Clinical Management Protocol for Seasonal Influenza (Revised on 25.02.2019)

1. Clinical Assessment:

Patient will be assessed for categorization, those patients falling under the category A and B does not require hospitalization. Category C patients should be immediately hospitalized

1.1 Course of Illness:

Fever and systemic symptoms usually last 3 days, occasionally 5-8 days, and gradually diminish. Cough and malaise may persist more than 2 weeks. Full recovery may take 1-2 weeks or longer, especially in the elderly.

1.2 Complications:

A wide spectrum of complications have been reported in severe progressive disease. Table 1 lists some of them.

Table 1: Complications in Influenza

Children	Adults
1. Otitis media	1. Exacerbation of chronic disease
2. Sinusitis	2. Pneumonia
3. Parotitis	3. Acute Respiratory Distress Syndrome
4. Pneumonia	4. Parotitis
5. Croup	5. Bronchitis
6. Bronchiolitis	6. Sinusitis
7. Myocarditis	7. Myocarditis, pericarditis
8. Rhabdomyolysis	8. Invasive bacterial co-infection (Mainly by *Staphylococcus aureus*)
9. Encephalopathy and encephalitis	9. Invasive pulmonary aspergillosis
10. Invasive bacterial co-infection	
11. Reye syndrome (with aspirin use)	

2. High Risk Groups:

Persons who are at high risk of complications from influenza include:

1. Age ≥ 65 years
2. Pregnancy (including up to two weeks post-partum)
3. Children aged less than 5 years especially <2 years of age
4. Chronic respiratory disease
5. Chronic heart, kidney, liver or neurological disease
6. Diabetes mellitus
7. Blood disorders (including haemoglobinopathies)
8. Persons with immunosuppression (including HIV/ AIDS & use of long-term corticosteroids, Post- transplant patients)
9. Extreme obesity (BMI ≥ 40 kg/m^2)

3. Investigations:

Routine investigations required for evaluation and management of a patient with symptoms as described above will be required. These may include hematological, biochemical, radiological and microbiological tests as necessary. Confirmation of seasonal influenza is indicated for Category-C patients and done through:

- Real time RTPCR or
- Isolation of the virus in culture or Four-fold rise in virus specific neutralizing antibodies (only for designated reference laboratory)
- **For** Collection, storage and transportation of samples *(Refer to laboratory guidelines)*

4. Treatment:

The guiding principles are:

- Early implementation of infection control precautions to minimize nosocomial / household spread of disease through frequent Hand wash, Social distancing etc
- Prompt treatment to prevent severe illness & death.
- Early identification and follow up of persons at risk

4.1. Infrastructure / manpower / material support:

- Isolation facilities: if dedicated isolation ward is not available then patients may be cohorted in a well-ventilated ward with beds kept at least one meter apart/ separate room
- Manpower: it is desirable to have exclusive doctors, nurses and paramedical workers in isolation wards and ICU for influenza patients.
- Equipment: Portable X- Ray machine, ABG machine, ventilators, large oxygen cylinders, pulse oximeter and other supportive equipment
- Supplies: Adequate quantities of PPE, disinfectants and medications (Oseltamivir, antibiotics and other medicines)
- Indications for ICU admission: Respiratory failure requiring mechanical ventilation, hemodynamic instability or multi-organ dysfunction

4.2. Standard Operating Procedures:

- Reinforce standard infection control precautions i.e. all those entering the room must use hand washing practices, high efficiency masks, gowns, goggles, gloves, cap and shoe cover.
- Restrict number of visitors and provide them with PPE.
- Provide antiviral prophylaxis to unprotected / unvaccinated / accidently exposed health care personnel managing a case and ask them to monitor their own health twice a day.
- Dispose waste properly by placing it in sealed impermeable bags labelled as Bio- Hazard.

4.3 Anti-viral Medication:

- Oseltamivir is the recommended drug for treatment.
- All patients in Category-B and C should receive oseltamivir.
- Empiric antiviral therapy is often necessary and treatment should not be delayed while awaiting confirmatory test results.
- Initiate treatment as early as possible (within 48 hours preferably)
- Usual duration of therapy is 5 days [Clinicians may consider longer duration of antiviral treatment for patients with documented or suspected immune-compromised condition or patients requiring hospitalization for severe lower respiratory tract disease (especially pneumonia or acute respiratory distress syndrome)]
- Dose for treatment is as follows –

Table 2: Dosing of Oseltamivir

Weight-based	**Age**	**Dosage**
<15kg	1-5 years	30 mg BD for 5 days
15-23kg	5-8 years	45 mg BD for 5 days
24-<40kg	8-12 years	60 mg BD for 5 days
>40kg	More than 12 years	75 mg BD for 5 days
Infants (less than 1 year)		
< 3 months*		12 mg BD for 5 days
3-5 months		20 mg BD for 5 days
6-11 months		25 mg BD for 5 days

* *in pre term infants the dose may be modified from 1 – 3 mg/ kg/ dose BD Oseltamivir is also available as syrup (6-12mg per ml.). If needed dose & duration can be modified as per clinical condition*

Table 3: Adverse reactions

Common side effects	**Rare side effects**
• Nausea • Vomiting • Insomnia • Vertigo	• Bronchitis • Anaphylaxis • Pseudomembranous colitis • Abdominal pain • Neuropsychiatric illness

Table 4: Supportive therapy

Supportive therapy in Category A&B	Therapy Category C
• Plenty of oral fluids • Paracetamol • For sore throat, short course of topical decongestants, saline nasal drops, throat lozenges and steam inhalation may be beneficial • Avoid use of salicylate due to risk of Reye's syndrome (in children) • Closely monitor the underlying high-risk condition	• Antiviral therapy • IV fluids • O_2 supplementation • Maintain hydration, electrolyte balance and nutrition • Antibiotics for secondary infection • Ventilatory support • Vasopressors for shock • Monitor respiratory rate, SpO2, Consciousness level

* No role of IVIG/Steroids (However, low dose corticosteroid may be used only in the setting of septic shock in adults)

Indications of concurrent antibiotics in Influenza*:

1. Patients presenting initially with severe disease (extensive pneumonia, respiratory failure, hypotension, and fever)
2. Investigate and empirically treat bacterial co-infection in patients who deteriorate after initial improvement
3. Patients who fail to improve after 3–5 days of antiviral treatment
   * Antibiotics to be given as per the guidelines for treating Community acquired pneumonia

4.5 Protocol for the ventilator management of patient with ALI/ARDS following Seasonal Influenza:

Indications for Mechanical Ventilation:

- Severe respiratory failure (Failure to achieve oxygen saturation of ≥ 90% (or pO2 of ≥ 60 mm Hg) on an FIO2 < 0.6)
- ARDS severity to be assessed according to Berlin criteria (mild PaO2/FiO2: 300-200, moderate PaO2/FiO2 <200-100, severe PaO2/FiO2<100)
- Mild ARDS may be tried with early NIV, Moderate and severe ARDS will require invasive ventilation.

Ventilator Settings:

- Pressure pre-set (controlled)
- Low tidal volume ventilator support
- Tidal volume — 6 ml/kg ideal body weight (Respiratory rate to a maximum of 30-35/minute)
- Open lung strategy of ventilation with PEEP titration to keep the lung recruited to achieve an FIO2 of < 0.5 and a saturation of > 90% or a PaO_2 of > 60 mmHg
- Plateau pressure not to exceed of > 30-35 mmHg.
- Recruitment manoeuvres, sedation, neuromuscular blockage & prone ventilations can be considered if above oxygen goals are not met.

5. **Discharge Policy:**

Patients may be discharged as soon as they are medically fit. Advise home isolation for a period of 7 days from the onset of illness. Use droplet precautions. No need for repeat testing.

6. **For health care staff:**

1. Use of universal Personal Protective Equipment (PPE) by all health care staff in isolation wards/ICU
2. Vaccination to be provided to health care workers as per National guidelines.
3. Consider antiviral chemoprophylaxis for exposed health care staff for 7 days following the last exposure during epidemic/outbreak situation

Timing

1. Administer post exposure antiviral chemoprophylaxis as soon as possible after exposure, ideally within 48 hours after exposure.
2. Full-dose empiric antiviral treatment should be initiated as soon as symptoms occur, if treatment is indicated.

Dosing and duration
Oseltamivir 75 mg OD for 7 days after the last exposure.

For pregnant females

Pregnant women are at increased risk for severe illness from influenza compared to non-pregnant women of reproductive age. Vaccine is recommended for pregnant women, irrespective of the duration of the pregnancy. In case of symptom development, anti-viral treatment should be initiated as early as possible (within 48 hours of illness onset) without awaiting results. Ante- natal steroids can be given for pre term labor.

Decision for delivery:

- Management of these women with complications should be multi-disciplinary (Obstetrician, Critical care specialist and neonatologist)
- Most may be delivered according to obstetric indication and can deliver vaginally.
- However, in critically ill patients, close to term may be delivered by LSCS in order to help with the mechanical ventilation of the patient*
- There may be situation where a pre term baby needs to be delivered in order to improve the outcome for ventilation of a very ill mother (in 3rd trimester)*

* *This decision should be made in conjunction with obstetric, critical care and neo-natal team*

Post-partum period:

In the post-partum period, there is a risk of transmission of infection to the neonates

1. Patient to follow strict hygiene measures (frequent hand washing, use of masks)
2. If symptomatic, she should receive anti-viral Oseltamivir
3. Breast feeding (expressed breast feeding in severe cases till symptoms resolve) should be encouraged.