This assessment is effective as of October 2016. For more information or to provide feedback on this or any other decision support tool, e-mail certifiedpractice@crnbc.ca

**ADULT CARDIO-RESPIRATORY ASSESSMENT**

Nurses with Remote Nursing Certified Practice designation (RN(C)s)\(^1\) are able to manage the following respiratory condition:
- Acute bronchitis

The following assessment must be completed and documented.
- As a complete respiratory exam includes a cardiovascular exam, these two examinations have been combined.

**ASSESSMENT**

**History of Present Illness and Review of Systems**

**General**
The following characteristics of each symptom should be elicited and explored:
- Onset – sudden or gradual
- Location - radiation
- Duration – frequency, chronology
- Characteristics – quality, severity
- Aggravating and precipitating factors
- Relieving factors
- Current situation (improving or deteriorating)
- Effects on Activities of Daily Living (ADL)
- Previous diagnosis of similar episodes
- Previous treatments and efficacy

**Cardinal Signs and Symptoms**
In addition to the general characteristics outlined above, additional characteristics of specific symptoms should be elicited, as follows:

**Cough**
- Quality
- Severity
- Timing
- Duration: greater than 2 weeks (screen for Tuberculosis (TB))

\(^1\) RN(C) is an authorized title recommended by CRNBC that refers to CRNBC-certified RNs, and is used throughout this Decision Support Tool (DST).
Sputum
- Colour
- Amount
- Consistency
- Purulence, odour, foul taste
- Time of day, worse

Hemoptysis
- Amount of blood
- Frank blood or mixed with sputum
- Association with leg pain, chest pain, shortness of breath

Shortness of Breath
- Exercise tolerance (number of stairs client can climb or distance client can walk)
- Posture – orthopnea or tripoding
- Shortness of breath at rest
- Association with Paroxysmal Nocturnal Dyspnea (PND)
- Associated swelling of ankles or recent weight gain

Cyanosis
- Central vs peripheral
- When does it occur
- Any recent changes in pattern of
- Associated wheeze

Chest Pain
- Associated symptoms (Appendix 2)
- Relation to effort, exercise, meals, bending over
- Explore the pain carefully – include quality, radiation, severity, timing

Fainting or Syncope
- Weakness, light-headedness, loss of consciousness
- Relation to postural changes, vertigo or neurological symptoms

Extremities
- Edema:
  - site
  - relation of edema to activity or time of day
- Intermittent claudication (exercise-induced leg pain)
  - distance client can walk before onset of pain related to claudication
  - time needed to rest to relieve claudication
  - temperature of affected tissue (warm, cool or cold)
- Tingling
- Leg cramps or pain at rest
- Presence of varicose veins
Other Associated Symptoms
- Fever
- Malaise
- Fatigue
- Night sweats
- Weight loss
- Palpitations
- Nausea and vomiting
- Gastro intestinal reflux

Medical History Specific to Cardio-respiratory Systems
- Allergies, including seasonal and environmental
- Medications currently used (prescription and Over The Counter (OTC) e.g., angiotensin-converting enzyme (ACE) inhibitors, β-blockers, (acetylsalicylic acid or ASA), steroids, nasal sprays and inhaled medications (puffers), antihistamines, hormones, diuretics, antacids, steroids, digoxin)
- Herbal/traditional preparations
- Immunizations (e.g., pneumococcal, annual influenza)
- Medical conditions:
  - Frequency of colds and respiratory infections, recent viral illness, joint pain or swelling
  - History of rheumatic fever
  - Nasal polyps, chronic sinusitis, asthma (Appendix 1), bronchitis, pneumonia, chronic obstructive pulmonary disease (COPD), TB (disease or exposure), cancer, cystic fibrosis
  - Dyslipidemia, hypertension, diabetes mellitus, thyroid disorder, chronic renal disease, systemic lupus erythematosus
  - Coronary artery disease (CAD), angina, myocardial infarction (MI)
  - Cardiac murmurs, valvular heart disease
  - Down’s Syndrome
- Admissions to hospital and/or surgery for respiratory or cardiac illness
- Date and result of last Mantoux test and chest x-ray
- Blood transfusion

Family History (Specific to Cardio-respiratory Systems)
- Others at home with similar symptoms
- Allergies, atopy
- Asthma (Appendix 1), lung cancer, TB, cystic fibrosis, bronchitis
- Diabetes mellitus
- Heart disease: hypertension, ischemic coronary artery disease, MI (especially in family members < 50 years of age), sudden death from cardiac disease, dyslipidemia, hypertrophic cardiomyopathy

Personal and Social History (Specific to Cardio-respiratory Systems)
- Smoking history (number of packages/day, number of years)
- Exposure to second hand smoke, wood smoke, pets, mould
- Crowded living conditions
- Poor personal or environmental cleanliness
- High stress levels (personal or occupational)
Remote Nursing Certified Practice  

Adult Decision Support Tools: CARDIO / RESPIRATORY ASSESSMENT

- Institutional living
- Occupational or environmental exposure to respiratory irritants (mining, forest fire fighting)
- Substance use (e.g., alcohol, caffeine, street drugs, including injection and inhaled drugs / solvents)
- Human immunodeficiency virus (HIV) risks
- Obesity
- Immigration or travel abroad

**PHYSICAL ASSESSMENT**

Examination of the ear, nose, and throat should also be carried out because of the interrelatedness between these systems and structures and the functioning of the lower respiratory tract

**Vital Signs**
- Temperature
- Pulse
- Respiratory rate
- SpO₂
- Blood pressure (BP)
- Peak flow

**General Appearance**
- Acutely or chronically ill
- Degree of comfort or distress
- Position to aid respiration (e.g., tripod)
- Diaphoresis
- Ability to speak a normal-length sentence without stopping to take a breath
- Colour
- Nutritional status
- Hydration status
- Mental status

**Inspection**
- Colour, cyanosis
- Shape of chest
- Symmetry of chest movement
- Rate, rhythm and depth of respiration, respiratory distress
- Intercostal indrawing
- Use of accessory muscles
- Precordium: visible pulsations
- Chest wall scars, bruising, signs of trauma
- Jugular venous pressure (JVP)
- Color of conjunctiva
- Extremities
  - Hands – edema, cyanosis, clubbing, nicotine stains, cap refill <3 seconds

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- Feet and legs – changes in foot color with changes in leg position i.e., blanching with elevation, rubor with dependency, ulcers, varicose veins, edema (check sacrum if client is bedridden), colour (pigmentation, discoloration), distribution of hair
- Skin – rashes, lesions, xanthomas

**Palpation**
- Tracheal position (midline)
- Chest wall tenderness or crepitus
- Respiratory excursion
- Tactile fremitus
- Spinal abnormality
- Nodes (axillary, supraclavicular, cervical)
- Masses
- Apical beat:
  - Point of maximum impulse (PMI) normally located at the fifth intercostal space, mid-clavicular line
  - Assess quality and intensity of apical beat
  - Apical beat (PMI) may be laterally displaced, which indicates cardiomegaly
- Identify and assess pulsations and thrills
- Hepatomegaly, right upper quadrant (RUQ) tenderness
- Assess peripheral pulses – radial, brachial, femoral, popliteal, posterior tibial, dorsalis pedis
  - Check for synchrony of radial and femoral pulses
- Edema: pitting (rated 0 to 4) and level (how far up the feet and legs the edema extends); sacral edema

**Percussion of lung fields**
- Resonance
  - Increased resonance over hyperinflated areas
  - Dullness to percussion over areas of consolidation
  - Location and excursion of the diaphragm

**Auscultation of lungs**
- Listen for sounds of normal air entry before trying to identify abnormal sounds
- Degree of air entry throughout the chest (should be equal)
- Quality of breath sounds (e.g., bronchial, bronchovesicular, vesicular)
- Ratio of inspiration to expiration
- Adventitious sounds:
  - Wheezes (rhonchi), crackles (rales), pleural rub, stridor, decreased breath sounds.

**Auscultation of heart**
- Listen to normal heart sounds before trying to identify murmurs
- Auscultate at aortic, pulmonic, Erb’s point, tricuspid, and mitral. Attempt to identify:
  - Rate and rhythm
  - S1 and S2 sounds and their intensity
  - Added heart sounds (S3 and S4), rubs, splitting of S2
  - Murmur
- Auscultate carotid arteries, abdominal aorta, renal arteries, iliac arteries, and femoral arteries for bruits

**Associated Systems**
- A complete respiratory assessment includes the Ear, Nose and Throat (ENT) system
- Consider Gastro Intestinal (GI)/Genito-Urinary (GU) assessment if appropriate

### SYMPTOMS REQUIRING URGENT REFERRAL OR CONSULTATION

The first step is to differentiate between acute respiratory distress and respiratory conditions that can be managed safely by RN(C)s.

New onset of the following signs and symptoms require immediate emergency care and referral to a physician or nurse practitioner:
- Severe dyspnea and inability to lay flat
- Inability to speak or fragmented speech
- Tracheal shift
- Unrelieved chest pain
- Unable to maintain SpO₂ greater than > 92% on room air
- Severe increasing fatigue
- Cyanosis (central cyanosis is not detectable until oxygen saturation is less than 85%)
- Silent chest or crackles throughout lung fields
- Decreased level of consciousness
- Diminishing respiratory effort
- Nasal flaring or tracheal tug
- Intercostal indrawing
- Recent hospitalization for congestive heart failure (CHF)

### Diagnostic Tests:
- The RN(C) may consider the following diagnostic tests in the examination of the cardio-respiratory system to support clinical decision making:
  - Electrocardiogram (ECG)
  - Hemoglobin (Hb)
  - Cardiac troponins
  - Sputum for Culture and Sensitivity (C&S)
REFERENCES

More recent editions of any of the items in the Reference List may have been published since this DST was published. If you have a newer version, please use it.


## Appendix I

### i. Asthma Triage Algorithm

(Laminated copy provided in toolkit).

Algorithm for patient presenting with shortness of breath/wheezing with a probable diagnosis of asthma

*Determine initial treatment algorithm by assigning CTAS level using symptoms, signs and peak flow.*

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>MILD</th>
<th>MODERATE</th>
<th>SEVERE</th>
<th>NEAR DEATH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breathless</td>
<td>While walking</td>
<td>While talking (infant – softer, shorter cry, difficulty feeding)</td>
<td>While at rest</td>
<td>Decreasing respiratory effort</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talking</td>
<td>In sentences</td>
<td>In phrases</td>
<td>In words</td>
<td>Unable to speak</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alertness</td>
<td>May be agitated</td>
<td>Usually agitated</td>
<td>Usually agitated</td>
<td>Confused or lethargic</td>
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</tr>
</tbody>
</table>

### SIGNS

<table>
<thead>
<tr>
<th>RESPIRATORY RATE</th>
<th>INCREASED</th>
<th>INCREASED</th>
<th>OFTEN &gt; 30/min</th>
<th>&gt; 30/min UNLESS IMMENSE RESP. FAILURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>USE OF ACCESSORY MUSCLES</td>
<td>USUALLY NOT</td>
<td>COMMONLY</td>
<td>USUALLY</td>
<td>USUALLY</td>
</tr>
<tr>
<td>WHEEZE</td>
<td>MODERATE</td>
<td>LOUD THROUGHOUT EXPIRATION</td>
<td>LOUD THROUGHOUT INSPIRATION OR SILENT</td>
<td>SILENT</td>
</tr>
<tr>
<td>PULSE/min (Adult)</td>
<td>&lt; 100</td>
<td>100 - 120</td>
<td>&gt; 120</td>
<td>&gt; 120 OR BRADYCARDIA IF RESP. FAILURE</td>
</tr>
</tbody>
</table>

### FUNCTIONAL ASSESSMENT

<table>
<thead>
<tr>
<th>O2sat on room air</th>
<th>&gt; 96%</th>
<th>92 - 94%</th>
<th>&lt; 90%</th>
<th>&lt; 90%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>92 - 93% (child)</td>
<td>&lt; 92% (child)</td>
<td>&lt; 90%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt; 90%</td>
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<td></td>
<td></td>
<td>&lt; 90%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt; 52% (child)</td>
</tr>
<tr>
<td>PEFR% predicted or % personal best</td>
<td>&gt; 200 lpm</td>
<td>&gt; 200 lpm</td>
<td>&lt; 200 lpm</td>
<td>UNABLE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TIME TO NURSE ASSESSMENT</th>
<th>30 minutes</th>
<th>30 minutes</th>
<th>IMMEDIATE</th>
<th>IMMEDIATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME TO PHYSICIAN ASSESSMENT</td>
<td>30 minutes</td>
<td>30 minutes</td>
<td>15 minutes</td>
<td>IMMEDIATE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INITIAL TREATMENT ALGORITHM</th>
<th>CTAS LEVEL 3</th>
<th>CTAS LEVEL 3</th>
<th>CTAS LEVEL 2</th>
<th>CTAS LEVEL 1</th>
</tr>
</thead>
</table>

**CTAS Level 1** - Near death asthma – unable to speak, cyanosis, lethargic/confused, tachycardia or bradycardia, O2 sat < 50%.

**CTAS Level 2** - Severe asthma is best defined with a combination of objective measures (FEV1, PEFR, O2 saturation) and clinical factors which relate to the severity of symptoms, vital signs and history of previous severe episode, O2 saturation < 90% (O2 Saturation < 92% child), PEFR < 40% of predicted or previous best, the patient is considered severe and requires prompt treatment and close observation until signs of improvement. In children who are unable to do spirometry, particularly those under age 6, clinical features and O2 saturation are used to estimate severity.

**CTAS Level 3** - Mild/moderate SOB/OE, frequent cough or night awakening (unable to lie down flat without symptoms) and PEFR 40 - 60 % predicted or previous best and O2 sat > 92-94%. Mild asthma is PEFR > 60% and O2 saturation > 95%. Mild asthmatics can have severe attacks and severe asthmatics can have mild attacks. Some documentation of meds and previous attack patterns (intubated, ICU, frequent admissions) can help to identify high-risk individuals. These patients should be placed in an area where they can be observed and re-evaluated, and the patient or family should be advised to report deterioration to the emergency staff.

# Appendix II – Characteristics of Chest Pain

<table>
<thead>
<tr>
<th>Characteristic of Chest Pain</th>
<th>Myocardial Infarction or Acute Coronary Insufficiency</th>
<th>Angina</th>
<th>Pneumonia</th>
<th>Pulmonary Embolism (Chest pain may be absent in pulmonary embolism)</th>
<th>Pericarditis</th>
<th>MSK Disorder (chest wall pain)</th>
<th>Esophageal, Gastric or Duodenal Disorder</th>
<th>Stress or Emotional Disorder</th>
<th>Bronchitis</th>
<th>Dissecting Aortic Aneurysm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset</td>
<td>Sudden, patient at rest</td>
<td>With exertion</td>
<td>Gradual or sudden</td>
<td>Sudden</td>
<td>Gradual or sudden</td>
<td>Gradual or sudden</td>
<td>Gradual or sudden</td>
<td>Gradual or sudden</td>
<td>Gradual</td>
<td>Sudden</td>
</tr>
<tr>
<td>Location</td>
<td>Retrosternal, anterior chest</td>
<td>Retrosternal, anterior chest, lateral and/or posterior lung field(s)</td>
<td>Retrosternal, anterior chest, lateral chest</td>
<td>Retrosternal, anterior chest, lateral chest</td>
<td>Anterior, lateral and/or posterior chest wall</td>
<td>Retrosternal, epigastric, left chest, left or right upper quadrant</td>
<td>Variable; anterior chest, left chest</td>
<td>Muscle pain in chest wall</td>
<td>Retrosternal, epigastric, back, posterior and/or anterior chest, abdominal</td>
<td></td>
</tr>
<tr>
<td>Radiation</td>
<td>Left arm, left shoulder, neck, jaw, back, upper abdomen</td>
<td>Left arm, left shoulder, neck, jaw, back, upper abdomen</td>
<td>Anterior chest, shoulder, neck</td>
<td>Variable; shoulder tip, neck</td>
<td>Arm, shoulder, neck, back, abdomen</td>
<td>May be felt in back or arm</td>
<td>Usually none</td>
<td>Usually none</td>
<td>Often radiates to thoracic back, or abdomen</td>
<td></td>
</tr>
<tr>
<td>Duration</td>
<td>&gt; 20 min</td>
<td>Usually &lt; 1-2 min</td>
<td>Hours variable</td>
<td>Hours to days</td>
<td>Minutes or hours</td>
<td>Minutes or hours</td>
<td>Hours to days, usually with coughing</td>
<td>&gt;20 minutes to hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity</td>
<td>Severe</td>
<td>Mild to moderate</td>
<td>Moderately</td>
<td>Absent or mild to moderate</td>
<td>Usually moderate, but may be severe</td>
<td>Mild to moderate</td>
<td>Moderate</td>
<td>Mild to moderate</td>
<td>Mild to moderate</td>
<td>Excruciating</td>
</tr>
<tr>
<td>Quality</td>
<td>Sensation of squeezing, pressure</td>
<td>Sensation of tightness, pressure</td>
<td>Constant ache, with intermittent knife-like</td>
<td>Dull ache; knife-like pain may also be present</td>
<td>Sharp</td>
<td>Dull ache; sharp pain may also be present</td>
<td>Burning (usually), tightness</td>
<td>Achy, stabbing</td>
<td>Aching</td>
<td>Knifelike, tearing. May be nagging.</td>
</tr>
<tr>
<td>Characteristic of Chest Pain</td>
<td>Myocardial Infarction or Acute Coronary Insufficiency</td>
<td>Angina Pneumonia</td>
<td>Pulmonary Embolism (Chest pain may be absent in pulmonary embolism)</td>
<td>Pericarditis</td>
<td>MSK Disorder (chest wall pain)</td>
<td>Esophageal, Gastric or Duodenal Disorder</td>
<td>Stress or Emotional Disorder</td>
<td>Bronchitis</td>
<td>Dissecting Aortic Aneurysm</td>
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<tr>
<td>Relief</td>
<td>May be relief with sublingual nitroglycerin</td>
<td>Rapid relief with rest and/or sublingual nitroglycerin</td>
<td>None</td>
<td>None</td>
<td>Sitting up and leaning forward often helps; other changes in position may alter the pain</td>
<td>Antacids, milk, sitting up or standing up</td>
<td>Rest, relaxation, distraction</td>
<td>Rest, control of cough</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Precipitating or aggravating factors</td>
<td>None may be obvious</td>
<td>Exertion, heavy meal, walking uphill against a cold wind, occasionally from laying down</td>
<td>Increase pain with coughing or deep inspiration; recently ill with a cold</td>
<td>Immobilization, estrogen or CA therapy. None may be obvious. Pain may be worse with deep inspiration or coughing</td>
<td>Previous infection of upper respiratory tract; pain worse with deep inspiration or coughing</td>
<td>History of unaccustomed physical work; pain worse with arm action</td>
<td>Certain foods, a large meal, bending over; pain may awaken person from sleep and may occur when stomach is empty</td>
<td>Stressful situations, fatigue</td>
<td>Cough</td>
<td></td>
</tr>
<tr>
<td>Associated signs and symptoms</td>
<td>Nausea, sweating, shortness of breath, anxiety, palpitations</td>
<td>Typically none</td>
<td>Fever, cough, sputum, shortness of breath, malaise, fatigue</td>
<td>Shortness of breath, sweating, hemoptysis, leg pain (rare), leg edema</td>
<td>Symptom of infection of upper respiratory tract may be present; malaise; usually occurs in localized chest wall tenderness, tender costochondral area</td>
<td>Regurgitation of acid in mouth, belching, difficulty swallowing, sticking sensation when food swallowed, cough (rare); Tightness in neck and shoulder(s), headaches, reduced appetite, mild weight loss, fatigue, sleep disturbance, palpitations</td>
<td>Malaise, fever, long standing productive cough, possibly wheezes in chest</td>
<td>Widening pulse pressure, dissociation of brachial blood pressures, absent pulses, hypotension paralysis</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>
### Characteristic of Chest Pain

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Myocardial Infarction or Acute Coronary Insufficiency</th>
<th>Angina</th>
<th>Pulmonary Embolism (Chest pain may be absent in pulmonary embolism)</th>
<th>Pericarditis</th>
<th>MSK Disorder (chest wall pain)</th>
<th>Esophageal, Gastric or Duodenal Disorder</th>
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<td></td>
<td></td>
<td></td>
<td>younger adults</td>
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<td></td>
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<td></td>
<td>test of stool for occult blood may be positive</td>
<td>dizziness, hyperventilation symptoms</td>
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Adapted from First Nations, Inuit and Aboriginal Health. 2010. Clinical Practice Guidelines for Nurses in Primary Care.