Emergency (ED) Acute Exacerbation of Chronic Obstructive Pulmonary Disease (AECOPD) Adult Order Set

Evidence-based, severity-guided support for managing Acute Exacerbations of COPD, with recommendations on aerosol delivery, pharmacologic therapy, oxygen use, non-invasive support, and environmental impact.

PATIENT INFORMATION

Last Name (Legal)			**First Name (Legal)**	
Preferred Name	**Last**	**First**	**DOB (dd-mm-yyyy)**	
PHN	**ULI**	**Same as PHN**	**MRN**	
Administrative Gender	**Male**	**Female**	**Non-binary**	**Prefer not to disclose**	**Unknown**

SEVERITY-BASED DECISION SUPPORT – use ONE of the following validated COPD scoring tools

GOLD

MILD	MODERATE	SEVERE
Signs and symptoms: ☐ Dyspnea VAS <5 ☐ RR < 24 Breaths/min ☐ HR < 95 bpm ☐ Resting SaO2 ≥ 92% on ambient air or home O2 prescription ☐ CRP <10mg/L if obtained	Signs and symptoms: ☐ Dyspnea VAS ≥ 5 ☐ RR ≥ 24 Breaths/min ☐ HR ≥ 95 bpm ☐ Resting SaO2 < 92% on ambient air or home O2 prescription ☐ CRP 10mg ≥ /L if obtained ☐ If obtained ABG may show hypoxemia (PaO2 ≤ 60mmHg) and/or Hypercapnia (PaCO2 >45mm HG) but no acidosis	Signs and symptoms: ☐ Dyspnea RR, HR, SaO2m and CRP is same as moderate ☐ ABG shows new onset/worsening hypercapnia **AND** acidosis (PaCO2 > 45mmHg and pH <7.35)

Severity: _____

DECAF

DECAF Score[3]	0	1	2	3
Dyspnoea (MRC)	1–3	5	4	
Eosinopenia (<0.05 × 10^9/L)	No	Yes		
Consolidation on CXR	No	Yes		
Acidaemia (pH < 7.30)	No	Yes		
Atrial fibrillation	No	Yes		

Total Score: _____ Disposition: ☐ Discharge Home: 0-1 ☐ Consider Admission to Floor: 2 ☐ Consider escalated care/monitoring: 3-6

Assessed by *(print)*	Designation	Signature	Date/Time (dd/mm/yyyy hhmm)

MONITORING / LABS

☐	Continuous SpO_2	☐	CBC	☐	SARS-CoV-2 PCR
☐	Continuous Heart Rate Monitoring	☐	Basic Metabolic Panel	☐	Influenza PCR
☐	Blood Pressure Monitoring	☐	Comprehensive Metabolic Panel	☐	Chest X-Ray
☐	ABG	☐	Sputum Culture	☐	D-dimer
☐	VBG	☐	Respiratory Panel	☐	Troponin

ACUTE MANAGEMENT (first hour)

PHARMACOLOGIC THERAPY - Bronchodilators

MEDICATION DELIVERY OPTIONS

MILD-MODERATE	SEVERE *Requiring HFNO/NIV*
☐ Salbutamol **pMDI** 100mcg/puff with spacer ____Puffs q20 min x3 PRN Shortness of breath ☐ Ipratropium **pMDI** 20mcg/puff with spacer ___ Puffs x3 *- For patients unable to coordinate breaths or generate adequate inspiratory flow, VMN should be considered [23,26,31]* *- pMDI should be delivered with a spacer to increase deposition*	☐ Salbutamol **pMDI** 100mcg/puff with Spacer ____Puffs q20min x3 PRN Shortness of breath ☐ Ipratropium **pMDI** 20mcg/puff with spacer chamber ____ Puffs x3 *- For patients unable to coordinate breaths or generate adequate inspiratory flow, VMN should be considered [23,26,31]* *- pMDI should be delivered with a spacer to increase deposition*
☐ Salbutamol via **VMN + Aerosol Reservoir** _____mg q20min x3 PRN Shortness of breath ☐ Ipratropium Bromide via **VMN + Aerosol Reservoir** 0.5 mg x1 PRN Shortness of breath	☐ Salbutamol via **VMN in-line** via HFNO or NIV _____mg q20min x3 PRN Shortness of breath ☐ Ipratropium Bromide via **VMN in-line** via HFNO or NIV 0.5 mg x3 PRN Shortness of breath
☐ Salbutamol via **JN** ___mg q20min x3 PRN Shortness of breath ☐ Ipratropium Bromide via **JN** 0.5 mg x3 Shortness of breath *JN may be inferior to VMN (clinical outcomes & deposition) and not superior to pMDI [1,2,31]*	☐ Salbutamol via **JN** ___mg q20min x3 PRN Shortness of breath ☐ Ipratropium Bromide via **JN** 0.5 mg x 3 Shortness of breath *For patients on HFNO or NIV: [25]* *- not recommended to disrupt oxygen delivery to deliver aerosol treatment* *- concurrent aerosol treatment with mask/mouthpiece not recommended (in-line delivery recommended)* *- adding flow to the circuit via JN is not recommended due to changes to FIO2 and nuisance alarms*

Infection Prevention

In patients with respiratory infections, it is preferred to use pMDI due to risk of secondary exposure. [33]

If nebulizer is needed due to patient inability to coordinate breaths, or lack of inspiratory flow, VMN with mouthpiece & filter or in-line with viral filter is preferred over JN to reduce the risk of secondary transmission. [33]

In patients receiving HFNO it is recommended to place a surgical mask over cannula to reduce the risk of transmission. [33]

Environmental Sustainability

VMN + Ultra: Enables continuous delivery in-line with HFNO/BiPAP; reusable; Less plastic waste than disposable jet nebulizers [6-10] [11,12]

pMDI + Spacer: Lower plastic waste and energy use vs disposable jet nebulizers; reusable spacers last months.x

Corticosteroids[2]

Route	Medication/dose	Select
Oral	Prednisone	☐ 40 mg daily × 5 days
Oral	Prednisolone	☐ 40 mg daily × 5 days
IV	Methylprednisolone	☐ 32 mg daily x 5 days

**GOLD guidelines recommend 40mg of prednisone or equivalent. Methylprednisolone 4mg=prednisone 5mg*

Antibiotics

Initiate antibiotics if any of the following are present:

- Increased dyspnea, sputum volume, and sputum purulence (all three)
- sputum purulence and either dyspnea or sputum volume
- Requirement for mechanical ventilation (invasive or noninvasive)

Route	Medication/dose	Select	Continuation
Oral	Amoxicillin/clavulanate*	☐ 875mg/125mg X1	☐ 875mg/125mg q12h X5 days
Oral	Doxycycline	☐ 200 mg X1	☐ 100 mg BID X5 days
Oral	Azithromycin	☐ 500 mg X1	☐ 500 mg Qday X4 days
Oral	Levofloxacin*	☐ 750 mg X1	☐ 750 mg Qday X4 days
IV	Ceftriaxone	☐ 2000 mg X1	☐ 1gm qday X4 days
IV	Cefepime*	☐ 2000 mg X1	☐ 2000mg q8h
IV	Levofloxacin*	☐ 750 mg X1	☐ 750 mg Qday X4 days
IV	Piperacillin/Tazobactam*	☐ 4.5g X1	☐ 4.5gm q8h X4 days

**Should be dose adjusted based on renal function*

- **Antibiotics should be chosen based on local resistance patterns**
- **Antibiotics should be continued for no more than 5 days for simple COPD**
- **Critically ill patients should be dosed with the most aggressive regimen possible**

Ordering Prescriber *(print)*	Designation	Signature	Date/Time (dd/mm/yyyy hhmm)

REASSESSMENT / MAINTENANCE (post 1-hour)

Reassessed COPD Severity: _____

PHARMACOLOGIC THERAPY (Continuation) - Bronchodilators

(continued device selection should be based on clinical considerations from the acute table)

MEDICATION DELIVERY OPTIONS	MILD – MODERATE	SEVERE
	SCHEDULED DOSES	
	☐ Salbutamol **pMDI** 100mcg/puff with spacer ___Puffs q6h ☐ Ipratropium **pMDI** 20mcg/puff with spacer___Puffs q6h ☐ Salbutamol via **VMN + Aerosol Reservior** ___mg q6h ☐ Ipratropium Bromide via **VMN + Aerosol Réservoir** 0.5 mg q6h ☐ Salbutamol via **JN** ___mg q6h ☐ Ipratropium Bromide via **JN** 0.5 mg q6h	☐ Salbutamol **pMDI** 100mcg/puff with Spacer ___Puffs q6h ☐ Ipratropium **pMDI** 20mcg/puff with spacer __Puffs q6h ☐ Salbutamol via **VMN in-line** via HFNO or NIV ___mg q6hr ☐ Ipratropium Bromide via **VMN in-line** via HFNO or NIV 0.5 mg q6h
	AS-NEEDED DOSES	
	☐ Salbutamol **pMDI** 100mcg/puff with spacer _____Puffs q1h PRN Shortness of breath ☐ Salbutamol via **VMN + Aerosol Reservoir** ___mg q1hr PRN Shortness of breath ☐ Salbutamol via **JN** ___mg q20min PRN Shortness of breath ×3	☐ Salbutamol **pMDI** 100mcg/puff with Spacer ___ Puffs q1hr PRN Shortness of breath ☐ Salbutamol via **VMN + Aerosol Reservoir** ___mg q1hr PRN Shortness of breath

Ordering Prescriber *(print)*	Designation	Signature	Date/Time (dd/mm/yyyy hhmm)

RESPIRATORY SUPPORT / SUPPLEMENTAL OXYGEN

☐ Target SpO_2 ≥ 94% (peds) / ≥ 92% (adult)

☐ Room Air
☐ Nasal Cannula _____L/min
☐ HFNC: _____L/min (Peds: 1.5–2 L/kg/min; Adults: 30–60 L/min)
- Inline Aerogen Ultra VMN for bronchodilator delivery

☐ NIV/BiPAP: IPAP _____/ EPAP _____
- Inline Aerogen Ultra VMN via T-piece or mask adapter

Considerations

- HFNO with Cannula (Moderate)
  - In-line with Fisher&Paykel Airvo2 or 3 in combination with the Airvo Neb humidifier adaptor
  - In-line with the Vapotherm HVT 2.0 Aerosol Adapter
  - If High-flow Nasal Oxygen is being delivered via standalone humidification Aerogen should be on the Dry side of the humidifier at the inlet
  - Higher delivery occurs when the patients inspiratory flow is matched to or greater than flow from the HFNO device (consider reducing the flow of the highflow device)
- Optimal Placement for NIV (Severe)
  - Single Limb Circuit: Between a non-vented mask and the patient side of the leak port (non-vented masks not recommended).
  - Dual Limb Circuit: Optimal position would 15cm back from the Wye at the inspiratory limb or between the Wye and the patient, and pre-humidifier
- Reassessment
  - Response to NIV should be monitored at least hourly
  - Follow institutional guidelines for need of escalation

DISPOSITION

☐ Consider discharge in patients fitting into the mild category: Peak flow > 80% predicted O2>95%, RR <20, no desaturation during walk test and able to use pMDIs at home.

☐ Admit to Ward

☐ Admit to ICU

DEFINITIONS

pMDI	Pressurized Metered Dose Inhaler
VMN	Aerogen Solo Vibrating Mesh Nebulizer
Ultra	Aerogen Ultra Aerosol Reservoir with aerosol mask or valved mouthpiece
HFNO	High-Flow Nasal Oxygen
NIV	Non-Invasive Ventilation
DECAF	Dyspnea, Eosinopenia, Consolidation on chest x-ray, Acidemia (pH<7.3), Atrial fibrillation
BiPAP	Bilevel Positive Airway Pressure
EPAP	Expiratory Positive Airway Pressure
FiO2	Fraction of inspired Oxygen

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