INTRODUCTION
Acute severe asthma is a life threatening medical emergency often under diagnosed under estimated and misdiagnosed. It often results from under treatment of existing disease, exacerbation of stable disease following exposure to allergen or severe disease (forced expiratory volume (FEV) less than 30% of predicted value)\(^1\). The present attempt is to outline the principles in early recognition and effective management and not a replacement to standard text books.

EVALUATION
Any patient who struggles to speak few words or walk even 25 meters or difficulty to eat should be ideally managed in ICU. Patient seen in emergency medicine department should be made comfortable, anxiety relieved and placed on 100% oxygen to maintain pulse oxymetry >93% before shifting.

### Role of Spirometry
Though spirometry is an essential investigation to assess the severity and diagnosis, it may have to be deferred till the patient becomes stable. Peak flow meter will guide the stage of the disease.

### Approach to the Problem
Once stable, early effort is made to confirm the diagnosis and rule out alternate conditions – left ventricular failure following hypertensive heart disease / myocarditis/ valvular lesion or ischemic heart disease. Patient should be subjected to EKG, portable x-ray chest (to rule out pleural effusion, pneumothorax, bullae or cardiomegaly) metabolic and renal, haematological lab parameters to exclude anemia, renal failure or pneumonia. Atelectasis / segmental involvement following mucus plugs should be attended whenever relevant. Arterial blood gases, serum electrolytes including magnesium should be done in refractory cases.

### Pharmacologic Therapy
Unstable asthma calls for betaagonist nebulizer, IV steroids, maintenance of fluid and electrolyte balance in addition to oxygen and mucolytic therapy. Those having pyrexia, leucocytosis and / or coloured expectation need antibiotic therapy.

Table 1 indicates the therapeutic option1 Salbutamol/levosalbutamol nebulization can be replaced by steroid inhalers (MDI / Rotahaler) after stabilising the wheeze. IV Doxofylline a newer xanthine cardiac friendly molecule can be, replaced, in place of aminophylline, given diluted as IV infusion. Present data suggest improved therapeutic response with a combination of formoterol and fluticasone (125 – 500 mg) twice daily. Budesonide combined with formoterol or salmeterol is an alternate choice \(^2\)\(^3\)

Leukotrine inhibitors (montelukast) combined with antihistamines (levo-cetrizine, rupatidine, loratidine, fexofenadine) may be considered in patients with persistent macrobronchial asthma, to reduce the risk of steroid inhalers.
**ROLE OF SYSTEMIC STEROIDS**

In acute states IV hydrocortisone 100 – 200mg initially followed by oral prednisolone 40 – 60mg daily should be given Table 1. It is a good practice to taper systemic steroids as soon as possible for fear of systemic steroid dependant asthma and related complications. IV steroids are recommended even in diabetics, with concurrent control of blood sugar with short acting human insulins.

Bactericidal antibiotics (macrolides, cefuroxime, fluroquinolone) should be given in those with associated infection. Care is given to watch for hypersensitivity reactions while prescribing beta lactum antibiotics.

**RISK FACTORS**

History of one or more cited below should warn the clinicians on early consideration for acute severe asthma

a. use of more than 2 canisters per month of inhaled short acting beta agonists (Salbutamol)
b. Two or more hospitalizations for asthma in the previous year
c. Prior admission to ICU, for asthma.
d. Comorbidities like, COPD and / or cardiovascular disorders
e. Recent withdrawal of systemic steroids
f. Serious psychiatric diseases.

**ROLE OF VENTILATORS**

(NIV) Non invasive ventilation (CPAP/BIPAP) should be considered when there is evidence of:

i. Pulses paradoxus
ii. Central cyanosis despite O₂ inhalation
iii. Arterial blood gas abnormalities PH < 7.3; PaO₂ < 60 mmHg or PaCO₂ > 50 mmHg
iv. Progressive dull sensorium
v. Hypopnoea / Apnoea

Invasive ventilators are recommended only in those where NIV is not possible.

**WHAT WE SHOULD KNOW?**

Acute severe asthma is largely avoidable if steroid inhaler therapy is continued, with variable doses³ ⁴, Thy need follow up after discharge, to ensure regular therapy. Inhalers are preferred to systemic steroid therapy. Short acting betaagonists should be used only for acute exacerbations. Secondary causes and ‘localized’ wheeze in those with intra/extra luminal obstructive lesion presenting with acute asthma should be ruled out. Control of infection, electrolyte and fluid imbalance should be considered in relevant cases.

**REFERENCES:**