

Caring Cancer Patients While Living With COVID-19: An Experience of a Tertiary Cancer Care Center

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Scope of the Article

The aim of this article is to share the experiences of a tertiary cancer care center on how it has prepared to provide cancer care in the middle of COVID-19 outbreak in Nepal. It deals with the key elements of preparedness plan and implementation strategies from the beginning of the spread of coronavirus to recent days. Timely planning and preparedness, strong infection prevention and control (IPC) team, team building and proper resources management are crucial for successful management of a cancer comprehensive cancer center during unusual pandemic situation.

ABSTRACT

COVID-19 has emerged as a serious public health crisis of 21st century affecting millions of people around the world. First identified in Wuhan China, COVID-19 has spread globally claiming millions of human life and suffering. The Government of Nepal (GoN) has accelerated control measures through mass media, laboratory testing, quarantine, isolation and treatment of COVID patients in designated hospitals. With rapid spread of COVID-19, the government owned as well as the private hospitals and health institutions across the nation face a great challenge to contain the spread of the novel virus. Nepal Cancer Hospital and Research Center (NCHRC) has been managing uninterrupted treatment services to cancer patients since the beginning of spread of COVID-19 in Nepal. Early planning and preparedness has been crucial to ensure patient care in the midst of COVID-19 pandemic.

Keywords: Quarantine, Isolation, COVID-19, Cancer

Introduction

The COVID-19 has emerged as a serious humanitarian crisis of 21st century. Probably, a 55-year-old man from Wuhan, the Hubei province of China might be the first case of SARS-CoV-2 known as novel corona virus disease (nCOVID-19), who may have contracted the virus as early as 17 November 2019.¹ More cases were reported from Wuhan in January and early in 2020. With rise of number of cases in China, it started spreading to neighboring countries and later throughout the world in short span of time.² On 23 January, Nepal reported the first case of

COVID-19 in a 32-year's man, who had returned from Wuhan China³. Starting third week of April and later in May 2020, sporadic cases started occurring especially when large number of migrant workers returned from several countries by air and land routes and crossing the open borders of the country.⁴ The Government of Nepal (GoN) adopted preventive and control measures such as; tightening movement across the borders, suspension of national and international flights, nationwide lockdowns, and closure of schools, universities and business enterprises including celebration of national festivals.

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The public education is emphasized to comply with maintaining physical distance, proper wearing of masks and practicing personal hygiene including frequent hand wash and avoidance of social and religious gathering. Upsurge of COVID-19 in low-income country like ours has affected in all sectors of public life including health. There is not much information to answer some of the pertinent questions such as for how long this crisis will last? What is the animal that served as a reservoir of the new corona virus? The scientific communities are still in the process of learning to understand more about the characteristics of this novel SARS-CoV-2. However, it is assumed that this virus will continue to infect people as long as a protective level of antibody against the virus is not developed (herd immunity).⁵ And, in absence of an effective vaccine and specific treatment, we need to face the challenges and protect ourselves and learn to live with COVID-19.

Health Impact of COVID-19

The continuing spread of COVID-19 has led to serious health problems such as depression, anxiety, suicidal deaths and several other health consequences. People who get infected feel terrified when their PCR test reports are positive. The epidemic has created a situation of insecurity and fear especially among the elderly and the patients with chronic diseases and COVID patients being discriminated by the society.⁶ More importantly, the delay or drop outs of treatment of the follow up and newly diagnosed cancer patients has been a matter of serious concern.

In this article we attempt to describe about the preparedness of Nepal Cancer Hospital and Research Center (NCHRC) and its unconventional arrangements that started from the scratch since the initial periods of COVID-19 pandemics. Several important decisions are being made, which are exemplary "Key to Success". NCHRC, a tertiary cancer care center has been treating more than 3,000 cancer patients annually. Established in 2015, this cancer center is a family of 650 staff.

In changing scenario of COVID-19, major challenges encountered are patient and staff protection from COVID-19. The nationwide spread and potential threat of COVID-19 drew the attention of the governing board of directors, NCHRC. To manage this unusual situation, the governing board delegated all administrative and

managerial powers to the chairman of the hospital authorizing him to make necessary decisions and execute them to prevent and control COVID-19 in the hospital and treatment of cancer patients in safe environment. In order to manage clinical services in an efficient way, the executive chairman formed a team of cancer experts and administrators named as "High Level-Multi Disciplinary Team" (HL-MDT) comprising department chiefs and administrators. The main idea being working as a team as in "War Room", where quick decisions are made for action to run services smoothly. In HL-MDT, the coordinator has main role to play as a "commander" for the operation of clinical services in a coordinated manner and report directly to the executive chairman NCHRC. The coordinator has been authorized to take necessary decisions in coordination with the IPC team, clinical department and unit chiefs to implement the action plans of the hospital and reports directly to the executive chairman.

Formation of "High Level-Multi Disciplinary Team" (HL-MDT)

Following this, several activities addressing the short-term, medium-term and long-term preparedness plans were worked out.

Situation Analysis/Need Assessment

With escalation of COVID situation, there are reluctances among cancer patients to attend hospitals because of fear of contracting coronavirus infection. Most of the cancer patients attend in advance stages, whereas patients in early stage postpone their visits to hospitals. This situation is expected to result in more serious conditions leading advancement of cancer. The need assessment identified following important areas which were addressed accordingly are:

- Awareness, education and training of staff to handle this unusual situation including proper cleaning methods, sanitization, hand wash and use of Personal Protective Equipment (PPE).
- Rearrangement of infrastructures, space, work force and equipment for isolation of patients and staff.
- Management of human resources (HR), staff protection, training, motivation, communication and building team spirit.
- Ensuring treatment of newly diagnosed, cancer patients in active treatment and follow up.
- Maintaining supply chain of essential medicines,

anti-neoplastic drugs, medical items, masks, PPE, oxygen and other consumables including safe food for patients and staff.

- Ensuring administrative support, repair and maintenance of equipment, spare parts and resource mobilization.

By end of January 2020, the hospital had reviewed the inventory and medical store for stock piling. Bulk purchases of all the medical items and consumables required with the provision of maintaining at least 20% of buffer stock. Arrangements were made for supply of safe hygienic food for the patients and staff through hospital cafeteria supervised by a dietician. The cancer education programs, training activities, seminars, conferences, and cancer screening as part of preventive oncology programs are put on hold. Arrangements were made for the deployment of essential staff in every service departments with clear terms of reference (TOR). The preexisting infection prevention and control (IPC) guideline of the hospital has been extensively revised based on international and ministry of health and population's guidelines. All the service departments and units adapted it in their standard operating procedures (SOPs) for practicing infection prevention and control procedures in context of COVID-19. While doing these arrangements, the quality of cancer care has been put in the center.

Infection Prevention and Control (IPC) Measures Being Undertaken

The rapid spread of COVID-19 and probable setback of the epidemics especially in health sector has drawn attention of the outbreak preparedness and response team (OPRT) members in this center as early as mid-January soon after the first case of COVID-19 was reported outside China in Thailand⁷. One of the advantages this center has the OPRT, already experienced in the Bird Flu (Influenza A, H5N1) outbreak in Nepal in 2019. Rejuvenation of OPRT has contributed to better formulate and implement the infection prevention and control (IPC) guidelines. In order to assess the risk of COVID-19, NCHRC has organized several informal and formal meetings involving IPC- committee, OPRT members, clinicians, nurses and other staff of the hospital.

- Physical distancing: Maintaining at least 2 meter of distance between two persons having proper wearing of face masks. The revised IPC guideline has

considered physical distancing as the main strategy to prevent infection from coronavirus. Since the droplet could enter susceptible mucosal surface within a certain distance by talking, breathing, coughing and by sneezing, the droplet can spread to a distance of >1 meter.⁸ And therefore, physical distancing has been strongly recommended by IPC committee.

- Use of mask: The IPC guidelines recommends a N 95 mask primarily for doctors, nurses and health care workers who are directly involved in patient care and diagnostic procedures. Compulsory wearing of surgical masks for all staff, patients, attendants and visitors has been emphasized. The face mask serves as a physical barrier to limit droplet and airborne transmission of coronavirus in health care facilities as well as in community.⁸ As a crash activity, the hospital initiated in-house preparation of hand sanitizers (alcohol based) and three layered cotton masks in coordination with Lalitpur municipality in the month of February.
- Personal Protection Equipment (PPE): To be used by staff in Operation Theater (OT), Intensive care Unit (ICU), Respiratory Intensive Care Unit (RICU), health personnel involved in diagnostic services, interventional and aerosol generating procedures including oral and dental care units. Hands on training and demonstration on donning and doffing of Personal Protection Equipment (PPE) are being organized from time to time to all the staff.⁹
- Hospital disinfection and environmental sampling: Performed mapping of potential risk areas where microbes/viruses can lodge for frequent and regular cleaning and disinfection. The high-touch areas like door handles, railings, chairs, tables and staff duty stations recommended for hourly disinfection. The floor in reception areas, staircases, hospital wards, passage and lift to be disinfected every three hours and as per need based on IPC committee decisions. Immediate thorough cleaning and disinfection of spaces and items in contact with a suspected or confirmed COVID case has been crucial for preventing transmission through contact. The swabs collection from potential areas and places for culture and sensitivity tests as part of ongoing hospital's regular infection prevention and control program to prevent non-COVID organisms is continued. Adequate crisis management and risk

- Equipment and Instrument decontamination/ disinfection

Equipment and instruments used in wards, Intensive care Unit (ICU), Emergency (ER) and Operation Theater including sphygmomanometers, thermometers, pulse oximeters, stethoscope and thermal guns and other instruments to be used are immediately disinfected after each use. The central sterile supply department (CSSD) to be well taken care and monitored/supervised by IPC team and Quality department.

- To practice safety measures involving essential staff only while performing the procedures related to clinical examination, diagnostic and aerosol-generating procedures as well as treatment of suspected cases or a confirmed case of COVID-19.
- Hospital waste management: Proper management (collection, treatment and disposal) of hospital waste including residual food, sterilization of gowns, dresses, blankets, bed sheets, sharps and other materials.
- Crowd management: Gathering of visitors and hospital staff in lobbies, canteen, pharmacy, reception and other areas strictly prohibited.
- Outpatient and Day care services utilization:

All patients without history of fever, sore throat, dry cough, shortness of breath with negative contact and travel histories has access.

Patient admission and discharge guidelines:

- All patients without fever, sore throat, dry cough, shortness of breath, negative contact and travel histories and with a most recent negative RT-PCR test done within last 72 hours should be admitted. Patients can be discharged normally after treatment is complete and free from symptoms of COVID. In any other conditions with suspicion, a RT-PCR negative test report will be required.
- Admission of cancer patients who have had contracted coronavirus in the past and have recovered, must have history of isolation for at least two weeks from the last date of recovery of symptoms and a most recent negative RT-PCR test done at least 72 hours before admission. The patient without any symptoms can be discharged normally. In any other conditions, a RT-PCR negative test report will be required.
- Cancer patients with coronavirus infection will have to follow government guidelines for COVID treatment in specialized hospital(s). In exceptional

case requiring lifesaving interventions, the patient can be admitted in the isolation ward complying high level of IPC measures.

- Diagnostic services (Laboratory and Radiological): Patients should be symptom free and negative contact history for COVID-19. Depending upon the nature of the diagnostic services such as intervention radiological services, biopsy and other procedures, a negative RT-PCR will be required. Importantly, those providing these services are required to adhere with IPC protocols while handling specimens and performing tests.

Employee-Directed Initiatives

In order to protect staff from coronavirus infection and develop confidence in daily work, the hospital has come up with several employee-directed staff motivation programs as mentioned below:

- Staff information and communications has been established through proper authorized channels. Different ways of communication were practiced, such as viber groups, Zoom meetings, emails, through heads of department (HoDs), unit chiefs and telephone calls.
- Proper way of reporting to any person, media or government agencies has been established; the spokespersons being Executive Chairman and/or in his absence Medical Director of the hospital.
- Insurance scheme of 100,000 rupees if a staff contracts the coronavirus infection during duty hours. In case of COVID-19 infection or close contact with COVID-19 case while at work, the quarantine/isolation facilities, COVID testing and basic treatment facilities are supported.
- "Corona Champions" title is given to a responsible staff every day in rotation. This person looks after all the staff on duty in their respective department to follow proper IPC protocol of infection prevention and control.
- Staff training: Training of all categories of staff including doctors, nurses, technicians, housekeeping, administrative and support staff and security personnel. Such training programs are conducted in small groups periodically complying physical distancing, proper use of masks and hand hygiene. Demonstrations are done on donning and doffing of personal protection equipment (PPE). Emphasis is given in self-protection, hospital cleanliness and

disinfection, prevention of COVID-19 and hospital acquired infections.

- **Staff transportation:** Pick up and drop facilities to all duty staff that do not have personal transport are arranged nearest to their residence since the earliest days of COVID-19 crisis in Nepal. Overnight bus routes were rescheduled with proper sitting arrangements and literally, the number of vehicles and the routes were modified on a day to day basis on each route as per need.
- **Food and lodging:** Duty staffs are free of cost during travel restrictions and lockdown periods.
- **Staff Clinic:**
The hospital has managed a special staff clinic under a physician and a psychiatrist to support wellbeing of staff including mental health and burnouts.
- **Quarantine facilities:**
Arrangements are made for staff that come in contact with a suspected case or a COVID case in their families or elsewhere, and have fever, she/he first informs the immediate supervisor. Such staff are advised to attend the staff clinic and based on evaluation the staff may be quarantined until fit for joining regular duty based on IPC guidelines.

Patient-Directed Initiatives

Lobby Supervisor: In order to keep the patients and visitors well informed, the concept of "Lobby Supervisor" has been implemented. The supervisors remain stand-by in entry gate and hospital lobby to support following activities:

- Manage patient's entry in front gate by motivating and controlling unnecessary visitor.
- In case of conflict, manage them sensitively and or inform the hospital authority.

Fever Clinic

The main objective of the fever clinic has been screening of suspected and confirmed COVID patients as a preventive measure to protect cancer patients and the staff in the hospital. The clinic remains open from early morning 6am to 7pm evening every day except public holidays. It is managed by a team of doctors, nurses and support staff led by a chest physician. The fever clinic is well equipped facility with devices such as thermal guns, pulse oximeter masks, face shield, PPE, viral transport media (VTM) for swab collection, cold boxes for laboratory sample storage and transportation,

disinfectant solutions, hand sanitizers and other consumables, During off hours, patients are screened by duty doctors in the emergency (ER) unit in a separate area. All new and follow up cancer patients have to fill up an Identification Form (IF) before proceeding to fever clinic and entering the hospital. As this NCHRC is a comprehensive cancer care center, COVID cases will be managed in collaboration with specialized hospitals for COVID care. In dire need of cancer surgery or medical interventions, the cancer cases with COVID shall be managed according to IPC guidelines. All cancer patients in the hospital that are suspected or conformed COVID case are referred to Chest Physician who is in-charge of Respiratory Intensive Care Unit (RICU) and his team.

Operational Case Definitions:

NCHRC has adapted the operational case definitions developed by the Epidemiology and Disease Control Division (EDCD), Dept. of Health Services (DoHS) Nepal as below:

- A. Suspected Case: A patient with severe acute respiratory infection (fever, cough, dyspnea and requiring admission to hospital), AND with no other etiology that fully explains the clinical presentation, AND a history of travel or residence outside Nepal during the 14 days prior to symptom onset, OR a patient with any acute respiratory illness, AND at least one of the following during the 14 days prior to symptom onset:
 - a) Contact with a confirmed OR probable case of COVID-19, OR
 - b) Worked in or attended a health care facility where patients with confirmed or probable case of acute respiratory disease were being treated.
- B. Probable case: A suspected case from whom the test for coronavirus is found inconclusive OR is tested positive using a pan-coronavirus assay and without laboratory evidence of other respiratory pathogens.
- C. Confirmed case: A person with laboratory confirmed coronavirus (RT-PCR, virus isolation in culture), irrespective of clinical signs and symptoms.

Triage/Risk Categorization

In order to screen patients in the fever clinic, a triage system has been worked out by the IPC team and HL-MDT.

- **RED color:** High risk for corona transmission

(confirmed and probable cases)

- **Yellow color:** Some risk for transmission (suspected case requiring quarantine at least for 2 weeks).
- **Green color:** No risk. No apparent exposure to a COVID patient, absence of fever, cough, sore throat/SOB, and fatigue for last 2 weeks, no travel history and social visits.

Score -1 (GREEN) (g. Non COVID illness)	Score 1 to 5 (YELLOW)	Score >5 (RED) MUST be sent to secondary isolation
STEPS Treat as Non Covid illness. Standard Precautions are advised	STEPS: 1) For patients with A single score of >2 compulsory PCR test is advised with treatment at secondary isolation unit level service. 2) For patients with a cumulative score of >3 compulsory PCR test with treatment at a secondary isolation unit level service is advised at NCH. 3) All other Yellow patients are identified as Suspected Cases. a. Please refer to Handling Suspected patients	STEPS: 1) SEND PCR if positive refer to PCR (+) Clinical flow 2) if RDT positive refer to RDT (+) Clinical flow 3) if PCR report available but still suspicious please repeat. 4) if Repeat PCR negative admit to secondary isolation for confirmation via other modalities. (CT, Serum, XRAY, End, Clinical Exam.)

Handling Suspected Cases (Along with Standard Precautions):

- 1) Yellow labeled patients need proper guideline directed PPEs prior to being taken care of.
- 2) Limit exposure level events:
 - i) Exposure Level Events: <2m distance, >15 mins conversation, crowding, direct physical contact, direct care without designated PPEs.
- 3) Suspected Cases are strongly advised to reside in isolated cabins, isolation areas until their grading is downgraded upon re assessment by primary physician.
- 4) If not admitting be confirmed as green prior to visiting OPD, Day Care.

The patients and visitors with green stickers enter the hospital through a separate entry/exit door.

The front desk staff guides the patients for diagnostic services or OPD consultation or for admission. The IPC guidelines has implemented “one patient-one attendant” policy for the attendants/visitors and encouraged to remain the same attendant/visitors throughout the admission period of the patient. The HL-MDT in coordination with the IPC committee members and service departments facilitates for better implementation of the fever clinic, diagnostics and treatment services of the hospital. Established and maintained communication networks with public, stakeholders and the government as a crucial program for opinion makers and the media on how to describe the COVID-19 situation.¹⁰

Sample Collection for SARS COV-2 Detection for Confirmation of Diagnosis

A nasopharyngeal or oropharyngeal swab is collected safely and kept in a viral transport media (VTM) vial. The outer surface of the sample vial is decontaminated within the isolation room using an alcohol (70%) swab. The decontaminated vial is kept in a zip-lock bag. The vials are triple-packaged, labeled as biohazard and placed in the cold-chain box at 4°C. The form used for viral transport is filled with clearly mentioned contact

number of the patient. As soon as the specimens are collected, it is transported to the diagnostic laboratory for the test maintaining cold chain. While collecting the sample, the doctors and laboratory technician takes all the measures for protection including wearing N95 mask, face shield, cap, gown and gloves complying full IPC guidelines for the procedure.

Primary Isolation

The main objective of setting up a primary isolation facility has been to hold COVID-19 cases in a separate place outside the hospital in order to protect cancer patients in the hospital. A room in the ground floor of the hospital main building with separate entry/exit doors was developed with basic equipment, consumables and personal protection equipment. Staff are trained and deployed with a weekly duty roster circulated in all departments. The doctor in charge at the primary isolation is responsible to:

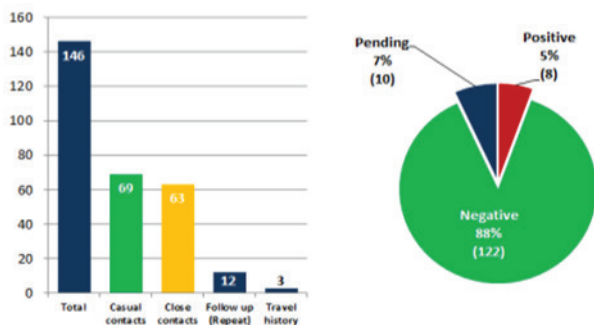
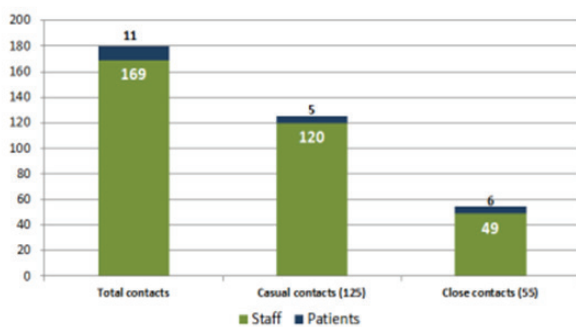
- Make sure that patient and the attendants/visitors wear well fitted proper mask. Counsel the patient and the attendants/visitors.
- Consult MD and Coordinator HL-MDT to refer the COVID patient to Patan COVID Hub Hospital, Lalitpur.
- Refer suspected cases to COVID dedicated hospital.
- When required collect naso/oropharyngeal swab with adequate personal protection measures to be transported to NPHL or government designated labs for PCR test.
- Disinfect the primary isolation room each time after the patient and the health care workers (HCWs) leaves the room.

Secondary Isolation (inside hospital)



The hospital has developed well equipped secondary isolation ward and a respiratory intensive care unit (RICU) led by chest physician and critical care specialists. The main aim is to treat all patients with breathing difficulties

including cancer patients suspected or diagnosed as COVID-19 in hospital wards before referring and transferring them to the hub hospital. The ward in-charge or the staff on duty informs the coordinator HL-MDT and the medical director about the incident and communication is set between the staff for transferring the case in the secondary isolation room. Efforts are made to involve as less staff as possible with PPE while shifting the COVID patient. Basically, COVID patients are referred to government-designated COVID hospitals however, if the patient is in dire need of RICU, he/she is shifted to isolation room for supportive care. The criteria for the patient to be discharged from the secondary isolation ward are complete resolution of symptoms and signs and negative RT-PCR test results for COVID performed according to IPC guidelines. The staffs that inadvertently come in contact and those involved in care without proper PPE are recorded for contact tracing and quarantining as recommended.

RT-PCR Tests Performed (n=146)

Contacts Traced (n=180)


Contact Tracing

Since COVID-19 can spread before symptoms occur or when no symptoms are present, case investigation and contact tracing activities must be swift and thorough.¹¹

Health staff that directly or indirectly came in contact with the COVID patients is recorded for quarantining for 14 days. The staff is quarantined and monitored daily for fever and other symptoms. A RT-PCR test is done on 5-7 days, and staff with negative reports joins regular duties.¹²

Clinical Services

The High Level-Multi Disciplinary Team organizes debriefing meetings with the service department/units frequently, and at times even twice a day for crisis management. The HL-MDT in coordination with the administration wing makes program changes time to time to meet patient needs and government directives. Recently, the ministry of health and population has implemented a general policy applicable to all hospitals in the country to allocate 20% of its beds for COVID care. The HL-MDT and hospital administration have been working on it. At NCHRC, the respiratory intensive care unit (RICU) is given the responsibility for the management of cancer patients with coronavirus infection before shifting to advanced care centers/hospitals where the patients get specialized treatment. The RICU is supported by Chest Physician, Cardiologist and critical care specialist doctors.

Medical Oncology Services

The department of medical oncology is concerned with the treatment of cancer patients not only in the hospital, but also at their homes. Until March 2020, when there were only a few COVID cases in Nepal, the medical oncology department could serve patients with various malignancies including hematological, pediatric cancers and others. Later, with deteriorating COVID situation in the country, the treatment services were curtailed due to frequent travel restrictions and lockdown. During these difficult times and when the risk of coronavirus infection was high, the department of medical oncology provided the OPD and inpatient services for emergency and semi-emergency cases only. Patients were also supported by home-based care, especially when reaching hospital had been difficult. Where possible, the IV chemotherapy was switched to oral with least immunosuppressive preparations. The regular follow up visits were rescheduled encouraging online consultations free of cost. The patients in dire need of treatment (emergency cases) were received and served following IPC guidelines.

Radiation Oncology Services

The Radiation Oncology (RO) department has plans to ensure continued radiation service. The radiation therapy (RT) has been prioritized based on category of the patients, the work flow, and the patient's follow up schedules.

Category of patients prioritized RT:

- Patients receiving External Beam Radiotherapy (EBRT) and Brachytherapy: patients with co-morbidities and elderly >Poor performance status >concurrent chemotherapy. Safety measures for staff, patient and the attendant before entering the RO department is ensured following IPC guidelines. Only one attendant/visitor for a patient is allowed.

Instructions for health staff: Physical distancing of at least 2 meters, proper use of masks and visor as well as hand-rub/washing after every procedure, and confinement to respective work places.

Instructions for patients and visitors: To make use of waiting lounge and physical distancing of at least 2 meters, use of hand-sanitizer and habit of hand washing every 2 hourly and as needed, Allowed only one patient inside the department, allotted treatment time to minimize waiting time.

Work flow in the department: Perform quality assurance (QA) of machine at 7 am with the participation of the physicist. All staff to follow IPC guidelines.

Disinfection and staff protection:

- PPEs for working staffs, especially Radiation Therapy Technicians (RTTs), nurse and attendee inside treatment bunker.
- Weekly follow-up and counseling services provided for symptom management, evaluation of disease status and side effects.
- Equipment, immobilization devices and machines which come in direct contact with patients are disinfected after each treatment.
- Working chairs, door handles/knobs, doors, table surfaces, floors, furniture (used by staff/patients/visitors) have to be cleaned every 2 hours and immediately where needed.

Depending upon urgency of treatment, Radiation Therapy (RT) services are planned. If the patient shows

signs and symptoms of COVID-19, RT is temporarily stopped and the patient is referred to the COVID Hub Hospital. The disinfection of the department including contact tracing and quarantining of all exposed staff is done according to IPC guidelines.

Follow up

Virtual consultation has been encouraged as much as possible.

- Patients who have just completed RT: Called after 3 months or any time if any side effect develops.
- Patients who completed RT <1 year: Follow up every 2 months or any time if needed.
- Patients who completed RT > 1 year: Follow up every 3 months or any time if needed.

Surgical Oncology Services

During initial period of lock down the surgical services had been limited to emergency and semi-urgent cases only. With prolonged situation of the coronavirus pandemic, limiting surgeries has not benefitted cancer patients. In consultation with HL-MDT, wide range of cancer surgeries (breast, gynecological, gastric, colorectal, head and neck, orthopedic, pediatrics, hepatobiliary, thoracic, renal and neurosurgery and others) has been resumed. The department provides services using three Operation Theaters in order to shorten long waiting time of the patients. It strictly follows the IPC guidelines of the hospital. The guidelines for conducting surgeries are as follows:

- Number of surgeries per day is based on patient load, and performed with separate sets of staff for each surgery.
- Assessment of blood requirement is done before hand because of shortage of blood in Blood Bank.
- All new patients undergoing surgery and or aerosol-generating procedures, a RT-PCR test is made mandatory.
- The patients need to be admitted 2-3 days prior to the surgery so that their temperature and health status can be assessed.
- The patient and patient party need to be informed about COVID-19 and risk of infection.
- Visitor control policy is based on IPC guidelines and allowed only with identity card (ID) with photo.
- Before surgery, the patient is temporarily isolated (from time of swab collection till time of result) in a separate ward.

- Health persons are trained to minimize in- out of staff to and from OT.
- All OT staff to use the N95 mask, face shield exclusively.
- TheAC and fans are disabled to prevent flow of aerosols in and out of OT.

Frozen Sections: Performed in limited numbers.

Endoscopy Services

All the staffs of the endoscopy unit have been appropriately trained and informed on the IPC guidelines for COVID-19. This includes the potential sources of contamination, hygiene and sanitation, correct use of PPE, interventions for high-risk or COVID-19 infected patients. The endoscopy unit complies with IPC guidelines for cleaning/sterilizing equipment and accessories after being used for endoscopic procedures. Pre-procedural assessment and risk stratification of any patient for symptoms of COVID-19 is done 1 day prior to endoscopy (by phone preferably) and on the day of endoscopy. For patients who are considered at high risk for COVID-19, separate pre- and post-endoscopy recovery areas are arranged. Washing of hands with soap and warm water (at least for 20 seconds) or use of alcohol-based hand rub, before and after interactions, after contact with potentially infectious sources, and before and after gowning has been practiced by all endoscopy unit personnel.

Intra-procedural risk management: Only essential staff allowed being present in endoscopy area. According to the patient's risk status, the PPE includes gloves, hairnet, protective eyewear (goggles or face shield), waterproof gowns, and respiratory protective equipment. Putting on and removal of PPE is done as recommended by IPC. Admitted patients who are considered to be at high risk or who are known to be positive for the COVID-19, endoscopic procedures has to be performed selectively only if medically indicated. In absence of negative-pressure rooms, endoscopic procedures needed to be performed in a dedicated room with adequate ventilation. Contaminated waste and endoscopic devices used for patients at high risk of or with suspected or confirmed COVID-19 need to be treated and disposed according to IPC guidelines.

Post-procedural risk management: All the patients

undergoing endoscopic procedures to be followed at 7 and 14 days for any new diagnosis, or development of COVID-19 symptoms and if indicated, use this information for contact tracing.

Hospital Administration and Supportive Services

The hospital administration facilitates staff welfare, ensures adequate and timely supply of medical items, consumables and manages human resources for smooth service delivery through all departments and support units. It plays vital role in resources mobilization, communication and coordination with local bodies, security authorities, health institutions, social media, civil society and the ministry of health and population. The infection prevention practices in clinical services are monitored are monitored by quality management system (QMS) of the hospital.

Key to success

- Timely planning and preparedness.
- Strong preexisting Infection Prevention and Control (IPC) team.
- A High Level-Multi Disciplinary Team (HL-MDT) as a Command Center for all clinical service operation/crisis management
- Team effort of all service departments/units
- Staff motivation initiatives
- Application of concept of "Lobby Supervisors"

Challenges

The health care system faces increased challenges especially when the COVID-19 outbreak takes longer time to settle. It will lead to shortage of the medical items, equipment, PPE and consumables that are imported from outside the country. Challenges faced by private health facilities like ours include limited isolation beds, space for staff quarantine and lack of manpower for sparing 7 days on and 7 days off, difficulty for certain diagnostic out sourced tests including RT-PCR, In addition, the low level of public awareness is a serious challenge for an effective IPC intervention in hospital setting. The economic loss reflected in health needs of the people pose a serious and long-term challenge.

Opportunities

Novel Corona Virus (COVID-19) is a new and recently discovered virus. The countries around the world are

striving to fight this virus. The vaccine development is in progress. Though, COVID pandemic has knocked the doors of the scientists and global community to explore ways to save human lives. Now the health professionals are equipped more than before to better implement the preventive and control measures in hospitals and in community settings. In our context, COVID-19 has provided an opportunity to learn more from global experiences and practice the preventive and control measures. It is also an opportunity for health care providers and hospitals to learn for better preparedness in terms of patient care, spaces, equipment, and medical items including oxygen to tackle epidemics.

Conclusion

It is learnt that adequate physical distancing, proper use of mask, hand hygiene and adoption of other personal protection measures minimize risks of infection. Everyone in our society has a role to play and comply with preventive measures in work places and in public. As health workers, we have our own responsibility and duty to perform. We need to keep our life going and learn to live with COVID-19.

Acknowledgements

Special thanks to Mr. Janahit Basukala, who has been involved in quality assurance activities of the hospital services. Similarly, Ms. Bidya Pathak and Ms. Sabita Poudel, for their great role to support cancer care.
Conflict of Interest: None

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