

## Review Article

# Challenges and Adaptation in Healthcare Delivery during COVID-19: Perspectives from four different Service Providers

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The corona-virus disease outbreak has tremendously disrupted the way of life for people from every social strata and profession. Healthcare workers, being on the frontline, are one of those who are facing the worst hit. Providing adequate and timely service to the community without jeopardizing self or family well-being has become an immense challenge. Not only had the people diagnosed as COVID-positive, even those who are visiting hospitals for other acute or chronic illnesses are facing severe logistic challenges in receiving optimum service. Similarly, learning and teaching activities have also taken a backseat due to lack of hands-on trainings and face-to-face meetings. A shift towards complete digitalization in scientific discussions has come to a rescue but with the caveats of technological unawareness and glitches. Appropriate usage of protective equipment, strict asepsis at workplaces, maintenance of distancing and following a healthy lifestyle must be incorporated in our daily life and workplace protocol as well. Here we describe the actual experiences from the routine of four medical professionals working at different fields and our perspectives on the same, keeping in mind the regular challenges that we face, how we are adapting to those, and how we view the way forward.

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**A** Novel Strain of Coronavirus (SARS-CoV-2) was first reported in Wuhan, China in December, 2019 to cause Severe Acute Respiratory Symptoms (COVID-19)<sup>1</sup>. Subsequently, this viral outbreak has spread to 213 countries and territories around the world and two international conveyances. A wide range of mortality rate has been reported from this viral illness and World Health Organization declared this outbreak as pandemic on 11<sup>th</sup> of March 2020<sup>2</sup>. As of July, 2020, based on publicly accessible web database (Worldometer), the disease has infected around 16 million people globally with mortality rate of approximately 4%<sup>3</sup>. More importantly, this pandemic has caused severe disruption in our social, economic, professional and personal life. The social medias and news channels are now flooded with alarming statistics, on a daily basis. We have now started embracing SMS (sanitization, mask and social distancing) as the 'new-normal' way of life. Undoubtedly, Health-care Professionals (HCP) are one of the worst affected

### Editor's Comment :

- COVID-19 might bring challenges, but could be an opportunity too.
- Quick adaptability is the key, with optimization of limited resources.
- Keeping healthcare professionals safe would benefit the society at large.
- Non-COVID medical needs should be addressed with equal importance.
- Digitalization is the way forward for all scientific communications.

segment, due to their nature of work as 'front-line warriors'. Till date, around 200 physicians in India have lost their lives while serving their duty. Moreover, the amount of physical and mental stress the whole community is going through is enormous. In this article, we have tried to capture the perspective on how the pandemic has affected the professional lives, learning curves and delivery of healthcare services from four different quadrant: practicing oncologist, practicing Spine Surgeon, Clinical Pathologist and Medical Affairs professional.

### Perspective of a Practicing Medical Oncologist :

An analysis by Lee et al involving 800 patients, who had cancer and COVID-19 together demonstrated that major risk factors for death were advancing age, male gender and presence of other comorbidities<sup>4</sup>. There have been a rise in advisory guidelines, which have seen more of personal recommendations and suggestions rather than compilation of high levels

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evidence<sup>5-7</sup>. It is difficult to derive high quality data at such short intervals, so we have to rely on expert opinions. Studies that looked from the perspective of patients during COVID-19 revealed majority of them were worried regarding their cancer progression and wanted their chemotherapies to continue<sup>8</sup>. It becomes difficult to imbibe the best strategies at all times for the end users. Therefore, considering significant interplay between the health professionals and the patients with their families, it is important to know the individual perspectives of cancer care from the bedside rather than the command centre.

#### **Effect on Routine Clinics —**

There has been a significant impact on the way routine cancer care is being delivered. Starting from the point the patient and their relatives enter the hospital, they need to go through various screening processes to rule out subtle symptomatic cases. This increases their duration of stay inside the hospital. Multiple checkpoints have been installed to ensure that symptomatic cases do not mix with other patients. This leads to longer waiting time in the Outpatient Department. The delay takes a toll on the patience of our patients and relatives. Similarly, there is a longer delay in-between patients in the day care, as nurses have to change Personal Protective Equipment (PPEs) before they can administer the next chemotherapy. Many hospitals have resorted to reducing the number of appointments to account for these delays. This leads to cancellation of OPD appointments as well as day-care dates. This creates a problem especially for the patients who have undergone curative surgery and are awaiting adjuvant chemotherapy or radiotherapy. For patients who have COVID-19 infection, many consultants are delaying treatment for 14 days. Due to lack of enough evidence behind the above practice, we do not know how much their outcomes are getting affected. Unless we have more clarity on the interplay of COVID-19 and cancer treatment it is impossible to formulate high level guidelines.

Most of the Private Hospitals are charging a little extra that goes for buying PPE kits and the additional materials. The Government hospitals have the PPE from inventories. Cost-effective analysis for this increased cost is not available in peer-reviewed literature. However, it would be worthwhile to look at it considering this pandemic might last quite long.

#### **Effect of Oncology Learning —**

Due to the flurry of COVID-19 cases, Oncology learning has largely shifted from discussing randomised clinical trials to “How to manage cancer in COVID-

19”. There has been a steep rise in webinars and lectures that deal with COVID-19 and cancer. COVID-19 related articles have crossed 55K mark at the time of drafting this article. Whether this is a setback for proper Oncological Clinical studies, only time will tell that. With the increase in the number of webinars due to the ease of conducting these, significant chunk of personal time is eroded by clinical discussion. In fact, pure oncology reading is a refreshment these days.

#### **Effect on Patients and their Caregivers —**

By far, this is the most significant aspect during this pandemic. There is heightened anxiety among patients due to the dual problem of cancer and COVID-19. Frequent cancellation of Chemotherapy radiotherapy or Surgery due to COVID-19 positivity is affecting their mental peace to a significant extent. Many patients are being upstaged due to the longer appointment date and coming to us at a higher stage after a prolonged symptomatic period. This will definitely affect the long-term mortality rates of the overall oncology population in the near future. The additional impact is having effect on the financial strain of our patients. Cancer treatment in itself is expensive, which is further complicated by longer ICU stay and intensive monitoring that is required if these patients get COVID-19 infection. The availability of oncology services also reduced significantly because of the shortage of staff in many hospitals. Many cancer hospitals have been turned into poor COVID-19 hospitals which is impacted patient care to a significant extent. Logistic difficulties have soared to great heights. Many patients are unable to come on the right time on the right date due to lack of logistic support and public transport. They have to hire personal vehicles, which adds on to the expenses.

#### **Effect on Clinical Trials —**

Due to the lack of on-site support and supporting staff, recruitment into clinical trials have also taken a backseat. Due to COVID-19 infection there is a higher number of adverse events that is occurring in patients who are ongoing treatment in clinical trials. These events might actually hamper the results of the clinical trial, which makes the whole process useless after so much of efforts. Patients are denied of potentially expensive and effective therapies due to halt of recruitment in these trials.

#### **Perspective of a Practicing Spine Surgeon :**

HCPs who are not directly associated with active COVID-19 management are also being greatly exposed to the risk of transmission from asymptomatic carriers (patients and colleagues). A spine surgeon is no

exception here, as he has to continue managing emergency spine problems with utilization of minimum healthcare resource, maximize patient and caregiver safety and prevent transmission.

### **Triage of Spine Surgery —**

As this global pandemic is increasing at a rapid speed, it is obvious that COVID-19 patients will soon overwhelm our resource-poor healthcare system. By delaying elective procedures, surgeons can preserve hospital beds including ICU beds, ventilators, blood products, Personal Protective Equipments (PPEs) and these can be used for COVID-19 care delivery. Patients being operated carry the risk of acquiring nosocomial disease, and to manage a postoperative complication in an already exhausted healthcare setting could be challenging. Hence triaging of patients for surgery becomes cornerstone of spine-care. Surgery should not be delayed in cases with severe neurological symptoms due to compressive etiology, postoperative infection, epidural abscess, spinal instability threatening neural tissue damage etc. All other cases of spinal pain, neurological deficit that can be observed or reasonably controlled with medication for few months, can be postponed. This recommendation is primarily based on North American spine society (NASS) guidance<sup>9</sup>.

**Pre-op Precautions :** All patients are strongly recommended to undergo RTPCR testing for COVID-19 as routine pre-operative screening. In an emergent condition when COVID-19 report is not available the patient should be considered as positive. A detailed discussed protocol for operating room should be formulated to minimize the transmission in such scenario<sup>10</sup>.

**Operating Room (OR) Set-up :** It is of paramount importance to set up a COVID-19 designated OR, preferably away from other similar set-ups. If possible negative pressure ventilation should be installed. All stationary equipment like ventilators, computers should be covered. All surgical tools required for the procedure should be stocked beforehand. Minimum personnel for each job to be employed and minimization of OR traffic to be ensured. All personnel should wear all requisite protective gears as per guideline. Adequate training of donning and doffing of PPE should be done. The most experienced surgeon should do the surgery to minimize the surgical time and complications. Fellow, post-graduate or post-doctoral training may unfortunately take a backseat.

**Extubation/ Intubation :** As the virus is mainly shed through respiration, coughing, sneezing, intubation and extubation procedures produce huge

aerosols. To minimize that patient should be adequately paralyzed, covered with a transparent plastic sheet. Most senior anaesthetist should do the procedure. All personnel not involved should stand outside of OR. Postoperatively patients should be transferred through dedicated routes and to dedicated wards.

Considering elective surgeries are being postponed until COVID negative report, for emergency COVID positive or COVID unknown cases hospitals have established Standard Operating Procedure (SOPs). The anaesthesia part is the most critical as they come in close proximity to patients' respiratory systems. The step pods to reduce transmission are as follows:

- All patients are put on masks unless otherwise necessary

- All OT personnel wear full PPE kit

- Regional anaesthesia is preferred whenever possible

- Minimum personnel stays inside OT during anesthesia and surgical team stays outside the OT during anaesthesia

- When general anaesthesia is necessary, the patient is given adequate muscle relaxant before intubation. A transparent plastic sheet is being kept on the patient's face and upper body and intubation is done by inserting a hand above it. It is a simple cost effective but very efficient way to reduce aerosol generation

- This procedure is being followed again during extubation

- Surgical team enters OT after 15 minutes of intubation and exits before extubation

**On-call Management :** A Spine Surgeon must attend the emergency room on call service with complete PPE. The unit should divide work of on-call management, OR, OPDs and take two weeks off after two weeks of work, though this system may not be feasible in smaller units.

**OPD Management :** Majority of OPD patients in our Spine Clinic are old age population with various co-morbidities and having degenerative spine disease. These patients are more vulnerable to contracting the viral illness. As most of the State Governments are imposing lockdown to reduce transmission, telemedicine should be encouraged among patients and caregivers, when appropriate and feasible. Video consultation can give detailed patient report and may substitute a physical visit, in selected cases. If some patients require direct consultation they should be properly screened for any COVID-19 related symptoms, travel history, infrared thermal screening,

etc. Proper use of masks, practicing adequate hand sanitization and physical distance between doctor and patient are mandatory (a transparent plastic screen could be helpful).

**Surgeons' own learning :** Continuous Medical Education (CME) occurs through various conferences, seminars, cadaveric courses, operative courses. Due to worldwide lockdown all such have been called off, and e-learning took the driver's seat. Various webinars are being conducted, where the discussions are revolving mainly on new guidelines of managing spine patients in COVID-19 era, albeit, students and trainees are mostly affected in their learning as they have a stipulated time limit for their course completion.

**Spine Research :** Operative and non-operative research activities are definitely affected globally as the number of cases are drastically reduced. In such time, a surgeon may try to maximize the free time for personal reading and data compilation of previous surgeries.

#### **Perspective of a Pathologist from the Field of Laboratory Medicine :**

In this rapidly transformed crisis period, the Laboratory Medicine is playing a major role in testing the massive size of our population. The laboratory system has altered in order to validate testing in-house, to procure sufficient reagent, swabs and instruments to set up COVID-19 testing for supporting our health system and the community. Main challenge for the entire diagnostic facility is to maintain the normal workflow for routine activities. With growing number of cases every day, regular laboratory work is significantly affected in view of higher turnaround time and diminished work force. The laboratory staffs are one of those frontline fighters in this pandemic who are risking their own health. Due to high transmissibility of this virus, doctors and staffs of diagnostic laboratories are facing genuine challenge as test samples and specimen can contain the pathogen and thus handling those make us vulnerable albeit proper safety precautions<sup>11-14</sup>.

#### **Effects on Daily Routine Work —**

The laboratories must continue the daily routine work alongside COVID-19 testing as per Government regulation. To ensure proper safety for all the persons working in a laboratory, a new quality manual has been implemented with proper guidelines for all the pre-analytical, analytical and postanalytical phases of laboratory testing and analysis. In day-to-day practice, the safety of lab personnel has to be balanced against timely reporting of results and high quality analysis.

Both doctors and technicians face obvious fear as blood & urine samples, body fluids and other tissue specimen can contain viable and transmissible virus. So maintaining the proper guidelines regarding handling and processing of every sample and specimen is necessary to minimize the impact on laboratory personnel. Considering potential infectious nature, appropriate PPE is being worn while obtaining and handing samples or specimen and frequent cleaning of the laboratory has become an absolute necessity. Also the number of staffs within laboratory has been reduced to maintain proper distancing while working, and allowing sufficient time between two shifts of a particular staff. All these factors are leading to obvious delay in reporting of routine tests. Patients are also suffering due to long waiting period for getting the test results. This in turn causing delay in managing the patients. Though COVID-19 has clearly become the center of attention at this moment, but we must also not forget that patients still need laboratory specialist doctors for their diagnosis and disease progression.

The precautionary measures are primarily targeted to minimize the spread of the virus, both to the person in charge of handling samples and to the environment in which the samples are processed. For this, specific persons are assigned to carry the samples from COVID wards, emergency and also the samples collected for COVID testing with full PPE including face shields and goggles. The samples are handled in a separate negative pressure room and processed in class 2B bio safety cabinet. Only specially trained technical staff and doctors are allowed to process the sample wearing full PPE. Donning and doffing of PPE are done in designated areas. After each batch of testing, surfaces are cleaned with hypochlorite solution and cabinets are sterilized with UV light. For floor and wall mopping, sodium hypochlorite solution is used after completion of daily routine work. After testing is done, all samples are discarded in a special double-layered bag designed to discard only tested samples. Bags are air sealed before taking it out of the room for disposal.

#### **Effects on Learning and Training Program —**

Teaching and training program in laboratory also took a back seat in this COVID-19 era. Hands-on training program has been replaced by webinars and online lectures in order to maintain social distancing. This pandemic is also encouraging the implementation of digital pathology, not only in day-to-day work, but also as a tool of teaching and education. It will also provide easy access to expert opinion for difficult cases. However, it is too early to tell that digital pathology, webinar or online teaching program is



enough for teaching the future laboratory specialist.

### **Perspective of Medical Affairs Professional from Pharmaceutical Industry :**

#### **Situation and Tasks —**

Medical Affairs (MA) helps in bridging the critical gap between the pharmaceutical industry and its internal and external stakeholders. MA has evolved significantly in the past few years from a supportive function to an instrumental role player, for generating and implementing scientific insights and drive patient-centered solutions aligning with the organizational strategy. This function is unique in managing external relationships with key opinion leaders (KOLs) within the scientific community across different therapeutic area, as well as with patients, payers, regulatory bodies, authorities, healthcare organizations, clinical research units and many more. Internally, the MA personnel works within a cross-functional environment, effectively links scientific evidence with promotional activities in an ethical and credible manner, thus reaching a larger audience with better value-proposition for all end-users<sup>15</sup>. Many a times these actions are driven through face-to-face and peer-to-peer interactions, which involves a lot of travelling within or outside city/regions quite frequently. With the sudden lockdown imposed, leading to severe travel constraint and lack of face-to-face meetings, the MA function faced a herculean challenge to embrace the paradigm shift with heightened digitalization of interactions. However, this challenge was taken positively and the situation was turned into an opportunity. Arguably it became of paramount importance to improvise, innovate and maintain the connect with all the stakeholders without the traditional meeting formats. The task was not easy, and as we know “when the going gets tough, the tough gets going”, the MA professionals got themselves prepared and adapted to the change, quickly and efficiently.

#### **Action and Results —**

How did MA leverage on the opportunity? The first and foremost challenge was probably revamping all the medical communications, making them suitable and interactive, yet user-friendly to be discussed over virtual platforms. No doubt, many of senior opinion leaders showed extreme agility to get accustomed with the virtual platforms within a short span of time, despite initial challenges, and medical affairs professionals had a key role to play in such transformation. Needless to say, HCPs too have accepted this new mode of communication positively and as a valuable tool to keep themselves updated. Especially, at a time when they

wanted to share experience and learn from the stalwarts in the same platform, not only on their respective areas of interest or expertise, but on also how science is evolving with respect to the pandemic situation. Definitely, saving on travel time and converting them to productive hours worked as a boon in many sense. Similar impactful scientific discussion are happening over virtual platforms over shorter time span (without the humane touch, I must say), while the spared time are being utilized (which otherwise would have been spent on commuting) in developing content, working on scientific projects, formulating research hypothesis, and other various forms of medical writing, to name a few. It has also become easier to reach and connect with more HCPs across a wider geographical area. Being virtually connected with patient-support groups and caregivers, to increase awareness has been a value addition to the MA role. We have become more technology-savvy, data oriented, outcome-driven and impactful like never before. This actually could pave down the path for future trends, as in the post-COVID-19 era, this digital shift is expected to continue long-term. What MA have experienced in past few months is a massive expansion of scientific and training engagements with providers, patients, and other cross-functions, across a vast range of touchpoints that are entirely digital. These have been designed in a way to provide tailored information to those who actually need it, thus focusing on a more personalized approach. Albeit the challenges, this could be a grand learning opportunity for MA to improve on certain soft skills, ability to influence over virtual platforms and decision making capabilities<sup>16,17</sup>.

#### **Need of the Hour and Way Forward :**

Considering the novelty of the situation and the disease process, we must learn to tackle each problem through different individualized approaches.

- Multi-specialty or super-specialty hospitals (for eg, a tertiary oncology care centre) should not be converted into dedicated COVID-19 centres.

- Delay in treatment of non-COVID-19 illness (due to lack of hospital bed or treatment provider or other resources) may lead to increase in mortality of the overall population

- Optimum usage of PPE, strict asepsis and appropriate shift-work (avoiding long-shifts) with adequate quarantine facility in between are advisable to prevent self-contamination and thus subsequent inevitable resource loss for healthcare delivery

- There should be prospective studies looking at the interplay of COVID-19 infection and various other disease processes including interactions of

therapeutic agents and anti-COVID-19 drugs

■ This pandemic is causing extra challenge than usual, towards providing high quality service in a timely manner with minimal risk to the healthcare workers and their families. Adopting new practices and following additional measures that directly or indirectly affect all aspects of workflow should become a standard practice at all set-ups

■ We must become familiar with digital technologies, to the best of our abilities. This is surely going to remain as the preferred mode of communication as far as the scientific discussion and sharing of expertise or experience is concerned

However, even considering these as setbacks, we must focus on our mental and physical well-being as well. It is important to keep the immune system healthy by having a balanced diet, proper sleep and some exercise or yoga on regular basis. This is inevitable that even on returning to a relatively normal time, some of these adaptive practices will be embedded as a part of future protocol for a safe work place. Whether the solution lies in herd immunity or an effective vaccine, only time will tell us. Until then, we all need to keep our fingers crossed, and continue to serve our patients relentlessly.

#### Conflict Disclosure Statement :

Mansij Biswas is an employee of Boehringer Ingelheim India Pvt Ltd. His contribution to this manuscript represents his independent viewpoints related to the topic and does not represent in any way, the opinion of Boehringer Ingelheim. Rest of the authors have no competing interest to disclose.

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#### REFERENCES

- Zhu N, Zhang D, Wang W, Li X, Yang B, Song J — A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med* 2020; **382(8)**: 727-33. doi: 10.1056/NEJMoa2001017.
- World Health Organization — WHO Director General's opening remarks at the media briefing on COVID-19. Published March 11, 2020. [Accessed on July 30, 2020].
- <https://www.worldometers.info/coronavirus/> [Internet, Accessed on July 30, 2020].
- Lee LYW, Cazier JB, Starkey T, Turnbull CD, Kerr R, Middleton G — COVID-19 mortality in patients with cancer on chemotherapy or other anticancer treatments: a prospective cohort study. *The Lancet* 2020; **395(10241)**: 1919-26.
- American Society of Clinical Oncology Special Report — A Guide to Cancer Care Delivery During the COVID-19 Pandemic. ASCO 2020; Available from: <https://www.asco.org/sites/new-www.asco.org/files/content-files/2020-ASCO-Guide-Cancer-COVID-19.pdf>. [Accessed on July 30, 2020]
- COVID-19 Provider & Practice Information. ASCO 2020. Available from: <https://www.asco.org/asco-coronavirus-information/provider-practice-preparedness-covid-19>. [Accessed on July 30, 2020].
- Cancer Patient Management During the COVID-19 Pandemic. ESMO 2020. Available from: <https://www.esmo.org/guidelines/cancer-patient-management-during-the-covid-19-pandemic>. [Accessed on July 30, 2020].
- Ghosh J, Ganguly S, Mondal D, Pandey P, Dabkara D, Biswas B — Perspective of Oncology Patients During COVID-19 Pandemic: A Prospective Observational Study From India. *JCO Glob Oncol* 2020; **6**: 844-51.
- Bono CM, Dohring EJ, FinkenberG JG, Ghogawala Z, Kauffman CP, Kreiner S, *et al* — North American Spine Society. Coronavirus NASS guidance document. Available from <https://www.spine.org/Portals/0/assets/downloads/Publications/NASSInsider/NASSGuidanceDocument040320.pdf>. [Accessed on July 30, 2020].
- Jain NS, Alluri RK, Schopler SS, Hah R, Wang JC — COVID-19 and Spine Surgery: A Review and Evolving Recommendations. *Global Spine Journal* 2020; **10(5)**: 528-33. doi: 10.1177/2192568220923655. Epub 2020 Apr 23.
- Gosney JR, Hofman P, Troncone G, Lopez-Rios F — Cellular pathology in the COVID-19 era: a European perspective on maintaining quality and safety. *J Clin Pathol* 2021; **74(1)**: 64-6. doi: 10.1136/jclinpath-2020-206789. Epub 2020 Jun 1.
- Centre for Disease Control and Prevention. Coronavirus Disease 2019 (COVID 19): information for laboratories. [Internet. Accessed on July 30, 2020].
- World Health Organization — Laboratory biosafety guidance related to the novel coronavirus (2019-nCoV), 2020. [Internet. Accessed on July 30, 2020].
- Tan SS, Yan B, Saw S, Lee CK, Chong AT, Jureen R, *et al* — Practical laboratory considerations amidst the COVID-19 outbreak: early experience from Singapore. *J Clin Pathol* 2021; **74(4)**: 257-60. doi: 10.1136/jclinpath-2020-206563. Epub 2020 Mar 20.
- Evers M, Ghatak A, Suresh B, Westra A — A vision for Medical Affairs in 2025. McKinsey & Company 2019. Available from: <https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/a-vision-for-medical-affairs-in-2025> [Accessed July 30, 2020]
- Keesara S, Jonas A, Schulman K — Covid-19 and health Care's digital revolution. *N Engl J Med* 2020; **382(23)**: e82. doi: 10.1056/NEJMp2005835. Epub 2020 Apr 2.
- Rajadhyaksha VD. Medical affairs post-COVID-19: Are we ready to take the baton? *Perspect Clin Res* 2020; **11(3)**: 124-7. Published online 2020 Jul 6. doi: 10.4103/picr.PICR\_164\_20