

COVID-19 CORONA VIRUS PANDEMIC: Challenges and Managerial Strategies for Hospital as Isolation Center with special reference to Jagadguru Dattatray Hospital & Research Center, Indore.

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Abstract: - SARS CoV-2 i.e. Severe Acute Respiratory Syndrome Corona Virus-2 is the cause for spread of contagious COVID-19 (Corona Virus Disease-2019) in the world. According to resources, bats are the main source for SARS-CoV-2 communication, although the virus might have jumped from another transitional host to humans. COVID-19 was first diagnosed in Wuhan, China during end of December 2019 and has since increased progressively resulting in the current corona virus pandemic. The first case of COVID-19 in India was observed on 30th January 2020. Whereas the first case of COVID-19 in Indore (MP) was reported on 23rd March 2020 and since then it is increasing rapidly resulting in scores of casualties. Before the arrival of pandemic, Indore Administrative Department, Municipal Corporation, Health Department in co-operation with private hospitals were prepared to face the change. Jagadguru Dattatray Hospital & Research Center, Indore was one of the CDCP (Center for Disease Control & Prevention) and Isolation Centers in Indore. This paper highlights the challenges and strategies adopted by a hospital as an isolation center to fight against a world spread pandemic i.e. COVID-19.

Keywords: Isolation, Pandemic, Quarantine, Surveillance, Syndrome.

I. INTRODUCTION

COVID-19 is a pulmonary area contagion caused by novel corona virus, first recognized in Wuhan, China in end of 2019. According to scientists, it is a novel type of corona virus different from those found earlier and very much close to the family of SARS. WHO in collaboration with experts, Member States and other countries (Situation Report-32, Feb-2020) tried to identify gaps and research priorities for the control of COVID-19, and provide advice to hospitals and individuals on prevention measures. It also prepared some additional guidelines on how hospitals and medical institutions to take necessary actions under disastrous situations. From the look of earlier eruption of allied corona viruses, such as the Severe Acute Respiratory Syndrome corona virus (SARS-CoV) and Middle East respiratory syndrome corona virus (MERS-CoV) the diffusion via food consumption is nil. Nevertheless, there was certain concern that expresses the probability of observing these viruses on raw foods mainly of animal origin.

Many countries, hospitals and medical research teams investigated to evaluate the viability and survival time of SARS-CoV-2. In general, corona viruses are very stable in a frozen state and shown survival for up to two years at -20°C . According to studies, earlier versions of these viruses can endure on diverse surfaces for many days depending on environmental temperature, humidity and light. At a temperature of 4°C , MERS-CoV can stay alive for up to 72 hours. Evidences show that, this virus appears to be firm at low temperatures for a particular period of time. Corona viruses are also susceptible to normal cooking temperatures (70°C). Although food hygiene and food safety can prevent the transmission of viruses through food.

II. LITERATURE REVIEW

WHO COVID-19 Situation Report-32 published on 21st February 2020 states that, they have developed certain protocols for medical institutions and hospitals to investigate early cases. These protocols are mainly provided to recognize the important features relating to the first cases of COVID-19 found in any particular individual affected country. It informs the world about development and updates of public health and also reduces the possible reach and impact of contamination.

Agarwal et. al. (Feb-2020) revealed that, “To prepare the hospital facility under current COVID-19 situation and its reach in India needs requirement for preparing fully operational and committed health facilities. It is the essential that such amenities are kept always ready during such tough periods for education of health professionals and to administer cases of multi-drug resistant and hard-to-treat pathogens. It also describes fundamentals for design of such unit (e.g., room, infection control, waste

clearance, safety of healthcare workers etc.) which can be adapted.”

A European agency ECDPC, Stockholm in their report published on Feb-2020 has provided a checklist to the hospitals for preparing and managing the COVID-19 patients. Elements to be assessed include (i) establishment of a core team (ii) human, material and facility capacity (iii) communication and data protection (iv) hand hygiene, personal protective equipment (PPE) and waste management and (v) patient placement, moving of the patients in the facility, and visitor access.”

According to Wang D. (Jan-2020), “a hospital facility must be a self-quarantine premise having limited contact. Basic requirements must include: safe water supply; appropriate housekeeping; adequate bed space; proper hand washing facilities; adequate ventilation for isolation rooms, clean doctors’ chamber and procedure rooms; proper isolation facilities and regulated strict patient flow to minimize exposure of highly risky patients; careful safety measures to control rodents, pests and suitable waste management facilities.”

Arora. M, (2012) in his paper mentioned that, “a well-equipped dedicated hospital facility (DHF) to deal with these cases must have adequate protections for healthcare workers and patients. Critical care and humane approach to acutely ill patients are important for epidemic control. While in India, the case of the COVID is in doubt, setting up of such units is important from the perspective of future epidemics due to hazardous pathogens and other viruses. Such isolation wards can be used for training of physicians and nursing staff during inter epidemic period.”

III. OBJECTIVES OF THE STUDY

1. To study the various issues regarding

preparedness of JDHRC, Indore as isolation center for COVID-19 cases.

2. To identify the strategies adopted and facilities provided by JDHRC, Indore to fulfill government guidelines and expectations under COVID-19 situation.

IV. ISSUES OR CHALLENGES FACED

As per the instructions from Indian Council of Medical Research (ICMR), Indian Medical Association (IMA) and Ministry of Health & Family Welfare (MH&FW), a converted hospital must crucially follow government protocols. The challenges or issues faced by Jagadguru Dattatray Hospital & Research Center during the preparation of isolation center were:

- Non-essential elective surgeries should be postponed only after the advice of specialist doctor.
- Create a facility that provides minimum 150 beds within 03 days and the beds must be set as per the guidelines.
- Hospital to arrange additional resources including sanitizers, soaps, fly catchers, mosquito repellents etc. Masks, gloves and personal protection equipment will be provided by government hospital.
- Hospital to ensure ventilators and oxygen masks.
- To have properly skilled manpower and nursing staff for ventilator/ ICU.
- Discharge the former patients as early as possible while, further new admissions (other than COVID) are to be restricted.
- Staff and patients to be educated about cough etiquette, suitable use of masks, gloves and PPE kits.

- Ensure social distancing in their premises.
- Having J D College of Nursing and J D College of Pharmacy in the same premises, all classes, practical, ongoing exams work to be rescheduled after 31.03.2020.
- To maintain regular communication with the students and teachers through mails or social media and keep them well-versed so as not to create anxiety. (As per the instructions from respective universities and recognizing Authorities.)
- Other patients to be advised avoid routine visits to the OPD.
- OPDs to be arranged such that patients showing flu like symptoms are attended separately.

V. STRATEGIES ADOPTED

A. Isolation Rooms

An isolation room has been identified within the emergency room. This room will be used to isolate patients who raise any doubt of COVID-19 infection. As, it is ideal to have separate rooms for suspected and confirmed cases. Within the hospital, two units should be built. The first one will be an isolation space for laboratory confirmed cases.

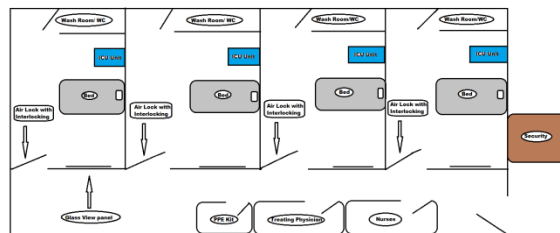


Fig (i): - Isolation space for confirmed cases.

Multiple patients can't be kept in the same room. Separate nursing staff room, physician's chamber and protective isolation facility will be provided to prevent infections. The second unit is made for

suspected cases that do not show any symptoms of infection; mainly include family and hospital contacts.

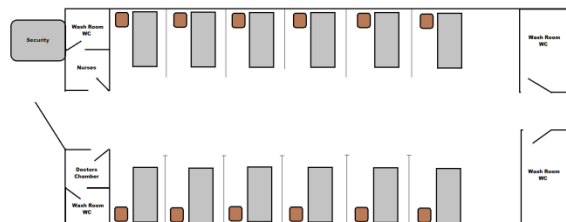


Fig (ii): - Multi-bedded isolation space

These are suspected to have potential contact with confirmed cases but await laboratory confirmation. This room will be a multi-bedded isolation room and include beds distancing at least 1 meter from each other.

B. Staff

Experienced physicians and full time residential doctors (on duty govt. doctors) are identified for the units. System is developed to ensure that a rapid response team (RRT) is always available on call. Intensive care unit (ICU) nursing staff (trained govt. nurses), paramedical staff (for laboratories) and housekeeping staff are also deputed. Precautions are taken to minimize healthcare worker (HCW) exposure. The attending staff must be adequately trained in prevention and control of infectious disease.

C. Food

Food will be served on disposable crockery. Essentially the non-disposable crockery and cooking utensils must be washed with hot water (70°C) and detergent, properly rinsed and dried. If possible, eating utensils should be cleaned in a dishwasher using a hot water cycle. A proper record of any patient or hospital staff entering the canteen should be maintained. Entry to the preparation room must be completely prohibited.

D. Standard Hygiene and PPE Usage

Precautions will be followed by all workers, for all patients and at all times. It includes personal hygiene practices, proper disposal of masks, hand gloves and PPE kits. Maintaining respiratory hygiene and cough etiquettes is also important. All health care works involved should have a proper knowledge of the donning, doffing and disposal of PPE kits. Latex-free gloves should be used by all workers. Respiratory hygiene and cough etiquette must be followed.

E. Ventilation and Negative Pressure Room

The risk of infection in a room can be minimized by proper ventilation through: dilution and removal. Fresh air reduces the contaminants present in the room, and thus reduces the chances of inhalation of infectious droplets.

Negative pressure rooms are those which have mechanical ventilation systems, which maintain the atmospheric pressure of isolation room comparatively lower than the pressure of outside area. As we know air naturally flows from high pressure area to low pressure area, thus allowing fresh air to flow into the isolation room in one direction only. It prevents unhygienic air from the isolation room to escape outwards. The entry room should have a small leakage. Clean air entering the room should flow through the doctors' chamber and nursing staff room and then circulates in isolation room area. The air from isolation room should be allowed to throw out *via* an exhaust fan or a high-efficiency mechanical particulate air filter.

F. Patient Transport and Stay

The movement of patients must be restricted within the hospital premises. If necessary, patients must wear either medical masks or particulate respirators. Separate emergency doors were used for shifting patients. Complete disinfection and sanitization of corridor is seen with 70 percent ethanol and

povidone-iodine solution or 2.5 per cent glutaraldehyde. In isolation rooms dusting is avoided; floors should not be carpeted.

VI. CONCLUSION

Protocols were prepared by WHO and other governmental medical agencies all over the world considering the worst case scenario under standard circumstances. Those were equal and rigid to follow for all. To counter a rapidly emerging outbreaks of a highly contagious disease like COVID-19; infrastructure development, arrangement of additional equipments, medical resources and to assemble the trained health care workers were needed. To educate staff, patients and other workers about etiquettes, maintaining distance, proper usage of mask, gloves and PPE kit was a challenging task. Still most of the issues were tried to get sorted. Separate isolation rooms were designed as per need for confirmed and suspected cases. Hygienic fooding conditions were tried to maintain. Patients and visitors record were carried over online ERP system. Being a new concept to local hospital, preparation of proper negative pressure rooms was a bit hard task. Still, this overall project not only helps in limiting the loss of lives, but also breaks the chain of transmission by excluding the infected patients from the general population.

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