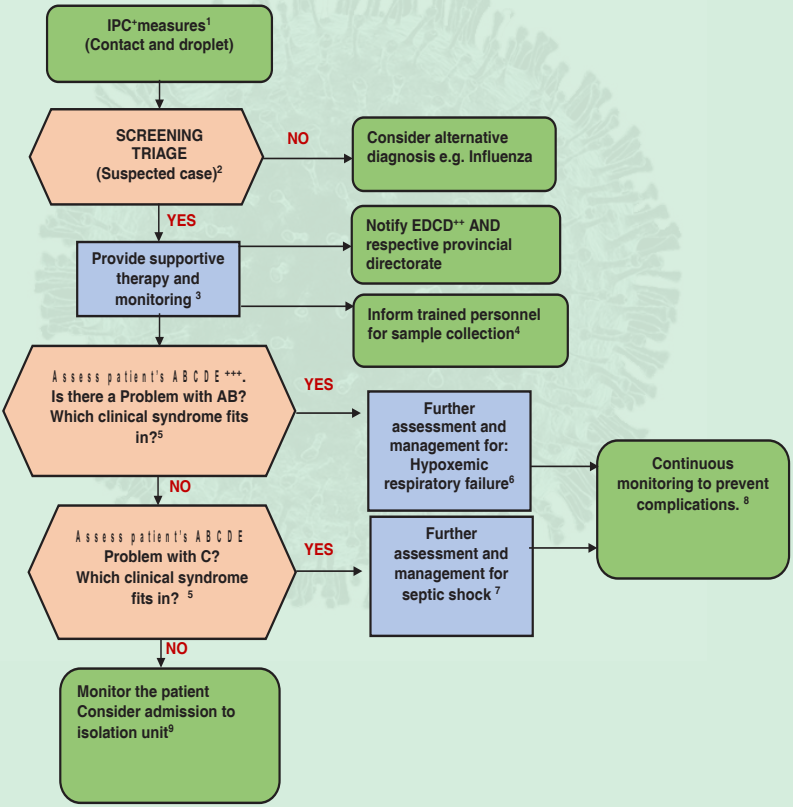
CLINICAL APPROACH TO A PATIENT WITH SUSPECTED COVID-19

Adapted from: WHO Interim guidance for COVID19 - 15 March 2020



*IPC: Infection prevention control; **EDCD: Epidemiology and Disease Control Division ;***ABCDE: Airway/Breathing/Circulation/Disability/Expose.

PLEASE REFER TO CORRESPONDING NUMBERED TABLES FOR FURTHER INFORMATION

Table 1. Infection control measures: How to implement

Standard precautions	Apply routinely in all health-care settings for all patients. Standard precautions include: hand hygiene and use of personal protective equipment (PPE) to avoid direct contact with patients' blood, body fluids, secretions (including respiratory secretions) and non-intact skin. When providing care in close contact with a patient with respiratory symptoms (e.g. coughing or sneezing), use eye protection, because sprays of secretions may occur. Standard precautions include: prevention of needle-stick or sharps injury; safe waste management; cleaning and disinfection of equipment; and cleaning of the environment.
Droplet precautions	Use a medical mask if working within 1 meter of the patient. Place patients in single rooms, or group together those with the same etiological diagnosis. If an etiological diagnosis is not possible, group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation of at least 1 meter. Limit patient movement and ensure that patients wear medical masks when outside their rooms.

Contact precaution	Use PPE (medical mask, eye protection, gloves and gown) when entering room and remove PPE when leaving. If possible, use either disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers). If equipment needs to be shared among patients, clean and disinfect between each patient use. Ensure that health care workers refrain from touching their eyes, nose, and mouth with potentially contaminated gloved or ungloved hands. Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles and light switches). Ensure adequate room ventilation. Avoid movement of patients or transport. Perform hand hygiene.
Airborne precautions	Ensure that healthcare workers performing aerosol-generating procedures use PPE, including gloves, long-sleeved gowns, eye protection and particulate respirators (N95 or equivalent). Whenever possible, use adequately ventilated single rooms when performing aerosol-generating procedures.

Table 2: Suspected Case*

A. a patient with acute respiratory illness (that is, fever and at least one sign or symptom of respiratory disease, for example, cough or shortness of breath) AND with no other etiology that fully explains the clinical presentation AND a history of travel to or residence in a country, area or territory that has reported local transmission of COVID-19 disease during the 14 days prior to symptom onset OR
B. a patient with any acute respiratory illness AND who has been a contact of a confirmed or probable case of COVID-19 disease during the 14 days prior to the onset of symptoms (see the definition of contact below); OR
C. A patient with severe acute respiratory infection (that is, fever and at least one sign or symptom of respiratory disease, for example, cough or shortness breath) AND who requires hospitalization AND who has no other etiology that fully explains the clinical presentation.

*To align with national updated case definition

Table 3. Definitions of clinical syndromes associated with COVID_19

Probable case	A probable case is a suspected case for whom the report from laboratory testing for the COVID-19 virus is inconclusive.
Conformed case	A confirmed case is a person with laboratory confirmation of infection with the COVID-19 virus, irrespective of clinical sign and symptoms.

Severe pneumonia	Adolescent or adult patient with fever or suspected infection, cough, respiratory rate > 30 breaths/min, severe respiratory distress, oxygen saturation (SpO2) < 90% on room air.
Acute Respiratory Distress Syndrome	Onset: acute, i.e. within 1 week of known clinical insult or new or worsening respiratory symptoms Chest imaging (e.g. X-ray or CT scan): bilateral opacities, not fully explained by effusions, lobar/lung collapse or nodules Origin of pulmonary edema: respiratory failure not fully explained by cardiac failure or fluid overload Degree of hypoxemia: 200 mm Hg < PaO2/FiO2 ≤ 300 mm Hg with PEEP or CPAP ≥ 5 cm H2O (mild ARDS); 100 mm Hg < PaO2/FiO2 ≤ 200 mm Hg with PEEP ≥ 5 cm H2O (moderate ARDS); PaO2/FiO2 ≤ 100 mm Hg with PEEP ≥ 5 cm H2O (severe ARDS). When PaO2 is not available, an SpO2/FiO2 ratio ≤ 315 suggests ARDS.
Sepsis	Documented or suspected infection, with two or more of the following conditions: temperature > 38 °C (100.4 °F) or < 36 °C (96.8 °F), HR > 90/min, RR > 20/min or PaCO2 < 32 mm Hg, white blood cells > 12 000 or < 4000/mm3 or > 10% immature (band) forms.
Severe sepsis	Sepsis associated with organ dysfunction, hypoperfusion (lactic acidosis) or hypotension. Organ dysfunction may include oliguria, acute kidney injury, hypoxemia, transaminitis, coagulopathy, thrombocytopenia, altered mental status, ileus or hyperbilirubinemia.

Septic shock	Sepsis-induced hypotension (SBP < 90 mm Hg) despite adequate fluid resuscitation and signs of hypoperfusion.

SpO2, oxygen saturation; PaO2, partial pressure of oxygen; FiO2, fraction of inspired oxygen; CPAP, continuous positive airway pressure; PEEP, positive end-expiratory pressure; HR, heart rate; RR, respiratory rate; PaCO2, partial pressure of carbon dioxide; SBP, systolic blood pressure. Table adapted from (3).

Table 4. Specimen collection

Please send the completed COVID surveillance form with the sample.
Use PPE: Airborne precaution
Specimens to be collected At minimum, respiratory material should be collected: • upper respiratory specimens: nasopharyngeal and oropharyngeal swab or wash in ambulatory patients • and/or lower respiratory specimens: sputum (if produced) and/or endotracheal aspirate or bronchoalveolar lavage in patients with more severe respiratory disease. (Note high risk of aerosolization; adhere strictly to infection prevention and control procedures).
Specimens which can be delivered promptly to the laboratory can be stored and shipped at 2-8°C with triple packaging.
When there is likely to be a delay in specimens reaching the laboratory by 24 hours, the use of viral transport medium is strongly recommended. Specimens may be frozen to - 20°C or ideally -70°C
Inform NPHL before collecting and sending sample (Annex 5) Contact Number: 9851168220 (Dr. Shrawan K Mishra), 9827701465 (Dr.. Ranjit Shah)

Table 5. Early supportive therapy and monitoring

Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxemia, or shock.(target SpO2 ≥90% in adults)
Use conservative fluid management in patients with SARI when there is no evidence of shock.
Give empiric antimicrobials to treat all likely pathogens causing SARI. Give antimicrobials within one hour of initial patient assessment for patients with sepsis.
Do not routinely give systemic corticosteroids for treatment of viral pneumonia or ARDS outside of clinical trials unless they are indicated for another reason.
Closely monitor patients with SARI for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis, and apply supportive care interventions immediately.
Understand the patient's co-morbid condition(s) to tailor the management of critical illness and appreciate the prognosis. Communicate early with patient and family

Table 6. Management for Hypoxemic respiratory failure and Acute respiratory distress syndrome

Recognize severe hypoxemic respiratory failure when a patient with respiratory distress is failing standard oxygen therapy.
Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions.

Implement mechanical ventilation using lower tidal volumes (4–8 ml/ kg predicted body weight, PBW) and lower inspiratory pressures (plateau pressure <30 cmH2O).
In patients with severe ARDS, prone ventilation for >12 hours per day is recommended.
Use a conservative fluid management strategy for ARDS patients without tissue hypoperfusion.

Table 7. Management for septic shock

Recognize septic shock in adults when infection is suspected or confirmed AND vasopressors are needed to maintain mean arterial pressure (MAP) ≥65 mmHg AND lactate is ≥2 mmol/L, in absence of hypovolemia.
give at least 30 ml/kg of isotonic crystalloid in adults in the first 3 hours. In resuscitation from septic shock in children in well-resourced settings, give 20 ml/kg as a rapid bolus and up to 40-60 ml/kg in the first 1 hr.
Do not use hypotonic crystalloids, starches, or gelatins for resuscitation.
Fluid resuscitation may lead to volume overload, including respiratory failure. If there is no response to fluid loading and signs of volume overload appear (for example, jugular venous distension, crackles on lung auscultation, pulmonary edema on imaging, or hepatomegaly in children), then reduce or discontinue fluid administration. This step is particularly important where mechanical ventilation is not available.
Administer vasopressors when shock persists during or after fluid resuscitation. The initial blood pressure target is MAP ≥65 mmHg in adults and age-appropriate targets in children.
If central venous catheters are not available, vasopressors can be given through a peripheral IV, but use a large vein and closely monitor for signs of extravasation and local tissue necrosis. If extravasation occurs, stop infusion. Vasopressors can also be administered through intraosseous needles.

Table 8. Prevention of complications

Reduce days of invasive mechanical ventilation	• Use weaning protocols that include daily assessment for readiness to breathe spontaneously • Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless • contraindicated) or with daily interruption of continuous sedative infusions
Reduce incidence of ventilator-associated pneumonia	• Oral intubation is preferable to nasal intubation in adolescents and adults • Keep patient in semi-recumbent position (head of bed elevation 30-45o) • Use a closed suctioning system; periodically drain and discard condensate in tubing • Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged but not • routinely • Change heat moisture exchanger when it malfunctions, when soiled, or every 5–7 days
Reduce incidence of venous thromboembolism	• Use pharmacological prophylaxis (low molecular-weight heparin [preferred if available] or heparin 5000 units subcutaneously twice daily) in adolescents and adults without contraindications. For those with contraindications, use mechanical prophylaxis (intermittent pneumatic compression devices).

Reduce incidence of catheter- related bloodstream infection	• Use a checklist with completion verified by a real-time observer as reminder of each step needed for sterile insertion and as a daily reminder to remove catheter if no longer needed
Reduce incidence of pressure ulcers	• Turn patient every two hours
Reduce incidence of stress ulcers and gastrointestinal bleeding	• Give early enteral nutrition (within 24–48 hours of admission) • Administer histamine-2 receptor blockers or proton-pump inhibitors in patients with risk factors for GI bleeding. Risk • factors for gastrointestinal bleeding include mechanical ventilation for ≥48 hours, coagulopathy, renal replacement therapy, liver disease, multiple comorbidities, and higher organ failure score
Reduce incidence of ICU-related weakness	• Actively mobilize the patient early in the course of illness when safe to do so

Table 9. Management of mild COVID19

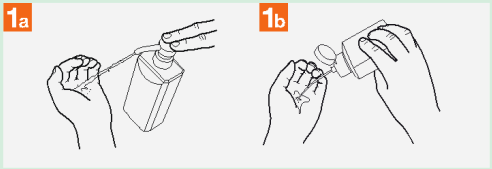
Patients with mild disease require isolation to contain virus transmission
Provide patients with mild COVID-19 with symptomatic treatment such as antipyretics for fever.

Annex 1: Hand Rub

How to Handrub?

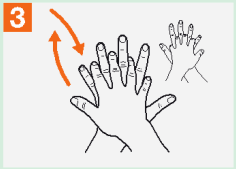
RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

Duration of the entire procedure: 20-30 seconds



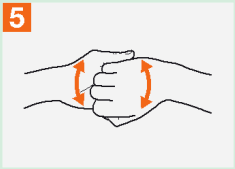
Apply a palmful of the product in a cupped hand, covering all surfaces;

Rub hands palm to palm;



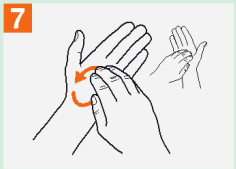
Right palm over left dorsum with interlaced fingers and vice versa;

Palm to palm with fingers interlaced;

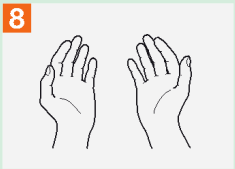


Backs of fingers to opposing palms with fingers interlocked;

Rotational rubbing of left thumb clasped in right palm and vice versa;



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



Once dry, your hands are safe.

World Health Organization

Patient Safety

A World Alliance for Safer Health Care

SAVE LIVES
Clean **Your** Hands

Annex 2: Hand Washing

How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

Duration of the entire procedure: 40-60 seconds

0

Wet hands with water;

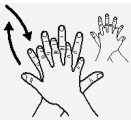
1

Apply enough soap to cover all hand surfaces;

2

Rub hands palm to palm;

3



Right palm over left dorsum with interlaced fingers and vice versa;

4

Palm to palm with fingers interlaced;

5

Backs of fingers to opposing palms with fingers interlocked;

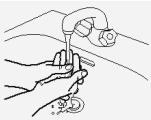
6

Rotational rubbing of left thumb clasped in right palm and vice versa;

7

Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

8

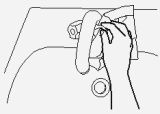


Rinse hands with water;

9

Dry hands thoroughly with a single use towel;

10



Use towel to turn off faucet;

11

Your hands are now safe.

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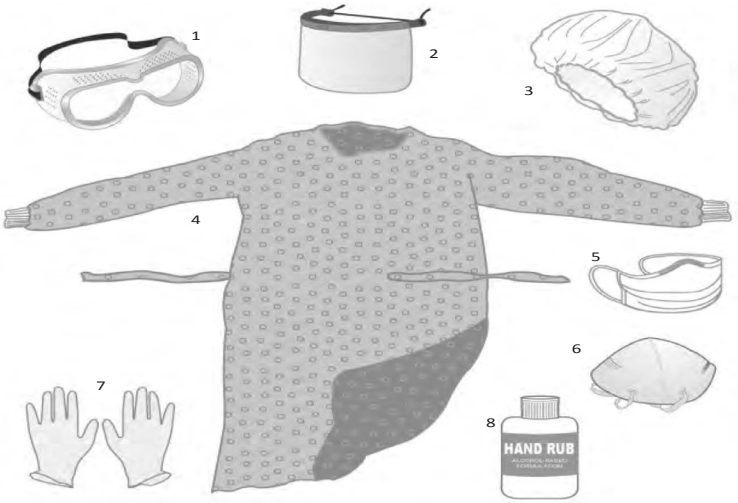
SAVE LIVES
Clean **Your** Hands

Annex 3: Personal Protective Equipment (PPE)



1. Goggles
2. Face Shield (use goggles or face shield)
3. Head cover
4. Gown
5. Surgical mask
6. N95 mask (use ONLY when airborne precaution is required)
7. Gloves
8. Handrub

Annex 4: COVID19 reporting form

Government of Nepal
Ministry of Health and Population
Department of Health Services
Epidemiology and Disease Control Division

HF Case ID: _____

Interim reporting form for suspected cases of 2019 Novel Coronavirus (2019-nCoV)

(based on WHO Minimum Data Set Report Form)

Date of reporting to national health authority: [_D_][_D_]/[_M_][_M_]/[_Y_][_Y_][_Y_][_Y_]

Reporting institution: _____

Detected at point of entry ☐No ☐Yes ☐Unknown If yes, date [_D_][_D_]/[_M_][_M_]/[_Y_][_Y_][_Y_][_Y_]

Section 1: Patient information

Unique case identifier (used at HF): _____

Date of birth: [_D_][_D_]/[_M_][_M_]/[_Y_][_Y_][_Y_][_Y_] or estimated age: [ ][ ][ ] in years

if < 1 year, [ ][ ] in months or if < 1 month, [ ][ ] in days

Sex at birth: ☐ Male ☐ Female

Patients' usual place of residency: Country: _____

Admin Level 1 (province): _____ Admin Level 2 (district): _____

Section 2: Clinical information

Patient clinical course

Date of onset of symptoms: [_D_][_D_]/[_M_][_M_]/[_Y_][_Y_][_Y_][_Y_]

Admission to hospital: ☐ No ☐ Yes

First date of admission to hospital: [_D_][_D_]/[_M_][_M_]/[_Y_][_Y_][_Y_][_Y_]

Name of hospital: _____

Date of isolation: [_D_][_D_]/[_M_][_M_]/[_Y_][_Y_][_Y_][_Y_]

Is the patient ventilated: ☐ No ☐ Yes ☐ Unknown

Date of death, if applicable: [_D_][_D_]/[_M_][_M_]/[_Y_][_Y_][_Y_][_Y_]

Patient symptoms (check all reported symptoms):

☐ History of fever / chills
☐ General weakness
☐ Cough
☐ Sore throat
☐ Runny nose
☐ Shortness of breath
☐ Diarrhoea
☐ Nausea/vomiting
☐ Headache
☐ Irritability/Confusion
☐ Pain (check all that apply)
( ) *Muscular* ( ) *Chest*
( ) *Abdominal* ( ) *Joint*
☐ Other, specify _____

Patient signs :

Temperature: [ ][ ][ ] ☐ °C / ☐ F

Check all observed signs:

☐ Pharyngea exudate
☐ Conjuctival injection
☐ Seizure
☐ Coma
☐ Dyspnea / tachypnea
☐ Abnormal lung auscultation
☐ Abnormal lung x-ray findings
☐ Other, specify _____

Underlying conditions and comorbidity (check all that apply):

- ☐ Pregnancy (trimester: _____)
- ☐ Cardiovascular disease, including hypertension
- ☐ Diabetes
- ☐ Liver disease
- ☐ Chronic neurological or neuromuscular disease
- ☐ Other, specify _____
- ☐ Post-partum (<6 weeks)
- ☐ Immunodeficiency, including HIV
- ☐ Renal disease
- ☐ Chronic lung disease
- ☐ Malignancy

Section 3: Exposure and travel information in the 14 days prior to symptom onset (prior to reporting if asymptomatic)

Occupation: (tick any that apply):

☐ Student ☐ Health care worker ☐ Other, specify: _____

☐ Working with animals ☐ Health laboratory worker

Has the patient **travelled** in the 14 days prior to symptom onset? ☐ No ☐ Yes ☐ Unknown

If yes, please specify the places the patient travelled:

	Country	City
1.	_____	_____
2.	_____	_____
3.	_____	_____

Has the patient visited any health care facility(ies) in the 14 days prior to symptom onset? □ No □ Yes □ Unknown

Has the patient had **close contact**[1] [1]with a person with acute respiratory infection in the 14 days prior to symptom onset?

If yes, contact setting (check all that apply):

☐ Health care setting ☐ Family setting ☐ Work place ☐ Unknown ☐ Other, specify: _____

Has the patient **had contact with a probable or confirmed case** in the 14 days prior to symptom onset?

☐ No ☐ Yes ☐ Unknown

If yes, please list unique case identifiers of all probable or confirmed cases:

Case 1 identifier. _____ Case 2 identifier. _____ Case 3 identifier. _____

If yes, contact setting (check all that apply):

☐ Health care setting ☐ Family setting ☐ Work place ☐ Unknown ☐ Other, specify: _____

If yes, location/city/country for exposure: _____

Have you visited any **live animal markets** in the 14 days prior to symptom onset? □ No □ Yes □ Unknown

If yes, location/city/country for exposure: _____

[1] Close contact' is defined as: 1. Health care associated exposure, including providing direct care for nCoV patients, working with health care workers infected with novel coronavirus, visiting patients or staying in the same close environment of a nCoV patient. 2. Working together in close proximity or sharing the same classroom environment with a with nCoV patient. 3. Traveling together with nCoV patient in any kind of conveyance. 4. Living in the same household as a nCoV patient

Section 4: Laboratory information

Samples collected		Date of Sample Collection (DD/MM/YYYY)	Date of Sample Sent (DD/MM/YYYY)
Nasopharyngeal	☐ No ☐ Yes		
Oropharyngeal (Throat)	☐ No ☐ Yes		
Sputum	☐ No ☐ Yes		
Endotracheal Aspirate	☐ No ☐ Yes		
Bronchioalveolar	☐ No ☐ Yes		
Serum	☐ No ☐ Yes		
Others	☐ No ☐ Yes		

If Other samples collected, specify _____

Sample sent to

☐ NIC/NPHL ☐ Others If others, specify _____

Any test conducted at HF / other laboratory for detection of pan-CoV

☐ No ☐ Yes

If yes, please specify :

Details of test: _____

Name of the laboratory conducted: _____

Test results: _____

Annex 5: Form for specimen transferal to NPHL

Government of Nepal
Ministry of Health & Population
Department of Health Service
National Public Health Laboratory
Teku, Kathmandu

Phone 4252421
Fax: 4252375
E-mail: nphl@nphl.gov.np

Laboratory Sample Collection Form for Suspected COVID-19 Case

Date: __/__/_____ S.No.....

Patient's Name		
Patient's Age	Sex:- ☐ Male ☐ Female	DOB:
Patient' s Temporary address	Province:_____ District: _____ Municipality: _____ Ward: _____	
Patient's Permanent address	Province:_____ District: _____ Municipality: _____ Ward: _____	
Patient's Contact Details	Landline: _____ Mobile: _____ Email: _____	
Name of hospital where patient is admitted		
Patient's Hospital ID		

Type of Collected Sample			
	Nasopharyngeal	Oropharyngeal (Throat)	
	Sputum	Endotracheal Aspirate	
	Bronchioalveolar	Serum	
	Others	*If others, Please Specify*_____	

Symptoms:

ILI	☐	Fever	☐	Cough	☐
SARI	☐	Duration :-		Duration :-	
Co morbidity		Temp. recorded (°F)		Dry:- ☐	Productive:- ☐

Additional symptoms? If any, specify _____

Travel History in last 14 days? Country visited (If yes) -
☐No ☐Yes
H/O close contact with positive COVID-19 patient?
☐No ☐Yes
Is the patient admitted in isolation ward/unit in hospital? Chest X-ray and CT Scan finding if any:-

☐No ☐Yes

**This form is to be filled mandatory by clinicians to send sample for COVID-19 test.*
**Sample from patient not meeting WHO case definition and not in isolation facility won't be accepted for COVID-19 testing.*
**Sample should be collected and transported in VTM with triple layer packaging and cold chain maintenance.*

For further information please visit https://www.nphl.gov.np/
Contact Person: During Office Hours- Mr. Rajesh Kumar Gupta (9851239988).
If Sample Brought After Regular Office Hours (09:00 Am To 04:00 Pm),
Contact :Mr. Dinesh Thapa Magar
(9886128922)Mr. Naresh Thapa Magar
(9803152149)

Lab result to be communicated:-
Name:-
Phone No.:-

Attending Physician:
Signature:
NMC number:
Contact Number:

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