Indian Orthopaedic Association’s
Suggestions for Orthopaedic Practice during CoVid-19 pandemic

RELEASED ON: 14TH APRIL 2020
1st UPDATE: 5th MAY 2020
2nd UPDATE: 8TH JUNE 2020
DISCLAIMER

Knowledge and best practice about CoViD-19 is rapidly evolving. As new research and experiences broaden, the understanding and practices may become different.

Following are suggestions by Indian Orthopaedic Association, considering various guidelines and publications by various health authorities/associations across the globe. Surgeons must rely on their experience and knowledge in evaluating and using this information for patient care. It is the responsibility of the surgeon, relying on their experience and knowledge of their patient, to decide the best treatment for their patients and take all safety precautions.

To the fullest extent of law, neither Indian Orthopaedic Association or the contributors of these guidelines, assume any liability for any injury and/or damage to person/s or property as a matter of negligence or otherwise from any method described in the material herein.
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CONFLICTS OF INTEREST: NONE DECLARED
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CoViD-19 - THE GLOBAL PANDEMIC

► OVER 7 MILLION CASES GLOBALLY.
(REF WORLDOMETER)

► ORIGINATED FROM WET ANIMAL MARKET, WUHAN, CHINA

► ZOONOTIC TRANSMISSION

► SYMPTOMS INCLUDE FEVER, COUGH, DYSPNEA, DIARRHEA.

► CLINICAL PRESENTATION RANGES FROM ASYMPTOMATIC INFECTIONS TO BILATERAL PNEUMONITIS TO ACUTE RESPIRATORY DISTRESS SYNDROME / SEPTIC SHOCK
Globally, as of 8:36am CEST, 8 June 2020, there have been 6,881,352 confirmed cases of COVID-19, including 399,895 deaths, reported to WHO.

Source: https://www.covid19india.org/
https://who.sprinklr.com/
CoViD-19-THE GLOBAL PANDEMIC

- MORTALITY 1- 10%
- W.H.O. DECLARED IT A GLOBAL PANDEMIC ON 11.03.2020
- AGGRESSIVE CONTAINMENT & MITIGATION MEASURES LEAD TO LOCKDOWN OF MANY COUNTRIES INCLUDING INDIA.
- SOCIO ECONOMICAL OF IMPACT OF LOCKDOWN AND OTHER CONTAINMENT MEASURES, MANY COUNTRIES ARE OPENING LOCKDOWN RESTRICTIONS, LEAVING HEALTH CARE COMMUNITY AFRAID OF RISE OF COVID CASES.
- THE ‘SECOND WAVE’ IS ALSO EXPECTED, WHICH IS BELIEVED WILL RESULT IN MORE CASES AND MORTALITY.
Coronavirus (SARS CoV-2)

- Positive stranded RNA viruses
- Crown like appearance, due to spike like glycoproteins on envelope
- Diameter of 0.06-0.14 microns
- Sensitive to ethanol, ether (75%), chlorine containing disinfectant, peracetic acid and chloroform, except chlorhexidine.
- Sensitive to UV rays and heat (>70 degree centigrade)
CoViD-19 (SARS CoV-2)

- SARS CoV-2 HAS SPECIAL AFFINITY TO HUMAN TRACHEAL EPITHELIAL CELLS
- ATTACHES TO ACE-2 RECEPTORS ON HUMAN AIRWAY EPITHELIAL CELLS
- ENTERS AND USES CELL MACHINERY TO REPLICATE AND ULTIMATELY CELL DEATH.
- THE CYTOKINE STORM, LEAD BY IL-6, THE FLORID IMMUNE RESPONSE LEADS TO ARDS AND SEPTIC SHOCK
- MAINLY RESPIRATORY/FOMITE TRANSMISSION
- FECO-ORAL ROUTE POSSIBLE
- PRESENT IN BLOOD, VERTICALLY TRANSMISSION (+/-)
- NO VACCINE/ DEFINITIVE RELIABLE TREATMENT YET.
CoViD-19-Susceptible population (CDC)

1. **Asthma** - Moderate to severe only
2. **Chronic Lung disease** – COPD. Pulmonary Fibrosis, Cystic Fibrosis
3. **Diabetes**
4. **Serious Heart Conditions** – Heart Failure, coronary artery disease, congenital heart disease, cardiomyopathy,
5. **Chronic kidney Disease** – Dialysis
6. **Severe obesity** – BMI > 40
7. **Age** - > 65 years
8. **Immunocompromised** – Cancer treatment, transplant including bone marrow, immune deficiency, HIV with low CD4, medication causing immunosuppression including long term steroids.
9. **Liver disease** – Cirrhosis

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<thead>
<tr>
<th>Risk Level</th>
<th>Description</th>
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<tr>
<td>Low Risk</td>
<td>&lt; 65 years with no risk factors</td>
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<tr>
<td>Medium Risk</td>
<td>&gt; 65 years with no risk factors &lt; 65 years with 1 risk factor</td>
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<tr>
<td>High Risk</td>
<td>&gt; 65 years with 1 risk factor &lt; 65 years with 2 risk factors</td>
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<tr>
<td>Very High Risk</td>
<td>All patients with 3 or more risk factors</td>
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Real time- Reverse Transcriptase Polymerase Chain Reaction (RT-PCR)-DIAGNOSTIC- gold standard.

But they have high false negative rates especially if done in early stages.

- due to less shedding of virus
- improper swab technique
- poor swab preservation and transport
- technical limitation inherent to test, e.g.: PCR inhibition)

The sample is obtained either by naso-pharyngeal swab, oropharyngeal swabs taken by lab personnel or physician following all safety protocols. Alternatively, bronchioalveolar lavages, sputum, endotracheal tube suctioned fluid can also be used.
OTHER/NEW DIAGNOSTICS

- **Antibody based/Serological kits** are although rapid, but only detect CoViD exposure after 7-10 days of exposure, have limited diagnostic capabilities.
  Used for sero-surveillance.

- **Isothermal nucleic amplification:**
  - Test by Abbott Laboratories, called ‘ID Now COVID-19’
  - It amplifies a unique region of the virus's RdRp gene
  - The resulting copies are detected with "fluorescently-labeled molecular beacons“ provides results in 13 minutes or less.
  - Not available in India, reliability >90%, needs more studies.

- **Antigen based tests:** "Sofia 2 SARS Antigen FIA" by Quidel Corp.
  - uses monoclonal antibodies to detect the virus's nucleocapsid (N) protein.
  - The result detected by company's device using immunofluorescence.
  - Simpler and cheaper but less accurate than available PCR tests
  - Gives results in 15 minutes.
Chest radiograph & CT findings are non-specific. (similar to other viral pneumonias)

Chest radiograph may be normal in early disease, less sensitive than CT,

CT scan has proven to be more sensitive than RT-PCR (1), which may be negative in initial stages. But, CT should not be used as a screening tool for mass population (2).

Typical CT findings include multifocal areas of consolidation and ground glass opacities in peripheral lung field. Other findings include:

- interlobular septal thickening (which when present with the ground glass opacities lead to the “crazy paving appearance”)
- Pleural effusion and pneumothorax are rarely seen.

WHY MODIFY ORTHOPAEDIC PRACTICE DURING COVID 19?

- CONTRIBUTE IN COUNTRY HEALTH CARE.
- ANTICIPATING HIGH PATIENT LOAD & NEED FOR VENTILATOR BEDS, MINIMIZE USAGE OF HEALTHCARE RESOURCES
- FOR SOCIAL DISTANCING AND HENCE PREVENTING SPREAD
- TO AVOID CONTAMINATION OF OTHER PATIENTS, HEALTH CARE WORKERS AND SETUP.
OPD/RECEPTION SCREENING

- **THERMAL SCREENING**: Screens for fever, will at least identify the febrile ones.

- **SECURITY PERSONNEL/HCW SCREENING**: Basic brief history of symptoms: fever, cough, diarrhea, bodyache.
  - T: Travel
  - O: Occupation
  - C: Contact
  - C: Cluster

- **AAROGYA SETU APP**: See the area where patient belongs.
OPD SCREENING

1. Thermal scanning
2. Screening form

Suspected Patients
1. Refer the patient to Covid-19 Facility
2. Inform CMO

Non Suspected Patients
Send the patient to main OPD area

CONSULTATION
Patient goes back to home
OPD PRACTICE TIPS

1. MINIMIZE OPD PATIENTS
2. SCHEDULE YOUR APPOINTMENTS, AVOID UNNECESSARY APPOINTMENTS, TALK TO PATIENT ON PHONE BEFORE CALLING TO OPD/CLINIC
3. CALL MINIMAL NECESSARY STAFF
4. HEALTH CARE WORKERS SHOULD WEAR HOSPITAL SCRUBS, MASKS (SURGICAL AT LEAST), GLOVES AND HOSPITAL SHOES
5. USE TELEMEDICINE
OPD PRACTICE TIPS
(PATIENT CROWD MANAGEMENT)

6. ONE PATIENT ONE ATTENDANT RULE

7. MAINTAIN SOCIAL DISTANCING

8. NO EATING /DRINKING IN WAITING AREA

9. KEEP WAITING AREA VACANT

10. PATIENT AND ATTENDANT SHOULD WEAR SURGICAL MASKS

11. EASY AVAILABILITY AND ACCESS TO SANITISERS FOR EVERYONE.
OPD PRACTICE TIPS 
(CLINIC CHAMBER GUIDELINES)

12. SHOULD HAVE SEPARATE ASSESSMENT AND PROCEDURE ROOMS

13. ROOMS SHOULD BE DISINFECTED AFTER EVERY PATIENT WITH 1% HYPOCHLORITE; Esp. FURNITURE WITH DIRECT PATIENT CONTACT LIKE PATIENT SEAT AND EXAMINATION COUCH.

14. USE OF E-PRESCRIPTION/ DIGITAL INVESTIGATION REPORTS/DIGITAL PAYMENTS SHOULD BE PREFERRED TO REDUCE FOMITES.

15. COVER OPD COMPUTER WILL TRANSPARENT PLASTIC SHEETS PREFERABLY TO ALLOW EASY DISINFECTION

16. COUCHES SHOULD BE COVERED WITH WATERPROOF SHEETS/ MACINTOSH/ REXIN SHEETS WHICH CAN BE DISINFECTED EASILY.
OPD PRACTICE TIPS

17. GIVE ONE STOP TREATMENT, MINIMAL FOLLOW UP VISITS

18. AVOID INTERDEPARTMENTAL REFERRALS, IF POSSIBLE

19. MINIMUM XRAY/INVESTIGATIONS
   FOLLOW UP XRAYS ONLY WHEN YOU EXPECT IT WILL HAVE DRASTIC IMPACT OF PATIENT’S MANAGEMENT

20. SHIFT C-ARM TO OPD, TO AVOID VISITS TO RADIOLOGY DEPT

21. USE VIDEOS/ONLINE REHAB TOOLS FOR PATIENT REHAB.

22. MINIMIZE ADMISSIONS FOR INPATIENT CARE
PATIENT TRIAGING FOR SURGERIES

- MINIMIZE ADMISSIONS FOR INPATIENT CARE
- AVOID ROUTINE SURGERIES
- USE HEALTHCARE RESOURCES WISELY
- TRIAGE PATIENTS WITH HIGHER TENDENCY FOR NON OPERATIVE MANAGEMENT
- AVOID SURGERIES IN GERIATRIC PATIENTS (SUSCEPTIBLE POPULATION FOR COVID, CHANCES OF NEED OF VENTILATOR CARE HIGHER IN POST OP PHASE)
AIR CONDITIONERS IN OPD?

- STAGNANTION OF AIR SHOULD BE AVOIDED.
- EXHAUST FANS SHOULD BE USED EVERYWHERE IF POSSIBLE.
- SEPARATE AC UNITS (window/split) IN EACH ROOM/CHAMBER IF POSSIBLE.
- CENTRAL AIR CONDITIONING TO BE AVOIDED, ENSURE >12 AIR CHANGES PER HOUR IF CENTRAL AIR CONDITIONING BEING USED.
PATIENT TRIAGING FOR SURGERIES

- DO INCISION AND DRAINAGE FOR LOCAL ABSCESSSES / SUTURE LACERATED WOUNDS IN ER ONLY

- SUGGESTED PATIENT TRIAGING GUIDES* (IN FOLLOWING SLIDES)

- NOT COMPREHENSIVE, SURGEONS SHOULD WEIGH THE RISK TO BENEFIT RATIO AND AVAILABILITY OF RESOURCES IN SETUP.


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<tr>
<th>ORTHOPAEDIC SUBSPECIALITY</th>
<th>OPERATIVE MANAGEMENT</th>
<th>NON-OPERATIVE MANAGEMENT</th>
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<tr>
<td><strong>ABSOLUTE INDICATIONS</strong></td>
<td><strong>RELATIVE INDICATIONS</strong></td>
<td><strong>INDICATIONS</strong></td>
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<tr>
<td>TRAUMA &amp; GEN ORTHOPAEDICS</td>
<td>• OPEN FRACTURES&lt;br&gt;• POLYTRAUMA&lt;br&gt;• TRAUMA WITH NEUROVASCULAR INJURIES&lt;br&gt;• IRREDUCIBLE FRACTURE DISLOCATIONS&lt;br&gt;• COMPARTMENT SYNDROME&lt;br&gt;• CRUSH INJURIES&lt;br&gt;• SEPTIC ARTHRITIS&lt;br&gt;• ACUTE OSTEOMYELITIS&lt;br&gt;• AMPUTATIONS FOR GANRENE</td>
<td>• FEMUR FRACTURES (SHAFT/NECK/DISTAL FEMUR)&lt;br&gt;• UNSTABLE PELVIC/ACTABULAR FRACTURES&lt;br&gt;• INTRAARTICULAR/FOREARM FRACTURES&lt;br&gt;• UNSTABLE TIBIAL SHAFT FRACTURES&lt;br&gt;• COMMUNITED/COMPLEX FRACTURES&lt;br&gt;• UNSTABLE UPPER LIMB FRACTURES&lt;br&gt;• DIABETIC FOOT</td>
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<td>HAND</td>
<td>• CRUSH HAND&lt;br&gt;• REPLANTATION SURGERIES&lt;br&gt;• INFECTIONS</td>
<td>• TENDON INJURIES&lt;br&gt;• COMMUNITED/UNSTABLE FRACTURES&lt;br&gt;• FRACTURE -DISLOCATION&lt;br&gt;• IRREDUCIBLE DISLOCATIONS</td>
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<td>• UNSTABLE SPINE FRACTURE WITH NEURAL DEFICIT</td>
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<td>• EPIDURAL ABSCESS</td>
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<td>ARTHROPLASTY</td>
<td>• PROSTHETIC JOINT INFECTIONS</td>
<td>• CHRONIC HIP/KNEE PAINS</td>
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<td>• PROSTHETIC JOINT DISLOCATIONS</td>
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<td>• PERIPROSTHETIC FRACTURES</td>
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| **ORTHOPAEDIC ONCOLOGY** | ● INFECTION INCLUDING INFECTED JOINTS | ● SARCOMA/MALIGNANCY IN CHEMO/RADIATION WINDOW  
● BENIGN AGGRESSIVE TUMOURS LIKE GCT  
● IMPENDING PATHOLOGICAL FRACTURES | ● BENIGN SOFT TISSUE TUMORS  
● BENIGN BONE TUMOURS |
| **SPORTS** | ● MULTILIGAMENTOUS INJURIES WITH NEUROVASCULAR DEFICIT | ● MULTILIGAMENTOUS INJURY  
● ROTATOR CUFF REPAIRS (YOUNG)  
● MAJOR MUSCLE TEAR | ● CHRONIC KNEE, ELBOW, SHOULDER, WRIST, HIP PAINS  
● RECURRENT SPRAINS/DISLOCATIONS  
● ACL/PCL TEAR |
PATIENT PRIORITISATION
(On basis of urgency of surgical procedure required)

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<tr>
<th>PRIORITY TYPE</th>
<th>PROCEDURES WHICH SHOULD OCCUR WITHIN</th>
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<tr>
<td>1a</td>
<td>24 hours</td>
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<tr>
<td>1b</td>
<td>72 hours</td>
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<td>2</td>
<td>1 month</td>
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<td>3</td>
<td>3 month</td>
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<tr>
<td>4</td>
<td>&gt; 3 months</td>
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Ref: Re-starting non-urgent trauma and Orthopaedic care: Full guidance. British Orthopaedic Association
Emergency patient
SCREENING AREA

Suspected
1. Inform CMO/regional nodal officer
2. Send Patient to CoVid-19 Facility

Non-Suspected

Unstable (TYPE 1a)
Life threatening
Limb threatening
(where you cannot wait)

1. Keep in Holding Area
2. Send CoVid 19 Test (RT-PCR)

1. Operate in separate OT for CoVid-19
2. Take all covid 19 safety precautions

If Positive

Shift the patient to
ISOLATION ROOM

1. Refer the patient to COVID-19 hospital
2. Inform CMO/regional nodal officer
3. Quarantine of doctor and staff as per institutional policy
4. Sanitization of hospital for 48 hrs as per protocol (no sealing or complete closure of hospital)

If Negative

Stable (TYPE 1b)
Semi Emergency patient (where you can wait for 24 -72 hrs and planning can be done)

1. Keep in Holding Area
2. Send CoVid-19 test (RT-PCR)

1. Operate
2. Take all CoVid 19 operation precautions (PPE)
PATIENTS WHICH NEED SURGERY WITHIN 1 MONTH (TYPE 2) AND WITHIN 3 MONTHS (TYPE 3)

- THESE PATIENTS CAN WAIT.
- PATIENTS OF TYPE 2, SHOULD BE SPLINTED AND / OR GIVEN SYMPTOMATIC CARE AND SENT HOME.
- THEY SHOULD BE PLANNED FOR SURGERY, ADVISED PREOP WORK UP & SENT FOR HOME ISOLATION/SHIELDING FOR 14 DAYS.
PATIENTS WHICH NEED SURGERY WITHIN 1 MONTH (TYPE 2) AND WITHIN 3 MONTHS (TYPE 3) - contd.

- They should be called for surgery, if they were asymptomatic during shielding/isolation period (as per availability of OT slots and their clinical condition).
- If hospital facilities permit, admit in holding area for 14 days for isolation/shielding.
- They should get COVID test (RT-PCR) after admission, within 48 hours of surgery.
FUTURE PLANNING FOR ELECTIVE SURGERIES

GREEN PATHWAY (COVID FREE)

- FOR ELECTIVE CASES
- MAY BE A SEPARATE HOSPITAL OR SEPARATE AREA IN A BIG HOSPITAL SETUP
- SHOULD HAVE INDEPENDENT ENTRY AND EXIT
- STAFF SHOULD BE REGULARLY SCREENED AND TESTED FOR CoViD-19.
- GREEN AND BLUE PATHWAY STAFF SHOULD BE KEPT SEPARATE

BLUE PATHWAY (COVID CARE)

- FOR COVID POSITIVE/ SUSPECTED PATIENTS
- FOR URGENT/EMERGENT SURGERIES & COVID CARE
- SEPARATE STAFF
- USE OF PPE AS ADVISED FOR COVID
CAN WE START ELECTIVE SURGERIES?

- **SHOULD BE AVOIDED CURRENTLY IN VIEW OF INCREASING CoViD-19 PATIENTS. ESPECIALLY AT SMALL SETUPS.**
- **SURGEON SHOULD ALWAYS WEIGH THE RISK TO BENEFIT FOR PATIENT AND AVAILABLE RESOURCES.**
- **THEY SHOULD BE DECREASING NUMBER OF PATIENTS FOR PAST 14 DAYS/ LOCKDOWN HAS BEEN LIFTED BY LOCAL GOVT BODIES**
- **THE HOSPITAL SETTING SHOULD HAVE ADEQUATE BEDS AND FACILITIES TO MANAGE PATIENTS, AFTER CONSIDERING BACK UP OPTIONS FOR COVID -19.**
- **AT PRESENT, GOVT OF INDIA HAS NOT RECOMMENDED ELECTIVE SURGERIES**
  - COVID-19 Pandemic:Protocols for Resuming Elective Orthopaedic Surgery , from The International Consensus Group*
  - Post Sars-CoV-2 Pandemic Protocols for Elective Orthopaedic Surgery, ICM Philly  April 23, 2020
DECLARATION - AT THE TIME OF ADMISSION

- To be signed by patient and attendant.

- It should state that ‘the patient & his/her attendants would follow the precautions and measures recommended by hospital authorities in view of COVID-19 pandemic’.

- Also in case the patient or his/her attendant gets infected during hospital stay, they will not hold hospital and its staff responsible for it.

- Single patient- Single attendant.
CONSENT

- EXPLAIN PATIENT OF EXTRA EXPENDITURE.
  (DUE TO PPE KITS AND EXTRA PRECAUTIONS)
- RISK OF COVID EXPOSURE FOR BOTH PATIENT & ATTENDANTS (IF PATIENT IN NOT SUSPECTED/COVID PATIENT).
- HIGHER CHANCES OF MORTALITY/MORBIDITY (MORTALITY 20.5%), IF PATIENT IS LATER FOUND TO BE COVID-19 POSITIVE LATER.

S. Lei et al., Clinical characteristics and outcomes of patients undergoing surgeries during the incubation period of COVID-19 infection, EClinicalMedicine (2020), https://doi.org/10.1016/j.eclinm.2020.100331
PREOPERATIVE WORK UP

- ROUTINE PREOPERATIVE WORK UP FOR ALL PATIENTS
- RULE OUT HISTORY OF SYMPTOMS/ CONTACT/TRAVEL HISTORY TO HOT-SPOTS
- CONSIDERING ASYMPTOMATIC INFECTED PATIENTS CAN SPREAD DISEASE AND THE POTENTIAL RISK OF CONTAMINATION OF HEALTHCARE SETUP & WORKERS, EVERY PATIENT PLANNED FOR INVASIVE/SURGICAL PROCEDURE SHOULD IDEALLY BE TESTED FOR CoViD-19 (RT-PCR).
- IF NONE, TREAT ALL PATIENTS AS COVID POSITIVE WITH FULL PRECAUTIONS
- IF PATIENT IS COVID POSITIVE AND SETUP FACILITIES ARE INADEQUATE/SMALL- REFER PATIENT TO A DEDICATED COVID CENTRE AFTER INFORMING THE GOVT AUTHORITIES. (GOVT OF INDIA GUIDELINES)
PREOPERATIVE WORKUP
(PATIENTS WITH SYMPTOMS OF COVID-19)

- IF SURGERY IS NOT MANDATORY/LIFE/LIMB SAVING-
  POSTPONE/DELAY THE SURGERY
- RT-PCR FOR ALL.
- IF RT-PCR NEGATIVE, BUT FEATURES OF COVID PRESENT, GET
  LOW DOSE CHEST CT (TO SEE FOR COVID-19 CHANGES, IF ANY).
- IF CT POSITIVE, RE-CHECK FOR RT PCR AFTER 3-7 DAYS,
  RECONSIDER THE INDICATION OF SURGERY
- IF PATIENT NEEDS SURGERY WITHOUT DELAY, TREAT PATIENT TO
  BE COVID POSITIVE/SUSPECTED.

PREOPERATIVE WORKUP
(PATIENTS WITH SYMPTOMS OF COVID-19)

*AGP’S : AEROSOL GENERATING PROCEDURES

#WALANT: WIDE AWAKE ANAESTHESIA WITH LIGNOCAINE ADRENALINE AND NO TOURNIQUET
PREOPERATIVE WORKUP
(PATIENTS WITHOUT SYMPTOMS OF COVID-19)

- RT-PCR FOR ALL.
- IF RT-PCR NEGATIVE, AND NO SYMPTOMS, ONE CAN PROCEED WITH SURGERY,

BUT

N95 MASK/TAPE SEALED SURGICAL MASK WITH FACE SHIELD & WATERPROOF GOWNS/WATERPROOF APRONS MUST IN ALL AEROSOL GENERATING PROCEDURES, IRRESPECTIVE OF COVID STATUS DURING PANDEMIC
PREOPERATIVE WORKUP
(PATIENTS WITHOUT SYMPTOMS OF COVID-19)

Patients which need Emergent/Urgent Orthopaedic surgery/procedure WITHOUT SYMPTOMS OF COVID

Test for CoViD-19 every patient

CoViD positive / RT PCR is not available (treat as positive)

Mandatory/life/limb saving surgery

Follow PPE: PAPR’s/N95 with impermeable gowns, eye protection and covered shoes.
Separate OT, Stop positive pressure in OT, shifting precautions, Min Staff
Minimize AGP’s
(avoid cautery/reaming/drilling/presurized lavages)
Avoid intubation(prefer spinal/blocks/WALANT#)

Reports are negative for CoViD-19
Proceed with surgery but
Maintain PPE during AGP’s*

Surgery not mandatory/life/limb saving

Postpone surgery for 4 weeks/patient is CoViD negative

*AGP’S : AEROSOL GENERATING PROCEDURES
#WALANT: WIDE AWAKE ANAESTHESIA WITH LIGNOCAINE ADRENALINE AND NO TOURNIQUET
PLAN OT LIST
AVOID BLOOD TRANSFUSIONS

- CHECK RESOURCES (PPE KITS, STAFF AVAILABILITY, VENTILATOR AVAILABILITY)
- DISCUSS WITH OTHER SURGICAL DEPARTMENTS AND ANAESTHESIA DEPARTMENT AND PARAMEDICAL DEPARTMENTS
- AVOID OPERATING PATIENTS AT NIGHT HOURS
- AVOID BLOOD TRANSFUSIONS, AS BLOOD SAFETY IS DOUBTFUL
- CHECK DONOR’S HISTORY, BEFORE ACCEPTING BLOOD IN BLOOD BANKS
Drug prophylaxis for health care workers

ICMR - National Taskforce for COVID-19 recommends the use of hydroxychloroquine for prophylaxis of SARS-CoV-2 infection for

Asymptomatic healthcare workers involved in the care of suspected or confirmed cases of COVID-19

DOSE: 400 mg twice a day on Day 1, followed by 400 mg once weekly for next 7 weeks; to be taken with meals

CONTRAINDICATIONS:
children under 15 years of age.
Persons with known case of retinopathy,
known hypersensitivity to hydroxychloroquine, 4- aminoquinoline compounds

CAUTION: INTAKE OF ABOVE MEDICINE SHOULD NOT INSTILL SENSE OF FALSE SECURITY

https://icmr.nic.in/sites/default/files/upload_documents/HCQ_Recommendation_22March_final_MM_V2.pdf
PPE BASICS : RESPIRATORY

• ORTHOPAEDIC PROCEDURES INVOLVE AEROSOL GENERATION.
• BIO-AEROSOLS GENERATED CAN POTENTIALLY CONTAMINATE EVERYONE.
• NEED ADEQUATE RESPIRATORY PROTECTION.
• HENCE, THE OT PERSONNEL SHOULD INHALE CLEAN AIR WITHOUT CONTAMINATING SURGICAL FIELD.
• OPTIONS AVAILABLE:
  ➢ SURGICAL MASKS
  ➢ RESPIRATORS, MOST COMMON N95 MASKS
  ➢ POWERED AIR PURIFYING RESPIRATORS
SURGICAL MASK

- Loose fitting devices
- Mainly to prevent contamination from one who wears it
- Poor seal around face, hence high leakage
- Poor filtration capacity
- Not to be shared/reused
- Discard if wet or after 6-8 hours
- Not adequate for aerosol generating procedures
- May be used in OPD or OT while operating non COVID patients, preferably tape sealed.
N95 MASKS/RESPIRATORS

- NEAR COMPLETE SEAL DUE TO CONTOURED FIT, MINIMAL LEAKAGE.
- BETTER FILTERING CAPACITY.
- MOST COMMON USED VARIANT IS N95: FILTERS 95% OF FINE PARTICULATE MATTER (<0.3 MICRONS)
- NOT TO BE SHARED
- DIFFICULT TO USE FOR THOSE WITH BREATHING DIFFICULTY/FACIAL HAIRS/KIDS.
- EFFECTIVE FOR AEROSOL GENERATING PROCEDURES WITH FACE/EYE PROTECTION.
N-95 REUSE??

• Ideally not be shared/ reused
• Considering limited /substandard supply during pandemic
  ➢ Keeping mask in a dry environment for 3-4 days
  or
  ➢ Heating at 70 degrees centigrade for 30 min.
Needs more validation by studies*

POWERED AIR PURIFYING RESPIRATORS (PAPR)

- Battery powered blowers
- Best protection
- Very bulky, costly, noisy, consumes energy
- Tough to obtain
- Doubtful role??
- Surgical helmets should not be confused with PAPR’s

EYE/FACE PROTECTION

FACE SHIELD  GOGGLES  BALACLAVA FOR HEAD COVER
IMPERMEABLE GOWNS (WATERPROOF) & SHOE PLUS LEG COVERS & DOUBLE GLOVES
# PPE GUIDLINES

<table>
<thead>
<tr>
<th>SURGEONS/SCRUB NURSE/ ANAESTHETIST (GA)/ANAESTHETIST ASSISTANT(GA)</th>
<th>FLOOR NURSE/ ANAESTHETIST (NON-GA)/ HOUSEKEEPING STAFF*</th>
<th>WARD NURSING STAFF/ SHIFTING NURSING STAFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>• N95 respirator/PAPR (ideal)</td>
<td>• N95</td>
<td>• SURGICAL MASK</td>
</tr>
<tr>
<td>• IMPERMEABLE/WATERPROOF GOWNS</td>
<td>• NORMAL SURGICAL GOWNS/FABRIC</td>
<td>• HOSPITAL SCRUBS/NORMAL SURGICAL GOWNS</td>
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<tr>
<td>• SHOE COVERS</td>
<td>• SHOE COVERS</td>
<td>• SHOE COVERS/HOSPITAL FOOTWEAR</td>
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<td>• LEG COVERS</td>
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<tr>
<td>• GOGGLES/VISOR/EYE SHIELD</td>
<td>• HEAVY DUTY GLOVES*</td>
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<tr>
<td>• BALACLAVA</td>
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*For situations requiring high risk of transmission or high level infection control procedures.
CONSIDERING HIGH CHANCES OF OPERATING ASYMPTOMATIC INFECTED PATIENT, WHICH MAY BE COVID NEGATIVE ON INVESTIGATIONS

ATLEAST N95 MASKS/TAPE SEALED SURGICAL MASKS WITH FACE SHIELD/EYE PROTECTION

&

WATERPROOF GOWNS/PLASTIC APRON BENEATH NORMAL LINEN GOWNS

SHOULD BE USED IN ALL SURGERIES
PPE DONNING

• SHOULD HAVE SEPARATE DONNING AREA, WHERE ALL GEAR IS AVAILABLE.

• FOLLOW INSTITUTIONAL/ CDC GUIDELINES.

https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf
PATIENT SHIFTING

- Ask security to clear passage, to avoid contamination to other patients, workers.

- Separate trolley for COVID-19/suspected patients

- Use PPE

- Patients should be shifted in OT, no stay in preoperative rooms

- Patient should wear mask all the time (irrespective of COVID status)
ANAESTHESIA CONSIDERATIONS

- AVOID GENERAL ANAESTHESIA: INTUBATIONS/MECHANICAL VENTILATIONS- AEROSOL GENERATING PROCEDURES

- IF NEEDS GA, PREFERABLY IN SEPARATE INTUBATION/EXTUBATION ROOM.

- ANAESTHETIST AND TECHNICIAN FULL PPE WHEN INTUBATING.

Staff not involved in intubation (including the Orthopaedic surgical team) should stay outside or at least 2 m away, preferably
ANAESTHESIA CONSIDERATIONS

TO MINIMIZE AEROSOL GENERATION DURING GA INDUCTION/REVERSAL

- Use Rapid Sequence Induction method,
- Avoid high-flow nasal cannulas and bag valve mask ventilation,
- Secure endotracheal tubes properly to avoid air leaks,
- Minimize patient coughing on emergence
- Laryngeal mask airways should be avoided, due to their high propensity for leaking and absence of a closed circuit
ANAESTHESIA CONSIDERATIONS

- All anaesthetic interventions should be completed before the surgical team enters the OR for patient positioning and the subsequent surgical procedure.

- PREFER REGIONAL ANAESTHESIA (SPINAL/EPIDURAL/BLOCKS/ WIDE AWAKE ANAESTHESIA)

- After a regional anaesthesia, surgical masks must be placed on patients at all times.

- Use nasal prongs instead of conventional masks for oxygenation, under the patients’ surgical masks if sedation is concurrently administered to minimize aerosolization.
OT CONSIDERATIONS

- SHOULD HAVE DEDICATED OT FOR COVID-19 POSITIVE/SUSPECTED PATIENTS.
- PREFERABLY AT ONE END OF THE OT COMPLEX.
- IDEALLY, FOR INFECTED SURGERIES/ISOLATION ROOMS, A NEGATIVE PRESSURE SYSTEM IS PREFERRED.
- BUT, VENTILATION SYSTEMS IN MOST ORTHOPAEDIC OT SYSTEMS ARE POSITIVE PRESSURE/LAMINAR FLOW SYSTEMS.

MANY GUIDELINES/CONSENSUS GROUPS ALLOW USE OF POSITIVE PRESSURE OT’S, IF THERE ARE 20 AIR CHANGES PER HOUR. NEEDS MORE STUDIES.

COVID-19 Pandemic:Protocols for Resuming Elective Orthopaedic Surgery ,from The International Consensus Group

Post Sars-CoV-2 Pandemic Protocols for Elective Orthopaedic Surgery, ICM Philly April 23, 2020
OT CONSIDERATIONS
COVID POSITIVE/SUSPECTED PATIENTS

ONE SHOULD HAVE A NEGATIVE PRESSURE OT FOR COVID POSITIVE/SUSPECTED PATIENT.

IF DEFICIENT, REFER TO THE SETUP WHERE THE FACILITIES ARE AVAILABLE.

NEGATIVE PRESSURE OT HAS EXHAUST WINDOWS/OUTLET NEAR THE OT TABLE/PATIENT BED, AND THROWS OUT THE INFECTED AIR BY EXHAUST FANS AFTER PASSING IT THROUGH HEPA FILTERS.

ALTERNATIVELY ONE CAN USE PORTABLE HEPA FILTERS

DONOT OPERATE IF FACILITIES ARE INDEQUATE/ARE SMALL SETUPS - COVID POSITIVE/SUSPECTED PATIENTS.
OT CONSIDERATIONS - COVID NEGATIVE PATIENTS

- POSITIVE PRESSURE OT/ LAMINAR FLOW OT MAY BE USED (> 20 AIR CHANGES PER HOUR), ONLY FOR COVID-19 NEGATIVE AND ASYMPTOMATIC PATIENTS WITH PRESCRIBED PPE.

- MORE STUDIES NEEDED TO SUPPORT USE OF LAMINAR FLOW IN COVID POSITIVE PATIENTS
OT CONSIDERATIONS

- ALL MACHINERY/EQUIPMENT NOT REQUIRED FOR SURGERY SHOULD BE WHEELED OUT OF OT.
- MONITORS AND REGULARLY TOUCHED INTERFACES SHOULD BE COVERED WITH POLYTHENES/TRANSPARENT
- DOORS CLOSED DURING PROCEDURES.
- MINIMUM ESSENTIAL OT PERSONNEL, EVERYONE SHOULD WEAR N95 RESPIRATOR
- NO ENTRY/EXITS IN BETWEEN PROCEDURE.

INTRAOPERATIVE CONSIDERATIONS

- MINIMIZE BLEEDING: USE TOURNIQUET/ TRANEXAMIC ACID/ GOOD HEMOSTASIS
  MORE BLOODY FIELD, HIGHER AEROSOL GENERATION

- USE CAUTERY MINIMALLY/ LOW SETTINGS/ USE SMOKE EVACUATORS

- AVOID PULSE LAVAGES/HIGH PRESSURE LAVAGES; DO GENTLE LAVAGES
INTRAOPERATIVE CONSIDERATIONS


- One can use transparent sterile plastic covers over wounds to potentially reduce aerosol spread in OT during drilling/reaming.

- Avoid staged surgeries.

- Avoid teaching during surgeries, senior surgeons should do the surgeries.

- Minimize the surgical time (try to finish <60 min).

- Use absorbable sutures.
INTRAOPERATIVE CONSIDERATIONS

- Avoid bulky dressings wherever possible, use minimal visible dressings like Opsite, Tegaderm etc. Allows wound inspection from safe distance.
- Use removable splints/ slabs instead of casts.
  Cast removal involves higher chances of patient contact, easier home based management.
- Give regular antiemetics to avoid nausea and vomiting, hence potential aerosolization on recovery and in post op period.
- Provide multimodal adequate analgesia.
  [NSAID’s to be avoided if possible, believed to increase expression of ACE-2 receptors (needs more studies)]
PPE DOFFING

- **ALL PPE SHOULD BE REMOVED INSIDE OT, EXCEPT MASKS.**

- **FOLLOW INSTITUTIONAL/CDC GUIDELINES.**

- **SEQUENCE: GLOVES, EYEWEAR/FACE SHIELD, /GOWN, THEN WASH/HAND RUB**

- **REMOVE RESPIRATOR/MASK OUTSIDE**

- **DISCARD PROPERLY**

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**HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE)**

**EXAMPLE 1**

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. Remove all PPE before exiting the patient room except a respirator. If it will remain, loosen the respirator after leaving the patient room and closing the door. Remove PPE in the following sequence:

1. **GLOVES**
   - Outside of gloves are contaminated.
   - If your hands get contaminated during glove removal, immediately wash your hands with an alcohol-based hand sanitizer.
   - Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove.
   - Note: removed glove in gloved hand.
   - Slide fingers of a gloved hand under remaining glove at wrist and peel off second glove over first glove.
   - Discard gloves in a waste container.

2. **GOGGLES OR FACE SHIELD**
   - Outside of goggles or face shield are contaminated.
   - If your hands get contaminated during goggle or face shield removal, immediately wash your hands with an alcohol-based hand sanitizer.
   - Remove goggles or face shield from the back by lifting head band or ear pieces.
   - If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container.

3. **GOWN**
   - Gown front and sleeves are contaminated.
   - If your hands get contaminated during gown removal, immediately wash your hands with an alcohol-based hand sanitizer.
   - Unbutton gown as far as possible, taking care that sleeves don’t contact your body when reaching for ties.
   - Pull gown away from neck and shoulders, touching inside of gown only.
   - Turn gown inside out.
   - Fold or roll into a bundle and discard in a waste container.

4. **MASK OR RESPIRATOR**
   - Front of mask/respirator is contaminated — DO NOT TOUCH!
   - If your hands get contaminated during mask/respirator removal, immediately wash your hands with an alcohol-based hand sanitizer.
   - Grasp bottom edge of the mask/respirator, then the ties at the top, and remove without touching the front.
   - Discard in a waste container.

5. **WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE**

**PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE**
PPE DOFFING

> ALL PPE SHOULD BE REMOVED INSIDE OT, EXCEPT MASKS.

> FOLLOW INSTITUTIONAL/CDC GUIDELINES.

> SEQUENCE: GLOVES, EYEWEAR/FACE SHIELD, /GOWN, THEN WASH/HAND RUB

> REMOVE RESPIRATOR/MASK OUTSIDE

> DISCARD PROPERLY
Before, during and after every procedure, social distancing should be maintained.

An infection control nurse/OT manager should ensure:
- proper donning and removal of PPE;
- compliance of Institutional SOP’s;
- segregation and disposal of biomedical waste management;
- OT cleaning and sterilization.

A shower is mandatory within the hospital premises before donning the outdoor wear.
POST-OPERATIVE CONSIDERATIONS

- Before, during after every procedure, social distancing should be maintained.

- An infection control nurse/ OT manager should ensure
  - proper donning and removal of PPE;
  - compliance of Institutional SOP’s;
  - segregation and disposal of biomedical waste management;
  - OT cleaning and sterilization.

- A shower is mandatory within the hospital premises before donning the
POST-OPERATIVE CONSIDERATIONS

- Shift patient to recovery room/patient’s room using shifting precautions.
- Patients and attendants should stay strictly in rooms.
- Patient masks should be ‘on’ always and maintain hand hygiene.
- Single attendant and no visitors.
- Single rooms or maintain safe distance between beds (6 ft).
- Regular disinfection of commonly touched surfaces (1% hypochlorite).
POST-OPERATIVE CONSIDERATIONS

- MINIMISE POST OP STAY
- TRY FOR DAY CARE SURGERIES.
- REHAB PROGRAM USING VIDEOS AND TELEMEDICINES
- MINIMAL FOLLOW UP VISITS, GIVE SOS NUMBERS TO PATIENT TO ALLAY ISSUES OVER PHONE
OT CLEANING

- Clean instruments used separately from other instruments

- **AFTER COVID POSITIVE PATIENT, CLOSE THE OT ATLEAST FOR 1-2 HOURS FOR DISINFECTION.**

- Normal sterilizing methods enough.

- All non dedicated/ non disposable equipment should be cleaned including C-arm
  Follow manufacturer’s and institutional policies
  
  - **70% Ethyl alcohol** to disinfect reusable dedicated equipment between uses
  
  - **Sodium hypochlorite at 1% (equivalent 5000ppm)** for disinfection of frequently touched surfaces.
  
  - Vaporization with **0.5% Hydrogen Peroxide**
LINEN CLEANING

- Soiled linen, if present, should be segregated in labelled container.

- Wash and disinfect them in warm water (60-90 degrees) and detergent.

  OR

- If hot water not available, soak linen in 0.05% chlorine solution for 30 mins.

- Rinse with clean water and dry fully in sunlight.
BIOMEDICAL WASTE MANAGEMENT

- FOLLOW BIOMEDICAL RULES

- DOUBLE LAYERED BAGS, TO AVOID LEAK

- WELL LABELLED SEPARATE BINS FOR COVID-19/SUSPECTED PTS. (“COVID-19 WASTE”)

- HANDED CAREFULLY TO BIOMEDICAL WASTE PERSONNEL USING ALL PREACUTIONS AND PPE (HEAVY DUTY GLOVES)
PSYCHOLOGICAL SUPPORT

• LOT OF STRESS, FEAR, ANXIETY.
• POTENTIAL FOR HYSTERIA, SUICIDE
• SOCIAL SUPPORT FROM FAMILY and HEALTH CARE WORKERS MANDATORY
• COUNSELLING BEFORE TESTING SHOULD BE DONE ALONGWITH ATTENDANTS IF POSSIBLE
• DOCTORS SHOULD GET BREAKS.
What to do if there is exposure to CoViD patient/ breach of PPE?

- Must report every exposure to COVID-19 to the concerned nodal officer and HoD of the concerned department immediately.

- The Nodal officer decides the level of exposure:

  - **High risk exposure:**
    - HCW or other person providing care to a COVID-19 case or lab worker handling respiratory specimens from COVID-19 cases without recommended PPE or with possible breach of PPE.
    - Performed aerosol generating procedures without appropriate PPE.
    - HCWs without mask/face-shield/goggles:
      - Having face to face contact with COVID-19 case within 1 metre for more than 15 minutes.
      - Having accidental exposure to body fluids.

  - **Low risk exposure:** Contacts who do not meet criteria of high risk exposure.

High risk exposure/contact

- Quarantined for 14 days, tested as per ICMR testing protocol, actively monitored for development of symptoms and managed as per laid down protocol.
- If they test positive but remain asymptomatic they will follow protocol for very mild/mild/presymptomatic cases as described below.
- If symptoms develop, follow advise for symptomatic HCW’s as described below.
- If they test negative and remain asymptomatic, complete 14 day quarantine and return to work.
Low risk exposure to HCW’s

- Low risk contacts shall continue to work.
- They will self-monitor their health for development of symptoms.
- In case symptoms develop, then they get tested.
- If tested positive, follow SOP/guidelines for symptomatic HCW’s as described below.
- If tested negative, he/she should resume work, once recovered from non CoViD ailment.
HEALTH CARE WORKER WITH SYMPTOMS OF COVID-19- WHAT TO DO?

- Should be immediately taken off the roster.
- Rapidly identify contacts and risk stratify (other HCWs and other patients that might have been exposed to the suspect HCW)
- Put them under quarantine and follow up for 14 days (or earlier if the test result of a suspect case turns out negative).
- Share their details with the local health authorities.
- All close contacts (other HCW and supportive staff) of the confirmed case should receive Hydroxychloroquine chemoprophylaxis for a period of 7 weeks, keeping in mind the contraindications of the HCQ.
- Ensure that the disinfection procedures are strictly followed.
SOP/GUIDELINES FOR SYMPTOMATIC HCW’S

- MILD SYMPTOMS: SYMPTOMATIC CARE, HOME ISOLATION. IF HOME ISOLATION NOT FEASIBLE>> THEN ADMIT IN COVID CARE CENTRE.
- MODERATE SYMPTOMS: ADMIT IN DEDICATED COVID HEALTH CARE CENTRE.
- SEVERE SYMPTOMS: ADMIT IN DEDICATED COVID HOSPITAL.
HEALTH CARE WORKER WITH SYMPTOMS OF COVID-19 - WHAT TO DO?

- All health facilities (HCF) must have a staffing plan in place including a contingency plan for such an event to maintain continuity of operations.

E.g. staff in HCF can be divided into groups to work on rotation basis every 14 days and a group of back up staff which is pooled in case some high risk exposure/HCW with suspected COVID-19 infection is detected.

KEEP STAFF BACK UP

- Once a suspect/confirmed case is detected in a healthcare facility, standard procedure of rapid isolation, contact listing and tracking disinfection will follow with no need to shut down the whole facility.
Advisory for small setups/hospitals

All Hospital and Clinics

1. Should do training of all doctors, paramedical and other staffs for
   a. Respiratory hygiene
   b. Hand Hygiene
   c. Sanitization
   d. Disinfection
   e. Use of PPE and Masks

2. Should have (size of these areas depends on requirement of the hospital)
   a. Screening facility
   b. Holding area facility (not required for clinic)
   c. Isolation facility (not required for clinic)

3. Should have enough
   a. PPE / mask
   b. Sanitizers
   c. Disinfectants
   d. Equipments

Contributed by: Dr. Anup Agrawal, Lucknow, Secretary, U.P Orthopaedic Association
Advisory for small setups/hospitals

**Screening Area**

- Screening of all subjects must be done under strict precautions
- Social distancing should be followed
- Protection of medical and paramedical staff with triple layer mask with proper distancing of 1-2 meters.
- Proper hand sanitation, disinfection and environmental hygiene.
- Screening personnel preferably should sit in a cabin or a room or with a desk at entry
- Screening cabin / desk should be placed at entry, and preferably in open area or the screening room should be such that one window opens outside or the room is located close to the entrance.
- Should be manned by one staff with PPE
- Thermal scanning
- Covid-19 screening form
- List of hotspot areas
- Proper security
- Proper signage

Contributed by: Dr. Anup Agrawal, Lucknow, Secretary, U.P Orthopaedic Association
Advisory for small setups/hospitals

- **Holding Area/Isolation Area:**
  - Should preferably have separate room/chambers with toilet facility (number depends on requirement of hospital)
  - If no separate rooms available then make a ward with bed distance of 1.5 to 2 meters.
  - Dedicated staff who should not go to any other area of hospital
  - Dedicated equipment like stethoscope/ BP /Infrared thermometer
  - Strict protocols for safety of medical and paramedical staff for sanitization and disinfection
  - Strict protocol for safety, sanitization and disinfection for entire area
  - No entry of attendants

Contributed by: Dr. Anup Agrawal, Lucknow, Secretary, U.P Orthopaedic Association
THERE'S A FINE LINE
between bravery and stupidity
TAKE ALL PRECAUTIONS
ISOLATE & STOP ATTENDING PATIENTS/CLINIC, IF EXPOSED.

QUARANTINE AND GET TESTED.

STAY SAFE!

USE RESOURCES JUDICIOUSLY.

DON'T WASTE IT!
REFERENCES


REFERENCES (CONTD.)


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