-19 is

1075 and 1800-112-545 (Hense *et al.*, 2020).

Personal Measurements

Handwashing

Prevention starts from the individual level and goes to the social and international level (UNICEF India, 2020). At individual level personal hand hygiene, frequent hand wash with Soap for 20 seconds with proper handwashing steps given by WHO (Publishing, 2020).

WHO handwashing protocol (Figure 4) shows that (WHO, 2020a) has helped us to reduce the spread of infection.

Sanitizing / Disinfecting

Materials, which are getting exposed to the environment. OUTDOOR CARE- cars, gates, shops, lifts, public places, cinemas, markets, hospitals should be sanitized daily 3 to 4 times a day to prevent transmission from outdoors to indoors (Iftikhar, 2020).

Indoor Care

whatever products are coming from outside to inside the home should be perfectly sanitized before entering the home, to prevent transmission of disease. Grocery and vegetables if not sanitized then should be kept under sun for at least 20-30 min to kill the virus. Preventing the diseases from the spread (Figure 5) help us to know how long the new coronavirus can live on surfaces, by sanitizing and using disinfectants.

Immunity Booster And Proper Diet

A good immunity ensures better combat with COVID-19 and Immunity boosting is the key to active intervention against coronavirus (Nghiem *et al.*, 2020). Therefore, to make our immune system strong, different lifestyle changes can be adapted. Early to bed early to rise, proper 6-7 hrs. Sleep should be taken. Proper 20min daily workout should be done to boost your immunity, like yoga, Zumba, different forms of exercises, to keep your mind and health both fit. Herbal tea/hot water/turmeric-milk drinks should be consumed 3-4 times a day to boost your immunity and to fight against any virus attack. Taking PROPER DIET, include protein, fibres and carbohydrates in proper proportion according to daily requirements as per the body requirements. Consume extra supplements in your diet to help overcome the deficiencies in the body like vitamin c tablets, vitamin D, multivitamins. Consume fruits and vegetables, which are rich in vitamin C to boost your immunity, and consume dry fruits and dates. STEAM should be taken through inhalational routes, (virus or bacteria colonize in the intranasal cavity and from there can travel downwards through pharynx and larynx towards lungs.) so to prevent this transmission steam plays an important role, and heat kills the virus present in the intranasal cavity (Jayawardena *et al.*, 2020).

Personal Protective Gears/Equipments

(Figure 6) helped us to know about what is included in PPE. It includes protective clothing which covers the body from getting exposed to the virus, helmets, goggles, gloves, facemask, (Figure 7) includes how to wear the mask with do's and don'ts, hair cover, shoes cover (WHO, 2020b).

It is the social responsibility of every individual to help stop the spread of Covid-19, in coordination with the government and following the policies planned to stop Coronavirus infection. Key points advertised by govt. of India are

1) Maintaining Social distancing of 2 feet.

2) Frequent hand washing.

3) Consulting a doctor when symptoms like fever, cough and breathlessness appear.

4) Lockdown of the affected areas, providing institutional or home quarantine for 14 days, i.e. maximum incubation period of the virus.

5) Avoiding social gathering.

6) Use of Application like Arogya Setu App.

(Organization, 2020) For preventing International spread, every traveller must be quarantined for 14 days and screened for COVID infection, more the number of screening more will be the effectiveness in identifying the Corona infected cases and more will be the contact tracing. Singapore was one of the worst affected countries by a coronavirus. Still, they have controlled its increasing cases by following the above steps and effectively Contact tracing and aggressive management of infected cases.

Screening of Suspected cases is required to detect early and restrict the possible spread; screening methods like Temperature Screening, Swab Sampling, Clinical examinations are mostly used. Temperature screening may not be an effective way as suspected cases may be in the incubation period, and symptoms like fever, cough,breathlessness may not be obvious (Steps to put on personal protective equipment (PPE) , 2020). Figures 8 and 9 help us to know about the steps to PUT ON PPE including coverall and steps to TAKE OFF PPE including coverall.

Border Control Measures

AIM is to prevent the spread of the virus from one area to another. Measures include; Restricting movements locally and staying at home, Restricting

movements inter-district, interstate, international and offering guidelines regarding travelling borders. A SCREENING CENTRE should be made at every border, airport, bus stand, road toll, railway stations, and BODY TEMPERATURE and TRAVEL HISTORY should be asked, and history of any contact with covid-19 patients should be asked, E-PASS or special passes are provided to people to travel borders to avoid the spread of the virus from one region to another. If found misusing this pass punishment is there for it (WHO, 2020).

Waste Management

Proper disposing of personal protective equipment is important to prevent transmission of disease from it. Mask, gloves and other gears should be disinfectant first and then throw it in the garbage bin in a bag. (Figure 10) help us to know in which colour box which infected waste should be discarded. Do not throw it on the streets as this can transmit disease on a community level and can infect others (Datta et al., 2018).

Mortuary Management

With the increasing number of active cases, there is also an increase in the number of deceased cases. Management of bodies of the deceased patients requires -Proper Labelling of biohazard risk of the deceased patient. Respecting the deceased and following the preferred method of burial or cremation. (Figure 11) helps us to know how to handle the bodies of COVID-19 patients. Complete Personal Protective Equipment for the Members involved in the Transport, carrying and burial or cremation procedure as they are directly in contact with the infected deceased patient. (Figure 12) helps us to prevent the spread by Sanitization Technique should be taught to all those working in the line of Mortuary care (Pan American Health Organization, 2020).

Laws and Guidelines Related to Covid-19

Laws and guidelines help manage conditions like Pandemic, Disasters, Natural Calamities, etc. Fighting an Invisible enemy requires strict application of law and obedience towards following them. Each one of the individuals is a warrior in this fight, and to be a great warrior in hard times like this, maintenance of law is of utmost importance. There are various laws related to quarantine, related to avoiding the spread of infection, Act related to the management of the disasters, Criminal Procedure code which describes the punishment for the defaulter who does not follow the rules (Lloyd Law College, 2020).

Following Laws About the COVID-19

There is a law to avoid the spread of infectious disease which prohibits any negligent act which will lead to the spread infection and may put one's life in risk. It is covered under Section 269 if IPC (Indian Penal Code) 1860. Punishment includes imprisonment/fine or can be both. The law related to the quarantine is covered under Section 271 of IPC (Indian Penal Code) 1860, which is related to the disobedience of quarantine related rule. Punishment includes imposing imprisonment or a fine or both. The government can take special measure and put new rule and regulation; the Epidemic Disease Act explains this.

Network Analysis of Covid 19

Network Analysis of covid19 in districts, states, Maharashtra, India, the world should be maintained to follow up on confirmed cases, recovery rates, death rates. Different modes used for prediction of covid-19 spread by researchers for developing countries (Wang et al., 2020). It's essential to keep track of records to see whether the graph is flattening or not, to control the spread of COVID transmission. Every single case is important in detecting the origin of the virus. Arogya setu app helps in maintaining the network analysis around the country, and it keeps you updated about the current scenario of the situation (Yum, 2020).

Hospital Protocol

Hospital Protocol for handling patients or nurses, staff, students training health care professionals General protocol is necessary to protect staff from direct exposure to covid-19 undetected cases, which can spread infection more. (Figure 13), (COVID Protocols, 2020) helps us to know about general hospital protocol about their golden rules. This can prevent transmission from one patient to another through doctors, nurses, and other staff.

CONCLUSION

As we know, COVID 19 has no specific treatment. So it's crucial to stop the spread in the society, from the health care system to monitoring and controlling measures. Health care system includes hospital protocols and primary health care management with the community and social measures. The critical points in preventing the spread of the diseases are regularly testing and isolation and quarantine. Personal measures like hand washing and sanitizing with immunity booster and proper diet maintaining social distancing. This can help to reduce the cases and maintain the protocol with law and guidelines that are being issued by the government in India.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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