



Bapuji Educational Association (R.)



# JJMMC

Vol-16

Issue-3

July 2020

*Voice*

**Official Quarterly News Letter Publication of  
JJM Medical College, Davangere**

## **90<sup>th</sup> BIRTHDAY CELEBRATION OF SHRI SHAMNUR SHIVSHANKRAPPA WITH PLANTING OF 90 SAPLINGS**





## VOLUNTARY BLOOD DONORS DAY



## APHERESIS INAUGURATION



## INDEPENDENCE DAY



## COVID-19 WORKSHOP





**J. J. M. Medical College, Davangere.**

## **NEWS LETTER COMMITTEE**

### **Patrons :**

Dr. Shamanur Shivashankarappa  
MLA, Hon. Secretary, BEA

Sri S. S. Mallikarjun  
Joint Secretary, BEA

### **Advisory Board :**

Dr. H. Gurupadappa,  
Director, P. G. Studies & Research

Dr. M. G. Rajasekharappa,  
Director, General Administration

### **Chairman :**

Dr. Muruges S. B.  
Principal

### **Editor :**

Dr. Santhosh C. S.  
Professor & Head, Forensic Medicine

### **Associate Editor**

Dr. Seema Bijjaragi  
Professor of Pathology

Dr. Vardendra Kulkarni  
Professor & HOD of Pathology

### **Scientific Committee:**

Dr. G. Guruprasad  
Professor of Neonatology

Dr. C. Y. Sudarshan  
Professor & Head of Psychiatry

Dr. Mohan Marulaiah  
Director of Bapuji Child health Institute

Dr. M. G. Usha  
Professor of Microbiology

### **Executive Committee:**

Dr. B. R. Uma, Professor of Anaesthesia

Dr. G. R. Veena, Professor of OBG

Dr. Vidya, Professor of Community Medicine

Dr. Rajani, Professor of Biochemistry

Dr. Anjana Telkar, Professor of Microbiology

Dr. Ashwini, Associate Professor of Physiology

Dr. Santhosh, Associate Professor of Pharmacology

Dr. Karthik Sasalu, Assistant Professor of Medicine

Dr. Sowmya, Assistant Professor of Dermatology

Dr. Akshay Hiremath, Assistant Prof. of Respiratory Medicine

Dr. Punith, Assistant Professor of ENT



## *From the desk of the Principal*

I whole heartedly welcome the new batch of postgraduates who have chosen our esteemed institute for their higher studies. The magnitude of admissions in all the departments testifies the quality of postgraduate training we offer and put us in the league of premier institutions. This brings in a great deal of responsibility and hence I appeal to my fellow colleagues to continue their zest for excellence.

Our efforts to combat the ongoing Covid pandemic have been scaled up in terms of testing facilities, bed availability, patient management and manpower allocation. A major share of the credit goes to our management for their unconditional support and our interns, postgraduates, nursing staff and faculty members for their relentless services in these times of crisis. The response from the Community at large has been overwhelming.

My sincere appeal to one and all to follow all the safety guidelines in this pandemic situation. Stay safe stay healthy.

**Principal, JJMMC**

## **Contents**

- ▶ Academics and Achievements
- ▶ Postgraduate Section
- ▶ Original Article



The Chairman / The Principal  
**J. J. M. Medical College**

Davangere - 577 004.

Ph : +91-8192-231388, 253850-59 Ex.101 / 104  
Fax : +91-8192-23188, 253859 [www.jjmmc.org](http://www.jjmmc.org)

**Disclaimer :** Views and opinions expressed in the newsletter are not directly that of the editor or the editorial board. For any clarification, author of the article is to be contacted.



### DEPARTMENT OF PATHOLOGY

#### LABORATORY SAFE PRACTICES

##### DURING COVID-19 PANDEMIC - A GUIDE

COVID 19 pandemic has put laboratories on edge even if they are not testing for the novel coronavirus. Laboratory safety practices includes safe handling of the samples involved in the various diagnostic testing. With the increasing magnitude of cases and the spread of infection, it is always wise to suspect every sample to be suspected/confirmed COVID19 positive sample and follow necessary precautionary measures to limit the spread.

Here are some safety guidelines put forth by World Health Organization (WHO), Center for Disease Control and Prevention (CDC), Occupational Safety and Health Act (OSHA) and our own Indian Council of Medical Research (ICMR) and various other organizations for the safe handling, basic safety precautions and the process to be followed if exposed.

#### BASIC MINIMAL PRACTICES

- All laboratories receiving COVID-19 samples for routine hematological and biochemical testing should ensure proper labelling and handling with relevant biosafety precautions and relevant regulatory standards to protect individuals and the environment.
- Risk assessment for each of the process step right from sample collection to various diagnostic procedures should be done and assessed with the grade of risk
- All procedures should be performed with standard operating protocols that minimize aerosol and droplet generation
- Appropriate decontamination and disinfection strategies for biomedical waste treatment and disposal should be in accordance to those mentioned in the "Revised Guidelines for Common Bio-medical Waste Treatment and Disposal Facilities" (2016) developed by Central Pollution Control Board (CPCB).
- The employing authority, through the laboratory director, must take responsibility for ensuring that the health of laboratory personnel is adequately checked and reported.
- Routine decontamination of the lab area and surfaces should be followed using appropriate disinfectant like 10% sodium hypochlorite or 70% alcohol.

#### LABORATORY ADMINISTRATION

- Minimize the contact among other workers, clients and customers by replacing face to face meeting with virtual communications and implementing telework if feasible.
- Establish alternate day shift working facility to minimize the exposure
- Laboratory personnel positive for COVID-19 should be refrained from duties and to be quarantined for 14 days.
- All personnel should be provided with necessary personnel protection kits which includes gloves, masks and face shields.

#### ADVICE TO ALL HEALTH-CARE WORKERS AT LABORATORIES

- To wear three ply-surgical mask/respirator, hand gloves and laboratory coats all the time. Avoid use of cotton cloth masks. Follow proper wearing and removing techniques so as to not touch the front of the masks. If touched, clean the hands using alcohol-based hand rub or soap.
- Avoid contact of gloved hand with the face.
- Refrain using from mobile electronic devices and gadgets when not specifically required for the laboratory procedures being performed
- All personnel at the testing centre (Biosafety lab 3) must wear personal protection kit (PPE)

#### COLLECTION AND HANDLING HISTOPATHOLOGY SAMPLES

- Histopathology laboratories are designated where human tissues are processed for diagnostic testing.
- It is determined that Coronavirus can be inactivated in a temperature and time dependent manner by keeping the samples in fixatives like Formalin at 37°C for 1 day or in glutaraldehyde at 37°C for 2 days.
- Paraffin embedding in most of the laboratories uses a temperature of 60-65°C.
- Hence it can be considered that routine formalin fixation of the samples for desired period at 37°C, followed by paraffin embedding of the tissue blocks could be considered to have a low risk of coronavirus infectivity.
- Frozen histopathology techniques should be refrained on possible cases of SARS-CoV unless the laboratory is confident in containing aerosols in cryostat.

## CONSIDERATIONS IN CYTOPATHOLOGY

- Cytology samples like non-gynaecological and fine needle aspiration samples are considered as highly infective as these samples come fresh with no prior fixation.
- Cytopreparatory steps like opening and closing the containers, vigorous shaking, vortexing, centrifuging and pipetting should be performed in Class II Biosafety labs with air conditioning systems.
- If unavailable it may be safer to suspend the activity of a pathologist-run FNA Clinic for the duration of the pandemic and consider performing FNAs only on a case-by-case basis, weighing the risks and benefits of the procedure for each patient.
- Measures such as working in shifts, staggered meal breaks, avoiding contacts between people and strict follow of necessary personnel protection are advised to minimize the spread.
- Needle used for FNA procedures should be carefully discarded into puncture proof containers fitted with sealed covers.
- Agitating the smears by hand or using handheld fans to speed up the drying of smears should be avoided.
- Rapid On-Site Evaluation (ROSE) to determine the adequacy of sample is performed with appropriate personal protective equipment (PPE) including gloves, laboratory coat/gown and goggles or face shields for eye protection and respiratory protection using a properly fit-tested filter respirator (N-95 or higher level) or a powered air-purifying respirator (PAPR).
- Measures like fixation of cytology samples in formalin or 70% alcohol to destroy the virus and proper usage of necessary precautions while handling the samples are to be considered.

## CONSIDERATIONS IN HEMATOLOGY

- Studies have shown that viral RNA can be detected in plasma and serum of patients infected with SARS-CoV at different times, after the onset of symptoms, but this isn't equivalent to the detection of intact infectious virus.
- As COVID-19 is primarily transmitted through respiratory route, the risk of transmission through blood and its components is likely minimal.

- With more cases of asymptomatic infections among COVID 19 cases, there is the theoretical risk of transmission; hence ensuring blood safety is a worthy consideration.
- The medical laboratory is usually in the frontlines of this war; haematological analysis to check for red and white cell abnormalities and clotting anomalies are routine.
- With evidence of viral shedding, this poses a high risk to personnel and the environment. Hence, it is utmost important to follow all the measures that are previously mentioned.

## CONSIDERATIONS IN CLINICAL CHEMISTRY LABORATORY ROUTINE PRACTICES

- Chemical pathology laboratory involves the biochemical analysis of blood, urine, cerebrospinal fluid, pleural fluid and stool.
- It is pertinent to note that in the wake of COVID-19 pandemic samples of different patients are sent routinely to health facilities which may pose a high risk to the laboratory health care workers, it becomes necessary that appropriate measures be taken by clinical laboratories to contain potentially infectious materials and forestall secondary infection and transmission.
- As part of risk assessment, the physician is supposed to notify the laboratory staff when specimens from a patient with suspected or confirmed COVID-19 are submitted, through proper completion of request form or direct communication with laboratory.
- Non communication of the true state of the patient, non availability of appropriate containment levels, PPEs and waste disposal systems would lead to spread of infection in laboratories.

## DEPARTMENT OF MICROBIOLOGY

As per ICMR guidelines, JJMMC Molecular laboratory has Data processing room, Donning room, Sample processing room with Bio-safety Cabinet class-2, Doffing room, RNA extraction room with Bio-safety cabinet class-2, Template room with Bio-safety cabinet class-2, Positive control room with PCR chamber and Amplification room with PCR machine and Laptop.

We have 14 trained technicians, 3 attenders who work day and night to achieve the target and maintain the laboratory safety. Fumigation is done regularly.



For RT-PCR Nasopharyngeal and Oropharyngeal swabs are collected and sent in Viral Transport Medium to the laboratory with specimen requisition form which contains SRF ID number which is mobile application based. For Rapid antigen test, Nasopharyngeal swab is collected in viral lysis buffer and tested on the spot and reported within 30 minutes.

RT-PCR for SARS CoV-2 infection is detected using COSARA SARAGENE RT-PCR Detection kit, which detects RDRP gene which is confirmatory gene. We use CO-DIAGNOSTICS PCR Machine from USA which has capacity to test 46 samples at a time. Readings given by software are interpreted by our expert faculties. This whole procedure takes 6-7 hours for completion. All the RT-PCR and Rapid Antigen test results are entered in ICMR portal before dispatching the reports.

Our laboratory has tested nearly 15,000 samples for RT-PCR and 1,000 samples for Rapid Antigen Test. Quality assessment of the laboratory maintained by EQAS, by sending assigned number of samples to NIV, Bangalore and inter-laboratory quality assessment is also done.

We are planning to upgrade the laboratory and testing capacity by getting automated RNA extractor and one more PCR machine.

### DEPARTMENT OF PHARMACOLOGY

#### REVIEW OF DRUGS USED IN COVID-19

##### REMDESIVIR

**Introduction :** Remdesivir, a drug that once offered hope against Ebola, is now in the spotlight as the only current effective medication for COVID-19. US Food and Drug Administration (FDA) issued an emergency use authorization for remdesivir in the treatment of coronavirus disease 2019 (COVID-19) infection in patients with 94% oxygen saturation (SpO<sub>2</sub>) on room air requiring supplemental oxygen, mechanical ventilation, or extracorporeal membrane oxygenation (ECMO).

**Mechanism of action :** Remdesivir is an intravenous (IV) investigational nucleotide prodrug of an adenosine analog. Remdesivir binds to the viral RNA-dependent RNA polymerase, inhibiting viral replication through premature termination of RNA transcription.

##### Current status in COVID-19 :

Studies have showed that remdesivir shortened recovery time for people with COVID-19 from an average of 15 days to about 11 days, improve outcomes in patients with moderate to severe

COVID-19 with mortality benefit. Another data showed that people with moderate COVID-19 recovered more quickly when given the drug for 5 days, although the benefit was "modest." However a 10-day course of the drug also improved patient outcomes, but the change wasn't statistically significant but patients in this study were hospitalized but didn't need mechanical ventilation.

**Dosing schedule :** Remdesivir is available in two bioequivalent formulations: a concentrated solution (5 mg/mL) and a lyophilized powder formulation. 14, 18 Vials contain 100 mg of remdesivir and are preservative free.

For adults and children weighing 40 kg requiring invasive mechanical ventilation or ECMO, the recommended dose is 200 mg IV on day 1 followed by 100 mg IV once daily on days 2 to 10. For those not requiring invasive mechanical ventilation or ECMO, a 5-day regimen is recommended. Doses should be administered over 30 minutes to 2 hours

**Common ADR :** respiratory failure; organ impairment, as indicated by low albumin; low potassium; and low red blood and platelet cell counts. Other reports show the occurrence of gastrointestinal distress, elevated transaminases, infusion site reactions, low blood pressure, nausea, vomiting, sweating, and shivering.

##### FAVIPIRAVIR

**Introduction :** Favipiravir (brand name: Fabiflu) is the first oral antiviral medication approved for the treatment of mild to moderate covid 19 patients.

Favipiravir is approved in Japan since 2014 for the treatment of novel or re-emerging influenza virus infections. Favipiravir has been used in the treatment of infectious diseases caused by RNA viruses such as influenza, Ebola, and norovirus.

**Mechanism of action :** It has a unique mechanism of action: it is converted into an active phosphoribosylated form (favipiravir-RTP) in cells and recognized as a substrate by viral RNA polymerase, thereby inhibiting RNA polymerase activity.

**Current status in COVID-19 :** Clinical trials testing favipiravir against COVID-19 has shown that COVID-19 patients treated with favipiravir have superior recovery rate (71.43%) than that treated with umifenovir (55.86%), and the duration of fever and cough relief time are significantly shorter in favipiravir group than in umifenovir group.



Favipiravir can be used in COVID-19 patients with co-morbid conditions such as diabetes and heart disease with mild to moderate COVID 19 symptoms. **It offers rapid reduction in viral load within 4 days**, and provides faster symptomatic and radiological improvement. Of most importance, Favipiravir has shown clinical improvement of up to 88% in COVID-19 mild to moderate COVID 19 cases.

**Dosing schedule** : Day 1: 1800mg twice daily, Days 2 - 14: 800mg twice daily, 200mg x 9 tablets/day in morning and evening on day 1

200mg x 4 tablets in morning and evening.

**Common ADR** : Reduced body weight, vomiting, increased liver function, reduced locomotive activity.

### HYDROXYCHLOROQUINE (HCQ)

Hydroxychloroquine (HCQ) is the drug used in prophylaxis and treatment of uncomplicated malaria, rheumatoid arthritis, chronic discoid lupus erythematosus, and systemic lupus erythematosus.

In pediatric age group it is also used for the management of juvenile idiopathic arthritis (in combination with other therapies)

**Mechanism of action** :- HCQ is a weak base that can change the of acidic organelles like endosomes/lysosomes essential for membrane fusion and thus interfere with viral entry, transport and post viral events. It also inhibits viral entry by reducing glycosylation of ACE 2 receptors and spike proteins.

HCQ causes inhibition of inflammatory cytokines such as IL-1, IL-6 and TNF-alpha.

#### **Current status in COVID-19 :-**

Studies have demonstrated clinical improvement and decrease in the viral load. The probability of SARS-CoV-2 infection in healthcare workers who have taken the prophylactic HCQ was less when compared to those who have not taken. A significant dose-response relationship was observed between the number of prophylactic doses taken and frequency of occurrence of SARS-CoV-2 infection in healthcare workers. Hydroxy-chloroquine treatment had significantly reduced the viral load in COVID-19 patients and its effect was synergised with azithromycin.

**Dosing schedule** :- As per ICMR, the prophylactic dosing schedule is as follows

For asymptomatic healthcare workers involved in the care of suspected or confirmed cases of COVID-19: 400 mg twice a day on Day 1, followed by 400 mg once weekly for the next 7 weeks

For asymptomatic household contacts of laboratory-confirmed cases: 400 mg twice a day on day 1, followed by 400 mg once weekly for the next 3 weeks (to be taken after meals)

**Common adverse effects** are headache, dizziness, diarrhea, vomiting, stomach cramps. There can also be ringing in ears, hearing loss, mood changes etc.

With a normal daily dose for less than 5 years therapy has a 1% chance of retinopathy.

QT interval prolongation has been reported in patients with specific risk factors, which may lead to **arrhythmia** (torsade de pointes, **ventricular tachycardia**) and more likely with combination of Azithromycin.

### Drug name : TOCILIZUMAB

**Introduction** : It is a humanized monoclonal antibody against the interleukin -6 (IL-6R) receptor, IL-6 is a Cytokine that plays an important role in immune response and is implicated in the Pathogenesis of many diseases.

**Mechanism of action** : It competitively inhibits the binding of interleukin-6 to its receptor. Inhibiting the entire receptor complex, it prevents IL-6 signal transduction to inflammatory mediators that summon B & T cells.

**Current status in COVID-19** : It has emerged as an alternative treatment for COVID-19 patients with a risk of cytokine storms. Recently, it has become a drug of choice for critically ill patients with elevated levels of IL-6, the aim of therapy is to reduce the risk of invasive ventilation and death.

**Dosing schedule: Route** : - SC, Intravenous infusion Dose & duration:- 8 mg/kg , Maximum 800mg/dose as a single dose or every 12 hours for 2 days. It is usually administered at the peak or elevated levels of IL-6.

**Common ADR** : cough, sore throat, Runny nose , Headache or Dizziness. Mouth ulcers. Hypercholesterolemia, Allergic reaction, tight chest muscles, wheezing, high temperature weight gain or Swollen ankles. Stomach irritation or abdominal pain



### SARILUMAB:

Sarilumab is a recombinant humanized anti-interleukin-6-receptor (IL-6R) monoclonal antibody that is approved by FDA for use in patients with rheumatoid arthritis.

The primary lab abnormalities that have been reported with sarilumab treatment are transient and/or reversible elevations in liver enzymes that appear to be dose dependent and rare occurrences of neutropenia and thrombocytopenia.

Risk of serious infections (e.g. TB, bacterial infections) have been reported only in the context of long term use of Sarilumab. A placebo-controlled clinical trial is evaluating the use of an IV formulation administered as a single dose for COVID-19.

### Drug name SILTUXIMAB

Siltuximab is a recombinant human- mouse chimeric monoclonal antibody that binds IL-6 and that is approved by the FDA for use in patients with Castleman's disease. Siltuximab prevents the binding of IL-6 to both soluble and membrane bound IL-6R, inhibiting IL-6 signaling. Siltuximab is dosed as an IV infusion.

The primary adverse effects are rash and serious bacterial infections, have been reported only in the context of long term dosing of Siltuximab once every 3 weeks.

### AZITHROMYCIN

**Introduction :** Azithromycin exhibits anti-inflammatory, immunomodulatory and anti-proliferation as well as an autophagy effect, also azithromycin has significant antiviral properties against H1N1 virus, enterovirus, and rhinovirus .

**Mechanism of action :** Azithromycin decrease the virus entry into cells and enhance the immune response against viruses. Azithromycin up-regulates the production of interferons and genes involved in virus recognition. Azithromycin shows an interesting immunomodulatory profile by inhibiting several cytokines involved in COVID-19 severe respiratory syndrome. AZM regulates and/or decreases the production of IL-1 $\beta$ , IL-6, IL-8, IL-10, IL-12, and IFN- $\alpha$

**Current status in COVID-19 :** Currently being administered to mild to moderate cases, studies still ongoing.

**Dosing schedule:** 500 mg OD for 5 days or 500 mg OD on day one followed by 250 mg OD from day 2 to 5. .

**Common ADR :** nausea, vomiting, diarrhea, or abdominal pain, these are mild to moderate in severity and reversible. It prolong the QT interval but clinical consequences such as arrhythmias are rare.

### Doxycycline (Doxy)

It is a semisynthetic derivative of tetracycline, broad spectrum antibiotic .The antiviral and anti-inflammatory activities of Doxy dampen the cytokine storm and prevent lung damage. Since Azithromycin +/- HCQ may influence the QT elongation and requires, monitoring, a safer and better alternative would be Doxy with HCQ/Ivermectin.

**Mechanism of action :-** Doxycycline reversibly binds to the 30S ribosomal subunits and possibly the 50S ribosomal subunit(s), blocking the binding of aminoacyl-tRNA to the mRNA and inhibiting bacterial protein synthesis.

Anti-inflammatory action at low (20-40 mg/day) and at high (100 or 200 mg/day) doses , inhibitory action on metalloproteases and modulating effects of pro-inflammatory cytokines IL-6, IL-8, and tumor necrosis factor-alpha

**Current status in COVID-19 :-** Doxy is used in combination with Ivermectin or other drugs in the treatment of Covid. It is inexpensive and widely available, has a safe tolerability profile. Potentially alleviates the lung sequelae and also provides coverage against atypical bacterial pneumonia such as Mycoplasma pneumoniae and Legionella pneumophila.

**Dosing Schedule :-** Cap DOXYCYCLINE 100mg 1-0-1 for 5 days given orally.

**Common adverse effects** are gastrointestinal (stomach pain, nausea, vomiting, diarrhea, and gastritis) and dermatological (rash, sensitivity to the sun).

### IVERMECTIN

**Introduction :** Ivermectin is a broad spectrum anti-parasitic agent and have shown to have anti-viral activity against a broad range of viruses in vitro like flavivirus and chikungunya virus recently its potency has been recognized in eliminating coronavirus in vitro.

**Mechanism of action :** Ivermectin binds to the Imp $\alpha$ / $\beta$ 1 heterodimer, leading to its destabilization and prevention of Imp  $\alpha$ / $\beta$ 1 binding to the viral proteins. This prevents viral proteins from entering the nucleus, thereby reducing the inhibition of antiviral responses



**Current status in COVID-19 :** The clinical benefit of ivermectin therapy was evaluated in an observational registry-based study involving critically ill SARS-CoV-2-infected patients. Treatment with ivermectin at a dose of 150 µg/kg was found to be associated with a lower mortality rate and reduced healthcare resource use. Various trials ongoing

**Dosing schedule :** Oral Ivermectin 12mg once a day for three consecutive days. To be started at early stage of the disease.

**Common ADR :** Side effects have been mild-pruritus, giddiness, nausea, abdominal Pain, constipation, lethargy and transient ECG changes

## CORTICOSTEROIDS

**Introduction :** A cheap and widely available drug is known to save lives from severe COVID-19. According to RECOVERY TRIAL, of Oxford University, which is one of the largest clinical trial till date, has shown that dexamethasone lowers death risk from 40% to 28% in patients on ventilators and from 25% to 20% for those requiring supplemental O<sub>2</sub> over 28 days.

**Mechanism of action :** Glucocorticoids stop two phases of inflammation and thus exert both anti-inflammatory and immunosuppressive effects.

At molecular level glucocorticoids, easily diffuse through the host cell membrane and bind the glucocorticoid receptor in the cytoplasm. This receptor binding triggers a cascade of reactions that end up suppressing pro-inflammatory cytokines. IL-1, IL-2, IL-6, IL-8, TNF-α, IFN-γ, are linked to COVID-19 severity.

**Current status in COVID-19 :** Use of glucocorticoids is recommended for use in moderate to severe cases of COVID-19 associated with respiratory distress, to reduce mortality rate. But not advised for initial or mild cases of COVID-19.

**Dosing schedule :** Methyl prednisolone - 0.5-1 mg/kg/day in 2 i.v doses for 3 days. Dexamethasone - 6 mg once daily for 10 days (oral or i.v). Prednisolone (in- pregnant and lactating COVID 19 patients) - 40 mg oral BD for 10 days. Hydrocortisone - 80 mg i.v BD for 10 days

**Common ADR:** In case of COVID-19, as glucocorticoids are used for maximum of 3-10 days, such short term treatment is free of significant side-effects.

## VITAMIN D

**Introduction :** COVID-19 patients have been shown to have lower levels of vitamin D, with mean plasma concentrations half that of controls. The positive influence of vitamin D on the immune system during cytokine storm has been demonstrated in COVID-19 patients with ARDS

**Mechanism :** Viruses such as influenza are known to significantly damage the integrity of epithelial tight junctions increasing the risk of infection and pulmonary oedema. Vitamin D enhances innate cellular immunity through stimulation of expression of antimicrobial peptides, such as adherens and defensins. Defensins maintain tight gap junctions, adherens enhance the expression of anti-oxidative genes.

**Source :** Wild mushroom, fortified orange juice, Milk, eggs, fortified cheese, yogurt, Bread, sunlight

**Dose :** Recommended Daily Intake: 5-15 µg

Effective dosage/day : 20-50 µg

### Common ADR

Hypercalcemia, Calcium deposition in parenchymal organs and soft tissues, Renal Stones, Hypertension

## VITAMIN C

**Introduction :** The cytokine storm during COVID-19 infection escalates as disease progresses, and vitamin C has been suggested as a counter to this.

**Mechanism :** Vitamin C acts as an anti-oxidant that can scavenge reactive oxygen species (ROS), thereby, protecting biomolecules such as proteins, lipids and nucleotides from oxidative damage and dysfunction.

**Source :** Citrus fruits, strawberries, kiwi, pineapple, tomato, broccoli, cabbage, kale, spinach

Chicken, beef, liver, oysters, milk

**Dose :** Recommended Daily Intake: 40-85 mg/day

Effective dosage/day: 6000-8000 mg/day

### Common ADR

Precipitation of Renal oxalate stones (High dose prolonged use)

## ZINC

**Introduction :** Zinc deficiency results in an alteration of cell barrier function in lung epithelial tissues. It also significantly increases pro-inflammatory cytokines and remodeling of lung tissue. These effects were partially countered by zinc supplements



## Academics & Achievements

**Mechanism** : Zinc is vital in both the innate and acquired responses to viral infection. It has a role in the recruitment of neutrophil granulocytes, chemotactic activity and phagocytosis. Zinc has also been shown to inhibit the synthesis, replication and transcription complexes of coronaviruses

**Source** : Beans, nuts, whole grains, fortified breakfast cereals, Poultry, red meat, crab, Oysters, lobster, dairy products

**Dose** : Recommended daily intake: 8-14mg

Effective Dosage per day: 30-50 mg

### Common ADR

Metallic taste, nausea

### VITAMIN E

**Introduction** : Vitamin E is a major component of antioxidant defense. Studies have shown that a deficiency of this nutrient alters immune responses and viral pathogenicity.

**Mechanism** : Through anti-oxidant pathways it increases the number of T cells, enhances mitogenic lymphocyte responses, increases IL-2 secretion, enhances NK cell activity and decreases the risk of infection.

**Source** : Nuts (hazelnut, almonds, peanuts), seeds, vegetable oils, green leafy vegetables, mango, avocado, fortified cereals, salmon, trout, crayfish, lobster

**Dose** : Recommended daily intake: 7-10mg

Effective Dosage per day: 50-200 mg

### Common ADR

Loose motions, abdominal cramps, lethargy, creatinuria

### SELENIUM

**Introduction** : The trace element selenium has a role in antioxidant defense.

**Mechanism** : It enhances the antioxidant effect of Vitamin E and promotes synthesis of Glutathione peroxidase. Further it stimulates the immune system of the body

**Source** : Nuts, whole grains, cereals, mushrooms

Dairy products, Poultry, red meat, seafood

**Dose** : Recommended daily intake: 60-70 µg

Effective Dosage per day: Yet to be determined

### Common ADR

Bad breath, fever and nausea Liver, kidney toxicity in overdose

### OMEGA-3 FATTY ACIDS

**Introduction** : Omega-3 fatty acids are well known to have favorable effects on immunity and inflammation.

**Mechanism** : Exert anti-viral effects by inhibiting influenza virus replication

**Source** : Flaxseed, chia seed, walnuts, eggs,

Fish (salmon, sardine, mackerel), lobster

**Dose** : Recommended daily intake: 90-160mg

Effective Dosage per day: 1000-3000mg

### Common ADR

Heartburn, stomach pain, nausea, diarrhea

### SPIRULINA

**Introduction** : Spirulina is a type of cyanobacteria of ten referred to as blue-green algae. Phycocyanin is the main active compound in spirulina and gives its unique blue-green color.

**Mechanism** : This antioxidant substance phycocyanin can scavenge free radicals and inhibit production of inflammatory signaling molecules, providing antioxidant and anti-inflammatory effect.

**Dose** : Recommended daily intake: 1-3 g

Effective Dosage per day: up to 10 g

### Common ADR

Overdosage may cause hypotension due to release of nitric oxide

## DEPARTMENT OF COMMUNITY MEDICINE

### COVID-19 : Myths and Facts

When the word "pandemic" starts appearing in headlines, people become fearful and with fear comes misinformation and rumors. Here, let's dissect some of the most common myths that are currently circulating on social media and beyond.

### Myth : Face masks always protect against Corona virus

**Facts** : A systematic review concluded that community mask use by the healthy population is beneficial where transmission is pre-symptomatic. In countries, where adoption of facemask use by the public is around 100%, have experienced significantly lower rates of COVID-19 spread and associated deaths. The Centers for Disease Control and Prevention (CDC) recommend all people 2 years of age and older wear a cloth face covering in public settings.



### **Myth : Mother with COVID-19 cannot breastfeed her child**

**Fact :** Breast milk is the best source of nutrition for most infants. Mother must practice respiratory hygiene, during feeding. If respiratory symptoms present, use a medical mask when near the child.

### **Myth : Taking healthy foods with anti-microbial properties such as garlic & foods rich in Vitamins C or other immune boosters can cure COVID-19**

**Fact :** Garlic contains Allicin, a Sulphur-containing phytonutrient, source of its antibacterial and anti-viral properties. Garlic provides a great boost to the immune system with added micronutrients. However, there is no evidence from the current outbreak that eating garlic has protected people from the new coronavirus. Vitamin C is a natural immunity booster and helps in improving the immune functions by increasing the production of white blood cells to fight infections. There is no scientific evidence to support the fact that intake of vitamin C is helpful in prevention of the COVID-19. Immune boosters cannot cure COVID-19.

### **Myth : SARS-CoV-2 is the deadliest virus known to humans**

**Fact :** Different sources estimate the mortality rate for COVID-19 at roughly 2% to 3%-but that could change as the virus rages on. However, the world has been through other outbreaks that were much, much worse. Middle East respiratory syndrome (MERS) has had a mortality rate as high as 37.2%. Ebola is rare, but it has a high mortality rate of about 50% (although

### **Myth : SARS-CoV-2 is the deadliest virus known to humans**

**Fact :** Different sources estimate the mortality rate for COVID-19 at roughly 2% to 3%-but that could change as the virus rages on. However, the world has been through other outbreaks that were much, much worse. Middle East respiratory syndrome (MERS) has had a mortality rate as high as 37.2%. Ebola is rare, but it has a high mortality rate of about 50% (although that rate has ranged from 25% to 90% in past outbreaks). The 2014-2016 outbreak in West Africa was the largest Ebola epidemic to occur: 28,610 people were infected and 11,308 died. Hence SARS-CoV-2 is not the deadliest virus known to humans

### **Myth : Urine and faeces can spread COVID 19**

**Fact :** A WHO study notes that SARS-CoV-2 is stable in faeces (and urine) at room temperature for at least 1-2 days and it's more stable (up to 4 days) in stool from diarrhea patients (which has higher pH than normal stool). A recent research letter in JAMA also concludes that SARS-CoV-2 is present in feces. But, there have been no reports of feco-oral transmission of the SARS-CoV-2 virus. It is still inconclusive.

### **Myth : Corona Virus can last on surfaces only for few hours**

**Fact :** Studies suggest that corona viruses in general may persist on surfaces for a few hours or up to several days. It also varies under different conditions (e.g. type of surface, temperature or humidity of the environment). Hence frequent cleaning of surfaces and hand sanitizing is recommended.

### **Myth : Eating meat & egg can cause coronavirus infection**

**Fact :** There is no specific connection as to how the novel corona virus or any virus can stay on chicken, meat, seafood and eggs in transmission of corona virus. Corona viruses need a host (human) to latch and develop on to and simply cannot grow in food. Hence, it is always suggested that any meat or poultry should undergo a thorough cooking process (minimum of 30 mins) to kill most germs and illness-causing viruses.

### **Myth : A person who was infected and cured of SARS-CoV-2 can't get infected again**

**Fact :** Studies had shown that infected patients who display symptoms do develop antibodies, but it remained unclear how long these lasted. A study published in Nature Medicine concluded that people who have recovered from COVID-19 may have antibodies for two to three months. Hence an individual is susceptible to re infection.

### **Myth : Are Obese at greater risk for COVID-19 ?**

**Fact :** Obesity is a strong COVID-19 risk factor, as are comorbidities, including diabetes, cardio-vascular disease; and sedentary lifestyle. Fat cells accrete vitamin D; the obese consistently have proportionately lower vitamin D status which makes the individual more susceptible for infections.

### **Myth : Herd immunity plays a role in stopping the spread of COVID-19 ?**



**Fact :** Yes, based on the information about COVID-19 available, experts have estimated that 60-70% of the population needs to be immune to achieve herd immunity that is approximately five billion people worldwide

### **Myth : Flu/pneumonia/MMR vaccines will also help prevent COVID-19**

**Fact :** There are insufficient data to support the advocacy of the influenza or pneumococcal vaccines to prevent COVID-19. While these illnesses have similar symptomology to COVID-19, the vaccines are formulated to be active specifically against the influenza virus and streptococcal bacteria, neither of which can prevent COVID-19 infection. Few studies have shown that MMR vaccine reduces the severity and complications of COVID-19

### **Myth : Alcohol consumption is protective against COVID 19**

**Fact :** Consuming alcohol will not destroy the virus. Alcohol (60%) works as a disinfectant on skin but it has no effect within the system when ingested. Heavy alcohol consumption weakens the immune system thus reducing the ability to cope with infections, further increasing the risk of ARDS one of the most severe complication of COVID-19

### **Myth : Dead body of an infected person can spread COVID-19**

**Fact :** Virus can remain alive in the bodies of people who have died of COVID-19. According to WHO, if necessary precautions are taken, there is no risk of infection from the dead bodies of COVID-19 patients.

### **Myth : Nasal irrigation and gargling can prevent COVID-19**

**Fact :** Nasal irrigation (neti) and gargling with saline water is known to prevent the entry of pathogens into the respiratory tract. Also warm water gargling may provide relief in patients with nasal and throat congestion. But there are no studies to prove that such methods can prevent the infection with novel corona virus.

### **Myth : Pets and mosquito's/house flies spread COVID-19**

**Fact :** Cats and dogs are tested positive for novel coronavirus in some countries like the US, Hong Kong and China. There are certain studies to prove that animal to animal transmission of virus can occur.

But there is no evidence for animal to human transmission of the virus. As of now there is no evidence to prove that COVID-19 can spread by vectors like mosquitoes, houseflies and cockroaches.

### **Myth : Sanitizer is superior to soap and water in preventing COVID-19**

**Fact :** Sanitizers containing >60% to 95% alcohol (ethyl alcohol) are known to be effective in killing most of the pathogens harboring on hands. But unlike soap and water sanitizer does not reduce all the germs. Sanitizer is more convenient to use and it is considered to be better than nothing. So, if the hands are visibly dirty then washing with soap and water is the preferred way to clean hands. If properly used both are effective means in preventing SARS-CoV-2 infection.

### **Myth : There is no cure or vaccine for COVID-19**

**Fact :** In Spite of so many claiming to have discovered treatment for COVID-19, yet there is no drug available to cure the disease. Some drugs such as Remdesivir, hydroxychloroquine, dexamethasone and other antiviral drugs are being used to reduce the severity of disease and prevent the development of complications.

More than a dozen COVID-19 vaccines are under trial globally. Indian Council of Medical Research (ICMR) aims to complete the indigenous COVID-19 vaccine's clinical trials as soon as possible. However to date, there are no vaccines available for commercial use anywhere in the world.

## DEPARTMENT OF OPHTHALMOLOGY

All India Ophthalmological society has come out with guidelines to safeguard the best interests of healthcare workers and patients.

### **Eye care delivery :**

We have adopted the following measures to ensure safe and effective ophthalmic care during COVID times.

#### **1. Practices followed in OPD :**

- The patient screening desk located at the entrance of the OPD is manned by an intern, nurse and/or paramedical staff with a Post-Graduate who screen all the patients and attendants before they enter the OPD premises.
- At the screening desk contact details of the patients are noted down in a register and thermal screening is performed.



- Patients from containment zones/ with history suggestive of COVID -19 are referred to Fever Clinic unless they have come with ophthalmic emergency.
- Patients are provided with hand sanitizer and allowed within the OPD premises after advising the proper use of mask and social distancing norms to be followed.
- One attendant only policy at the entry point is maintained.
- All the Consultants, postgraduates, nursing and paramedical staff wear PPE as indicated: surgical mask/N95 mask, goggles/ face shield and gloves.
- Slit-lamps used for examination have the barriers/ breath shields to minimize the exposure of doctors and equipment disinfection protocols are being followed.
- We are ensuring proper management of Biomedical Waste as per the BMW Management Rules.

## 2. OT protocols:

- All patients posted for ophthalmic surgeries (elective/emergency) undergo screening for COVID-19.
- Strict asepsis protocols are in place in the OT.
- Operating surgeon and OT assistant wear appropriate PPE during surgery.
- Meticulous sterilization procedures of the OT, ophthalmic equipments and instruments are performed at the end of the surgery.

## DEPARTMENT OF MEDICINE

### EXTRA-PULMONARY MANIFESTATIONS OF COVID-19

- Corona virus diseases 2019 [COVID-19] ,caused by severe acute respiratory syndrome corona virus 2 [SARS-COV-2], has become a global pandemic
  - Most patients manifest fever and respiratory tract symptoms. It may also involve other organs / system. Extra pulmonary manifestations Of Covid-19 are:
1. Cardiac : Acute cardiac injury, heart failure, arrhythmia , shock ,acute Myocarditis, chest tightness.
  2. Gastrointestinal: Anorexia, Diarrhea, nausea/ vomiting, abdominal pain.
  3. Hepatic manifestation: Abnormal elevation of liver enzymes.
  4. Renal manifestation: Acute Kidney Injury

5. Neurological symptoms: Dizziness, headache, impaired consciousness, acute cerebrovascular diseases, seizures, ataxia, meningoencephalitis, Guillain-Barre syndrome
6. Olfactory and gustatory symptoms: Hyposmia, Anosmia, Dysgusia, Aguesia
7. Ocular: Acute conjunctivitis
8. Cutaneous symptoms: Erythematous rash, hives, vesicles, acro-ischaemia, transient unilateral livedoreticularis
9. Hematological: Lymphopenia, thrombocytopenia, coagulation disorders, thrombotic events.

### HOW DOES COVID TEST WORK?

#### 1. RAPID ANTIGEN TEST

- An antigen is any substance that involves the immune system to produce antibodies which target and destroy antigens
- Rapid antigen test (RAT) strip contains antibodies that attach to specific antigen i.e. Corona virus spike protein
- Throat or nasal swab is obtained. This is dipped in a solution to neutralize the spike protein. This sample is applied on test strip. If specific Covid antigen is present, they act on antibodies and mark the strip indicating positive test
- Result of RAT depends on amount of antigen picked up by swab called viral load.
- More the viral load, better the chances of RAT detecting Covid
- Time taken to perform the test is 15-30min
- Negative RAT should be tested by RT-PCR to confirm diagnosis

#### 2. RT - PCR

- It is a molecular test that will amplify the virus genetic matter
- Nasal / Throat swab is used
- Coronavirus is RNA virus this test converts RNA into DNA by a process called reverse transcriptase
- The sample is mixed with reagents that amplifies virus genetic material. It is then placed in polymerase chain reaction (PCR) machine ,which used cycles of heating and cooling that amplifies target DNA
- A fluorescent dye is added which will help in detecting the infection
- RT-PCR is more reliable test as it amplifies virus genetic even a small viral load Time taken for the procedure is 3-4hrs



### DEPARTMENT OF SURGERY

Respiratory tract manifestations are most commonly reported symptoms of COVID 19. Emerging data suggests that gastrointestinal manifestations are also common, as the gastrointestinal epithelial cells express ACE2 receptor which is a major anchoring receptor for SARS COV 2. In our hospital, in a single surgical unit, more than 15 cases of carcinoma breast have been diagnosed in a span of 3 months. 4 patients who have been operated for carcinoma breast and have completed standard treatment protocol and on regular follow-up for 2-3 years, have presented with pulmonary metastasis and cerebral metastasis.

Further research is needed to look for the cause of increase in the number of carcinoma breast cases and its relation with COVID-19 or due to lockdown.

In our hospital, in the department of surgery from June 2020 onwards, only emergency surgeries are being conducted and all elective surgeries have been postponed. Only seriously ill patients are being admitted and all are being tested for COVID 19 by RT-PCR technique at the time of admission.

Patients who were admitted from casualty in late evening/ night were tested for COVID 19 on the next day with RT-PCR technique.

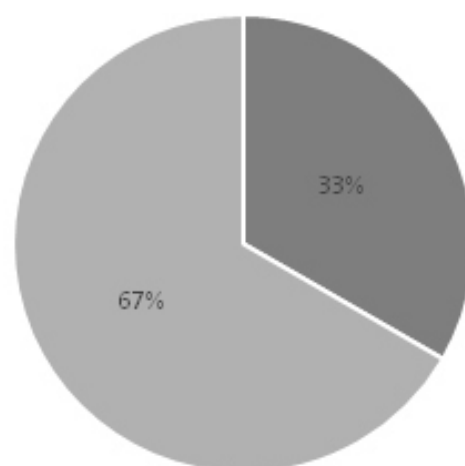
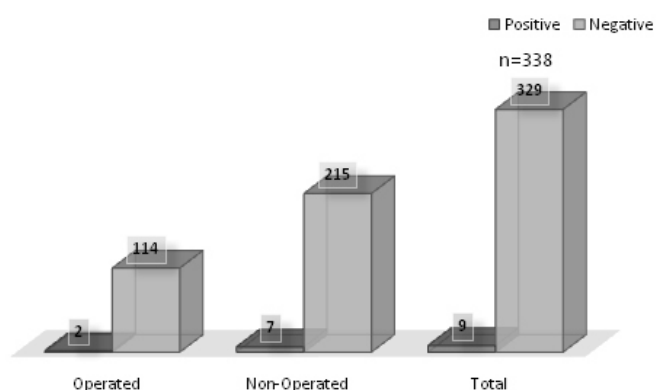
Emergency surgeries were performed with universal precautions including PPE, if the COVID 19 report of the patient was not available at the moment, and no emergency surgery was delayed.

In our hospital, between June and July 2020, 338 patients were admitted in surgical department, out of which 116 patients were operated.

Chart showing number of patients admitted in surgical department in our hospital and the number of patients who turned out to be COVID19 positive with RT-PCR technique.

Of the 338 admitted patients, 9 patients (2.7%) were found to be COVID 19 positive, out of which two patients (22.2%) were diagnosed as Chronic Liver Disease (with portal hypertension/ duodenal ulcer), two (22.2%) were having Acute Pancreatitis, two (22.2%) presented as Acute Appendicitis (one with appendicular abscess), one patient (11.1%) had Necrotizing fasciitis of abdominal wall with sub diaphragmatic abscess, and the remaining two patients (22.2%) presented with acute severe gastritis, which could all be atypical gastrointestinal manifestations of COVID 19. Two (22.2%) out of these nine patients - one appendicular abscess and the other necrotizing fasciitis of abdominal wall with sub diaphragmatic abscess were operated. Both the patients were shifted to designated government district COVID Hospital for further treatment. No operative complications occurred in appendicular abscess patient and patient recovered well. The other 7 patients who were tested positive were also shifted to designated Government COVID Hospital for further conservative management, and showed delayed response to the treatment given, but have also improved symptomatically.

Out of these 9 patients 3 patients (33.3%), including the two operated positive cases did not have any respiratory symptoms. Further research is essential in this regard to see how patients respond to treatment or whether the delay in response to standard treatment is common in all COVID 19 patients.



- Number of positive cases without respiratory symptoms
- Number of positive cases with respiratory symptoms



Chart showing percentage of patients who presented with only gastrointestinal symptoms without any respiratory symptoms.

Patients undergoing surgery are a vulnerable group at a risk of SARS-CoV-2 exposure in hospital. They may be particularly susceptible to subsequent pulmonary complications, due to inflammatory and immunosuppressive response to surgery and mechanical ventilation.

In a cohort study assessing postoperative outcomes in 1128 adults with COVID-19 who were undergoing broad range of surgeries, it was found that in 30 days following surgery 51% patients developed pneumonia, severe respiratory distress syndrome, or required unexpected ventilation, which were reasons for high mortality, as most patients who died had experienced pulmonary complications.

Patients undergoing surgery are a vulnerable group at a risk of SARS-CoV-2 exposure in hospital, leading to high morbidity and mortality in post operative period.

Relation of new cases of Carcinoma Breast and development of metastasis(Cerebral & Pulmonary) with COVID19 needs to be established with further studies.

### DEPARTMENT OF PSYCHIATRY

This disease is associated with various psychosocial aspects . They can be classified as those happening

Before one gets infected ,during the course of infection and after recovering from infection

Such manifestations can be seen in those infected, their kith & kin and healthcare professionals.

#### Before one gets infected

Fear of getting infected is very common. This is due to the lack of information about the disease in all sections of the society. One of the main source of fear is possibility of being quarantined after having come in contact with an infected person. Quarantining involves restriction of freedom of movement which is equated with imprisonment which is associated with crime which carries stigma. Further, anxiety is fuelled by the media which exaggerates the negative news associated with poor medical care, cost of care, poor facilities at quarantine centres. This leads to difficulties in contact tracing and testing as primary contacts become untraceable.

Fear can lead to excessive preoccupation with measures to be taken to prevent getting infected. It can manifest as repetitive washing, hypochondriacal preoccupation ( excessive concern about bodily symptoms) and repeated medical consultations accompanied by requests for testing for Covid 19 infection. Frequent modifications of the information about transmission of disease, protocols for testing , isolation and quarantining by the authorities creates confusion in lay people

Lockdown can have economic and psychosocial implications. Loss of business, cut in wages and loss of jobs result in anxiety and depression. Those holding temporary jobs, daily wage workers and migrant workers are the ones most affected. Meeting house hold expenses and paying EMIs of loans becomes difficult. Fear of shortage and unavailability of essential commodities (food and medicines) can result in excessive buying and hoarding. Inability to access healthcare for non Covid 19 diseases result in anxiety. Being housebound results in social isolation. Man is a social animal and isolation leads to mood changes. Nonavailability of modes of socialization and entertainment like visiting friend& relatives, movies, out of home dining , outdoor sports, gymnasium, sports & cultural events, out of home religious activities and tours results in boredom. Avenues to spend the suddenly available excessive free time varies across people . Many can drift in to unhealthy ways . Screen time increases with its associated negative consequences. Lack of physical activity and excessive intake of food ( both healthy & unhealthy) leads to weight gain. Need to sit and monitor children during online classes can be difficult for parents who are not tech savvy. It might also arouse anxiety in those parents with limited academic skills reminding them of negative memories of their school days. It can manifest as frustration and anger.

Closure of schools results in loss of studying patterns in children and restricted academic skills. Confining children to home restricts outdoor play & activities results in altered physical development. Those due to take qualifying exams and entrance exams face uncertainty about future regarding jobs and entry in to other courses.

Observing and hearing woes of those who got infected results in negative anticipation of such a state to one self.



### During the course of infection

Need to get tested for Covid 19 arouses lot of anxiety. Tendency is to deny and postpone the need for testing. When tested positive for Covid 19, some people can feel guilty of having inadvertently transmitted the infection to others. Infection can be symptomatic or asymptomatic. Asymptomatic persons quarantined at Covid care centers can be worried about the facilities at the centre and isolation from family. Fear of developing symptoms over time can be anxiety provoking and lead to close self monitoring. Negative attitudes of healthcare workers results in psychological distress.

Those who are symptomatic and needing in patient are worried about finding a hospital meeting their needs. Fear of lack of availability of beds, treatment facilities like ventilators, cost of treatment, quality of care in hospital, events happening in other patients around and progression of symptoms in oneself can be intimidating. Treatment in ICU can cause delirium where in patient becomes confused, disoriented and restless.

Close relatives of such patients also undergo the same emotional trauma.

In the unfortunate event of somebody succumbing to infection, the protocol for performing last rites prevents relatives from carrying out rituals as per their needs. This interferes with normal grief process and can have lasting effects on the psychological state of those bereaved.

### After recovering from infection

Postinfective asthenia and depression are common after a viral infection. This is due to the cytokine storm during the infective stage. Person feels exhausted but at the same time relieved for having survived. But if some one close has not survived the infection, they may experience survival guilt. Economic burden of treatment and the need to start life all over again can be stressful. Some people can have long lasting depression. However long term consequences of the infection are not yet fully understood.

Health careworkers directly involved in Covid 19 care can face hostility from patients and relatives during contact tracing, testing, survey, OP care and IP care. Fear of contracting infection hangs like a Damocles sword. Excessive and unreasonable demands by patients, relatives and authorities poses additional burden on them. Hounding by media for inadvertent shortcomings adds fuel to fire. Extended working hours in emergency situations, death of patients despite all

sincere efforts can cause burnout. Staying away from family during post duty quarantine and worry about transmitting infection to young children and aged parents at home can take a heavy toll on them.

Those doctors not directly involved can have reduction in income due to lockdown and unwillingness on part of other patients to access health care. There was ambiguity over whether private OPD clinics to be kept open or not, with different authorities issuing contradictory guidelines. Threat of cancellation of registration of medical establishment and Medical council registration were often there for perceived non compliance of guidelines like not uploading details of fever cases daily and not providing beds in hospitals for Covid care, fuelling anxiety, anger and frustration. More work and less pay provoked many health care workers to go on agitation pressing for implementation of their demands.

Development of psychiatric manifestations depend on multiple factors like personality, coping styles, social support, financial strength, presence of preexisting psychiatric morbidity in family and associated co morbidities.

Isolated symptoms like lack of sleep, appetite, feeling anxious and sad, fear of contracting infection are common and can be self limiting. They may require reassurance, proper information and anxiolytic medications for a brief period.

Others can go on to develop full blown syndromes of Anxiety, Obsessive Compulsive Disorder, Phobia and Depressive disorders. Loss of a loved person, job, money or objects result in grief manifesting as depression. Readjustment to life after the pandemic places extra psychological demand on a person. Occurrence of psychosis per se due to Covid 19 is rare. But those having preexisting psychosis can incorporate the theme of Covid 19 infection in their delusions. All preexisting psychiatric syndromes tend to exacerbate during an epidemic/pandemic. Unavailability of alcohol during lock down or hospitalization results in alcohol withdrawal which can vary in intensity. Severe alcohol withdrawal manifests as delirium tremens requiring IP care. Suicides have been reported both in Inpatients and primary contacts. In previously psychologically healthy people, stigma is the main cause, resulting in impulsive suicide. This group of people require intensive psychological interventions and psychopharmacological support for an extended period.

Psychiatric manifestations can be prevented or minimised by



Acquiring authentic information through concerned authorities

Avoiding viewing or transmitting rumors, fake news.

Following all measures advocated for preventing infection transmission

Accessing health care early during the course of illness

Not hesitating to get tested when advised.

Following all guideline during isolation and quarantine

Following the advise of health care professionals during OP and IP care.

Having realistic expectations from health care professionals

Being optimistic, hopeful and thinking positively

Eating healthy diet, Avoiding alcohol and other addicting substances

Doing optimal physical exercise

Indulging in relaxing activities like Music, Praying, Yoga, Meditation, Reading,

Acquiring new useful information, Indoor games, Crossword puzzles and

Communicating with near & dear ones

Not hesitating to contact mental health professionals when unable to manage by oneself

Not viewing infected persons and contacts as criminals and provide them

necessary empathy, care and support.

Psychosocial aspects often take a backseat when lifethreatening physical manifestations predominate. But, psychosocial aspects assume importance in a section of people in all stages of disease, which have to be addressed promptly to reduce morbidity and mortality.

## DEPARTMENT OF RADIO-DIAGNOSIS

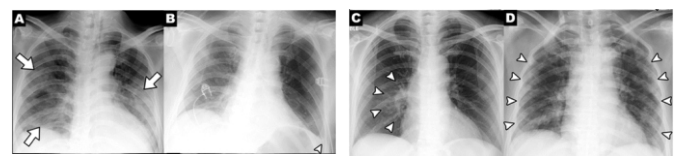
### Radiological prospective in COVID-19 chest infection

The understanding of the radiological features of the COVID-19 is incomplete and evolving as it continues to spread, there is a need to consolidate the emerging knowledge on its radiological profile.

The chest radiographs are the cheapest and easy available modality to initial assessment of the chest infection. Various patterns are described in various published studies.

Findings can be normal chest radiograph, ground glass opacifications, consolidation, bilateral involvement and pleural effusions. Predominance of lung involvement can be upper or lower zones, both upper & lower zones, peripheral, central lung distribution.

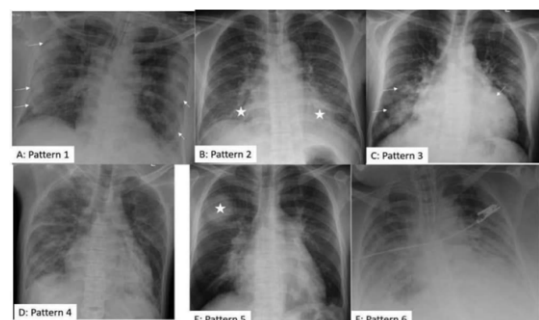
In a study by Chen et al, Among 99 patients in addition to other lung findings, they found that bilateral pneumonia was the commonest finding on the chest radiograph. Song et al, described predominantly ground glass opacities (77%) with largely peripheral distribution (86%) and lower lobe involvement (90%). Findings on chest radiograph:



- Patchy consolidations (arrows),
- Pleural effusion (arrowhead),
- Peri hilar distribution (arrowheads) and,
- Peripheral distribution (arrowheads)

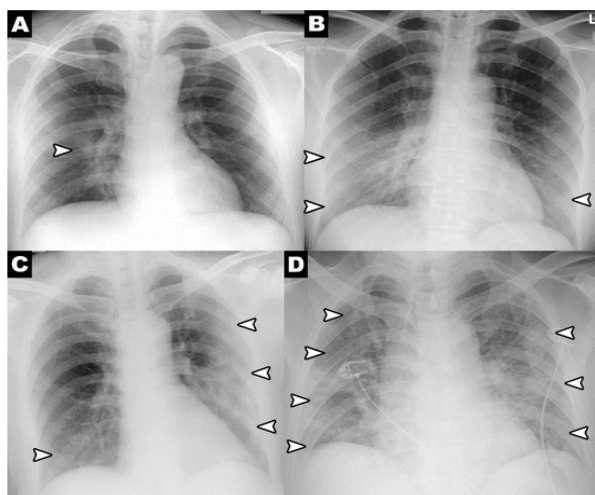
### Various patterns of COVID on chest radiograph:

- Reverse batwing
- Multifocal lower lobe predominant consolidation
- Peri-bronchial rounded consolidation
- Multifocal bilateral consolidations
- Ball pattern or round pneumonia.
- Bilateral symmetrical diffuse lung involvement.



### Radiographic score:

Radiographic Assessment of Lung Edema score (RALE score) proposed by Warren et., al. A score of 0-4 was assigned to each lung depending on the extent of involvement by consolidation or ground-glass opacities (0, no involvement; 1, <25% involvement; 2, 25%-50% involvement; 3, 50%-75% involvement; 4, >75% involvement). The scores for each lung were summed to produce the final severity score.



Examples of chest radiography severity scoring in patients with corona virus disease 2019 and days from symptom onset are shown as follows (the calculation right lung score + left lung score = total score was used): A, day 12 (1 + 0 = 1); B, day 5 (2 + 1 = 3); C, day 3 (1 + 3 = 4); and, D, day 10 (4 + 3 = 7)

Computed Tomograph:

The CT scan thorax reveals various features of lung parenchymal involvement which are grouped as obligatory and confirmatory patterns

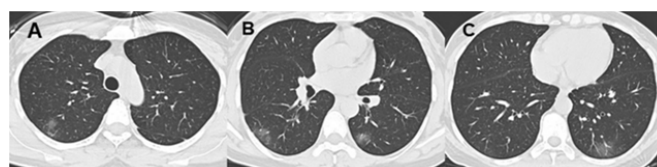
Table 2: Typical Features for Pulmonary Involvement of COVID-19	
Obligatory Features	
Ground-glass opacities, with or without consolidations, in lung regions close to visceral pleural surfaces, including the fissures (subpleural sparing is allowed) and multifocal bilateral distribution	
Confirmatory Patterns	
Ground-glass regions	
Unsharp demarcation, (half) rounded shape	
Sharp demarcation, outlining the shape of multiple adjacent secondary pulmonary lobules	
Crazy paving	
Patterns compatible with organizing pneumonia	
Thickened vessels within parenchymal abnormalities found in all confirmatory patterns	

## CT severity score:

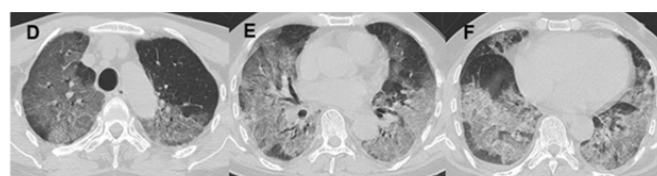
Previously a study done by Sudhir Bhandari et.al was used to grade the severity of the lung involvement. The three lung lobes on the right and two lobes on the left were individually assessed and percentage involvement of the lobe was noted based on visual assessment. Visual severity scoring of CT chest was classified Score-1 (<5% area involved) Score-2 (5-25%) Score-3 (25-50%) Score-4 (50-75%) Score-5 (>75%). The clinical condition of patients corresponds with the CT severity score-mild cases shows score of <15/25 in 45.83% patients and severe cases shows CT severity score of >15/25 in 87.50% patients[5]

Now, according to RSNA the anatomical lung segmental involvement is being used to score the severity. The 18 segments of lungs were divided into 20 regions - apico-posterior segment of the left upper lobe was subdivided into apical and posterior segmental regions. The anterior basal segment of the

left lower lobe was subdivided into anterior & medial basal segmental regions. 20 lung regions were subjectively evaluated on chest CT attributing scores of 0, 1, and 2 if parenchymal opacifications involved 0, < 50%, or >50% of each region. The CT-severity score was defined as the sum of the individual scores in the 20 lung segment regions, which may range from 0 to 40 points.[6]



A-C. Non-contrast chest CT images of a 46 year old woman with mild COVID-19 pneumonia. CT scans show ground-glass opacities in the posterior segment of right upper lobe, superior segment of bilateral lungs and posterior basal segment of right left lobe, the CT-SS is 4.



D-F. Non-contrast chest CT images of a 69 year old man with severe COVID-19 pneumonia. CT scans show multiple ground-glass opacities and septal thickening, the imaging manifestation is the so-called "white lungs", the CT-SS is 35.

According to study done by Ran Yang et.al. CT-severity score less than 19.5 could rule out severe or critical forms of disease with a high negative predictive value of 96.3% in this cohort study.

The differential diagnosis of the COVID-19 infections may be other viral pneumonias, Influenza A virus (H1N1) infection, Adeno virus pneumonia and respiratory syncytial virus pneumonia. Other bacterial & mycoplasma pneumonias. Non infectious pneumonias like hypersensitivity pneumonitis, mechanical pneumonia and vasculitis can be considered.

The radiological features of COVID-19 will complement the clinical suspicion of infection. Baseline chest radiographs has good sensitivity. However NCCT thorax has more sensitivity with specific patterns being described. As the COVID pandemic threatens to overwhelm health care system in the country. Chest radiograph and CT thorax can be used as tool to identify the severity and progression of the disease and help in management.

## P. G. Rank Holders



**Dr. GURUPARAN R**  
M.D(Emergency Medicine)  
3rd Rank



**Dr. KALKE SIDDHARTH VIJAY**  
M.D(General Surgery)  
5th Rank



**Dr. MEDINI LAKSHMESWAR**  
M.S(O.B.G)  
2nd Rank



**Dr. NAMITA C S**  
M.S(O.B.G)  
8th Rank



**Dr. PRATHIK R**  
M.S(Orthopaedics)  
4th Rank



**Dr. B GURUMURTHY**  
M.D(Radio-Diagnosis)  
10th Rank



**Dr. SRIDURGA J**  
M.S(ENT)  
4th Rank



**Dr. LEKHYA V**  
M.S(ENT)  
8th Rank



**Dr. BHOJAR SHRADDHA SUBHASH**  
M.S(ENT)  
9th Rank



**Dr. NIKITA BANAKAR**  
M.D(Dermatology)  
9th Rank



**Dr. BALASUBRAMANYA S TANDUR**  
DCH  
2nd Rank



**Dr. FARZANA BEGUM**  
DCH  
2nd Rank



**Dr. DAYASAGARI MADAM**  
DCH  
5th Rank



**Dr. ARDRA KRISHNAN M**  
DCH  
6th Rank



**Dr. NAGARJUN G**  
DCH  
9th Rank



**Dr. VIKAS M**  
DMRD  
1st Rank



**Dr. YOGESHWARI P HIREMATH**  
DLO  
3rd Rank



**Dr. PATIL VEENA HANAMANT**  
DOMS  
3rd Rank



**Dr. ABHIJITH U**  
DA  
2nd Rank



**Dr. BHEEMSHETTY SHAILAJA**  
DA  
5th Rank



**Dr. CHARULATHA K S**  
DDVL  
1st Rank



**Dr. VANISHREE B N**  
DPM  
1st Rank



**Dr. POOJA RAIKAR**  
DPM  
2nd Rank

## U. G. Rank Holders



**MADHU KUMARI JHA**  
COMMUNITY MEDICINE  
10th Rank



**NOOR SHAZIA BEGUM**  
PATHOLOGY  
7th Rank

### ATTENTION PLEASE

The submission for the next issue October 2020 of the News letter should be done before 20<sup>th</sup> October 2020. All the Photos should be in JPEG format. Please send the copy of the material in the form of soft copy as well as hard copy through the department co-ordinator within the stipulated time and cooperate.



## CURRICULUM IMPLEMENTATION SUPPORT PROGRAMME

