Hyperventilation Syndrome (HVS)

1. PURPOSE

- To provide a standardized approach for the assessment, diagnosis, and management of patients presenting with Hyperventilation Syndrome (HVS) in a general hospital setting.

2. SCOPE

This SOP applies to:

- Emergency Department physicians
- General physicians
- Nurses
- Respiratory therapists
- Mental health professionals

3. DEFINITION

- Hyperventilation Syndrome (HVS) is a condition characterized by rapid or deep breathing exceeding metabolic demand, leading to decreased arterial carbon dioxide (hypocapnia), which results in respiratory alkalosis and associated symptoms.

4. COMMON CAUSES

- Anxiety or panic attacks
- Emotional distress
- Acute stress reaction
- Pain
- Fever
- Asthma exacerbation
- Metabolic acidosis (compensatory hyperventilation)
- Pulmonary embolism
- Cardiac conditions

5. CLINICAL PRESENTATION

Symptoms:

- Rapid breathing (tachypnea)
- Shortness of breath
- Chest tightness
- Dizziness

- Tingling in hands, feet, or around mouth
- Lightheadedness
- Palpitations
- Anxiety

Severe Cases:

- Carpopedal spasm
- Syncope

6. INITIAL ASSESSMENT (ABCDE APPROACH)

A Airway

Ensure airway patency.

B Breathing

- Assess respiratory rate
- Pulse oximetry
- Observe breathing pattern

C Circulation

- Check pulse, blood pressure
- Cardiac monitoring if indicated

D Disability

- Assess mental status (GCS)
- Check blood glucose

E Exposure

- Look for trauma, infection signs

7. INVESTIGATIONS (AS INDICATED)

- To exclude serious causes:
- Pulse oximetry
- Arterial Blood Gas (ABG)
- ECG
- Chest X-ray
- D-dimer (if PE suspected)
- Cardiac enzymes (if cardiac cause suspected)
- Serum electrolytes

8. DIAGNOSTIC CRITERIA

- Diagnosis of HVS is made after excluding organic causes.
- Typical ABG findings:
- Low PaCO
- Elevated pH (respiratory alkalosis)
- Normal oxygen saturation unless underlying pathology exists.

9. MANAGEMENT

9.1 Immediate Management

- Reassure the patient calmly.
- Position patient upright.
- Encourage slow, controlled breathing:
- Inhale through nose for 4 seconds
- Hold for 2 seconds
- Exhale slowly through mouth for 6 seconds
- Do NOT use paper bag rebreathing (risk of hypoxia).

9.2 If Anxiety/Panic Related

- Provide psychological support
- Consider short-acting benzodiazepine (e.g., Lorazepam) if severe anxiety (as per hospital protocol)
- Refer to psychiatry if recurrent

9.3 If Secondary Cause Identified

- Treat underlying condition:
- Asthma Bronchodilators
- Pulmonary embolism Anticoagulation
- Metabolic acidosis Treat cause

10. ADMISSION CRITERIA

Admit if:

- Uncertain diagnosis
- Abnormal vital signs
- Suspected cardiac/pulmonary cause
- Recurrent unexplained episodes
- Severe electrolyte imbalance

11. DISCHARGE CRITERIA

- Stable vital signs
- Organic causes excluded
- Symptoms resolved
- Patient educated about breathing control techniques
- Follow-up arranged

12. PATIENT EDUCATION

- Teach breathing exercises
- Stress management techniques
- Avoid caffeine and stimulants
- Follow-up with primary care or mental health provider

13. DOCUMENTATION

- Record:
- Time of onset
- Vital signs
- Investigations performed
- Differential diagnoses considered
- Treatment provided
- Response to treatment
- Discharge advice