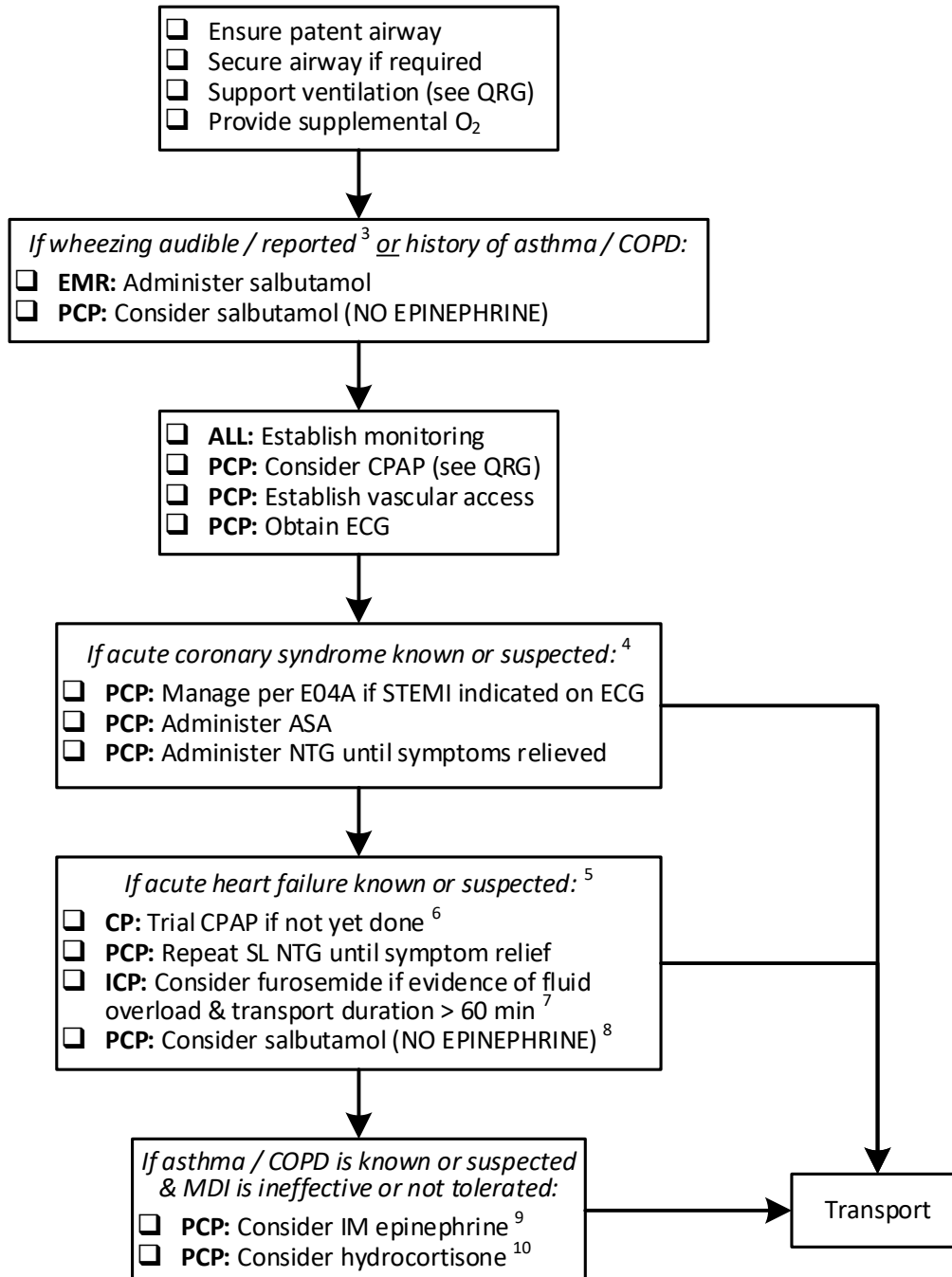
	E06 - BREATHING PROBLEMS	
	All ages	MEDICAL
ALL - Paramedics with all work scopes will follow this protocol except where indicated by PCP (primary & intermediate only) or ICP (intermediate only). EMR indicates mandatory step for basic work scope.		
Version date: 2023-02-13		Effective date: 2023-02-22 (0700 hrs)



QRG: OXYGENATION & ASSISTED VENTILATION DURING COVID

COVID STATUS	SUPPLEMENTAL O ₂	PPV / UNSEALED AIRWAY	CPAP
POSITIVE ^a	Yes	NO	NO
NEGATIVE ^b	Yes	Yes	Yes
UNKNOWN	Yes	Yes, only if C is true	Yes, only if C is true

- a. Regardless of known or suspected cause of breathing problem, or absence of symptoms or signs (appendix A).
- b. Confirmed by RAD or PCR administered by a health care provider on that day.
- c. Alternative cause of breathing problem is known or reasonably suspected (eg. acute chest trauma, acute decompensated heart failure) and no symptoms or signs suspicious for COVID.

INDICATIONS

- Patients with acute dyspnea, worsening of chronic dyspnea, respiratory distress, or respiratory failure¹

CONTRAINDICATIONS

- Not applicable

NOTES

1. In the absence of arterial blood gas analysis, respiratory failure should be presumed with a pulse oximetry measurement of less than 90% on room air or a capnometry reading of greater than 45 mmHg. Patients with dyspnea or distress can *rapidly* progress to respiratory failure despite adequate initial readings. Continuous monitoring with oximetry, capnometry, electrocardiography and frequent blood pressure measurements is essential.

Agitation in a patient with respiratory distress is assumed to be due to hypoxemia until proven otherwise, while a decrease in level of consciousness may indicate progressing hypercapnia. **DO NOT SEDATE A PATIENT WITH RESPIRATORY DISTRESS OR FAILURE.**
2. Notify receiving emergency department (ED) staff before arrival if a patient with unknown COVID status is receiving CPAP ventilation.
3. Acute coronary syndrome (ACS) with myocardial ischemia, injury or infarction may present with painless dyspnea.
4. Acute decompensated heart failure (ADHF) is a common cause of dyspnea and may be due to a variety of cardiac diseases. It may occur suddenly due to a new event (eg. ischemia, arrhythmia) or may represent a more

gradual deterioration of the chronically failing heart (eg. disease progression, noncompliance). While commonly called congestive heart failure, it is not always accompanied by signs of fluid overload (ie. congestion).

5. Pulmonary edema refers to ADHF causing fluid overload in the lungs (ie, respiratory distress, crackles, distended neck veins) and is often called *cardiogenic* pulmonary edema to differentiate it from noncardiac causes of increased lung fluid. In addition to crackles, wheezing due to edema in the bronchiolar walls may be present and work of breathing may improve with bronchodilator administration.

CPAP ventilation and vasodilation are first line therapy for pulmonary edema. As it is often accompanied by ventricular dysfunction, hypotension must be avoided with these.

6. Limited data suggest that diuretics are effective in relieving symptoms in pulmonary edema and *early* administration is associated with lower mortality. Although the peak effect may take up to two hours, the onset of diuresis typically begins within 15 to 20 minutes. It may also cause venodilation leading to early symptom improvement.¹⁰
7. A lack of wheezing in a patient with bronchospasm may indicate severe airflow obstruction (silent chest) and is an ominous sign in asthma.
8. Systemic steroids hasten improvement in patients with severe airway obstruction and *early* administration is indicated if initial bronchodilator treatment is ineffective.¹⁰
9. Parenteral epinephrine may be lifesaving in patients with impending respiratory arrest due to asthma who do not respond to, cannot tolerate, or cannot cooperate with inhaled bronchodilators.

There is no evidence to support its use in acute exacerbations of chronic obstructive pulmonary disease (AECOPD) and it may precipitate cardiac arrhythmias or myocardial ischemia, especially in patients who are already hypoxemic or acidotic. It is contraindicated in AECOPD, ADHF and ACS.

10. Physician assessment may be delayed due to prolonged transport duration, offload delays, or physician availability. If medical care will be delayed, paramedics may administer second-line therapeutics (eg. hydrocortisone, furosemide) after evaluating the risks versus benefits based on the patient's condition and anticipated length of delay.

NOTES

A09 - MEDICAL PROCEDURES DURING COVID PANDEMIC
 E04A - ACUTE CORONARY SYNDROME (ACS) AND STEMI
 M05.3 - EPINEPHRINE FOR ASTHMA
 M09 - FUROSEMIDE
 M13 - HYDROCORTISONE
 M15 - SALBUTAMOL

APPROVED BY	
	
Medical Director - Provincial EMS/PT	Associate Medical Director – Provincial EMS/PT

VERSION CHANGES (REFER TO X05 FOR CHANGE TRACKING)
<ul style="list-style-type: none"> PCP can administer hydrocortisone

APPENDIX A: SYMPTOMS & SIGNS SUSPICIOUS FOR COVID
<ul style="list-style-type: none"> Fever / chills Cough (or increased severity of chronic cough) Shortness of breath / difficulty breathing Hypoxemia / hypoxemia * Sore throat / hoarse voice * Runny nose Headache * Muscle aches * Loss of smell / taste Conjunctivitis Nausea / Loss of appetite Poor feeding in infants Diarrhea / vomiting for more than 24 hours Fatigue Skin rash of unknown cause <div style="text-align: right; margin-top: 20px;"> <p>* Not due to trauma, exercise, or sport</p> </div>

APPENDIX B: SYMPTOMS & SIGNS OR RESPIRATORY DISTRESS & FAILURE

UP TO 12 MONTHS			
MILD	MODERATE	SEVERE	FAILURE
<ul style="list-style-type: none"> • Minimal or no increased respiratory effort with usual activity • Fussy • Normal cry • May have difficulty with feeding • No cyanosis • Increased RR • Normal SaO₂ • Normal HR • No accessory muscle use • Wheezing & prolonged expiratory phase on auscultation • Adequate response to bronchodilator administration 	<ul style="list-style-type: none"> • Increased respiratory effort with any activity • Usually agitated • Weak cry • Difficulty with feeding • Central cyanosis • Rapid RR • Decreasing SaO₂ • Tachycardia • Intercostal / subcostal / substernal retractions • Audible wheezing • Inadequate response to bronchodilator administration 	<ul style="list-style-type: none"> • Increased respiratory effort at rest • Extreme agitation • Too dyspneic to cry • Will have stopped feeding • Generalized cyanosis • Very rapid / inadequate RR • SaO₂ < 90% • Extreme tachycardia • Supraclavicular / suprasternal / sternal retractions & nasal flaring • Decreased wheezing due to insufficient airflow • Minimal or no response to bronchodilator administration 	<ul style="list-style-type: none"> • Decreased LOC • Mottling • Hypoventilation or apnea • Severe hypoxemia • Bradycardia • Paradoxical chest movement (abdominal breathing or seesaw respirations) • Silent chest

12 MONTHS UP TO 10 YEARS			
MILD	MODERATE	SEVERE	FAILURE
<ul style="list-style-type: none"> • Minimal or no increased respiratory effort / dyspnea with usual activity • Irritable • Talking normally or normal cry • May have difficulty feeding / eating • No cyanosis • Increased RR • Normal SaO₂ • Normal HR • No accessory muscle use • Wheezing & prolonged expiratory phase on auscultation 	<ul style="list-style-type: none"> • Increased respiratory effort / dyspnea with any activity • Usually agitated • Talking in short sentences or weak cry • Difficulty with feeding / eating • Central cyanosis • Rapid RR & increased work of breathing • Decreasing SaO₂ • Tachycardia • Intercostal / subcostal retractions • Audible wheezing 	<ul style="list-style-type: none"> • Increased respiratory effort / dyspnea at rest • Extreme agitation • Speaking few words only or too dyspneic to cry • Will have stopped feeding / eating • Generalized cyanosis • Very rapid or inadequate RR • SaO₂ < 90% • Extreme tachycardia • Supraclavicular / sternal retractions & nasal flaring • Decreased wheezing due to insufficient airflow 	<ul style="list-style-type: none"> • Decreased LOC • Diaphoresis & mottling • Hypoventilation or apnea • Severe hypoxemia • Bradycardia • Paradoxical chest movement (abdominal breathing or seesaw respirations) • Silent chest

<ul style="list-style-type: none"> • Increased inhaler administration / use with adequate response 	<ul style="list-style-type: none"> • Increased inhaler administration / use with inadequate response 	<ul style="list-style-type: none"> • Minimal or no response to inhaler 	
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10 YEARS & OLDER			
MILD	MODERATE	SEVERE	FAILURE
<ul style="list-style-type: none"> • Minimal or no dyspnea with usual activity • Talking normally • No cyanosis • Increased RR • Normal SaO₂ • Normal HR • No accessory muscle use • Wheezing & prolonged expiratory phase on auscultation • Increased inhaler use with adequate response 	<ul style="list-style-type: none"> • Dyspnea on exertion • Agitation • Talking in short sentences • Cyanosis of nail beds & lips • Rapid RR • Decreasing SaO₂ • Tachycardia • Accessory muscle use • Audible wheezing • Increased inhaler use with inadequate response 	<ul style="list-style-type: none"> • Dyspnea at rest • Extreme agitation • Speaking few words only • Generalized cyanosis • Very rapid RR • SaO₂ < 90% • Extreme tachycardia • Tripod posture (hunched forward) • Decreased wheezing due to insufficient airflow • Minimal or no response to inhaler 	<ul style="list-style-type: none"> • Confused / decreased LOC • Diaphoresis • Hypoventilation or apnea • Severe hypoxemia • Ineffective respiratory effort • Silent chest