

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).

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The DSTs are not intended to replace the RN(C)'s professional responsibility to exercise independent clinical judgment and use evidence to support competent, ethical care. The RN(C) must consult with or refer to a physician or nurse practitioner as appropriate, or whenever a course of action deviates from the 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 tripodding
- 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)

- 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

- 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.

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- Provincial Health Services Authority. (2009). *Asthma protocol: Health Authority acute asthma management toolkits*. Retrieved from <http://www.phsa.ca/Documents/AcuteAsthmaManagementToolkitVCHA1.pdf>
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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.

SYMPTOMS	MILD	MODERATE	SEVERE	NEAR DEATH
Breathless	While walking	While talking (infant – softer, shorter cry, difficulty feeding)	While at rest	Decreasing respiratory effort
Talking	In sentences	In phrases	In words	Unable to speak
Alertness	May be agitated	Usually agitated	Usually agitated	Confused or lethargic
SIGNS				
Respiratory Rate	Increased	Increased	Often > 30/min	> 30/min unless imminent resp. failure
Use of Accessory Muscles	Usually not	Commonly	Usually	Usually
Wheeze	Moderate	Loud throughout expiration	Loud throughout insp/exp or silent	Silent
Pulse/min(Adult)	< 100	100 - 120	> 120	> 120 or bradycardia if resp. failure
FUNCTIONAL ASSESSMENT				
SpO ₂ on room air	> 95%	92 - 94% 92 - 93%(child)	< 90% < 92%(child)	< 90% < 92% (child)
PEFR% predicted or % personal best	> 200 lpm	> 200 lpm	< 200 lpm	Unable
Time to Nurse Assessment	30 minutes	30 minutes	Immediate	Immediate
Time to Physician Assessment	30 minutes	30 minutes	15 minutes	Immediate
Initial Treatment Algorithm	CTAS Level 3	CTAS Level 3	CTAS Level 2	CTAS Level 1

CTAS Level 1 - Near death asthma – unable to speak, cyanosis, lethargic/confused, tachycardia or bradycardia, O₂ sat < 90%

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/COE, 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 admits) 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.

From PHSA (2009) Emergency Services Asthma Protocol Toolkits published online for each health authority at <http://www.phsa.ca/Documents/AcuteAsthmaManagementToolkitVCHA1.pdf>

Appendix II – Characteristics of Chest Pain

Characteristic of Chest Pain	Myocardial Infarction or Acute Coronary Insufficiency	Angina	Pneumonia	Pulmonary Embolism (Chest pain may be absent in pulmonary embolism)	Pericarditis	MSK Disorder (chest wall pain)	Esophageal, Gastric or Duodenal Disorder	Stress or Emotional Disorder	Bronchitis	Dissecting Aortic Aneurysm
Onset	Sudden, patient at rest	With exertion	Gradual or sudden	Sudden	Gradual or sudden	Gradual or sudden	Gradual or sudden	Gradual or sudden	Gradual	Sudden
Location	Retrosternal, anterior chest	Retrosternal, anterior chest	Anterior, lateral and/or posterior lung field(s)	Retrosternal, anterior chest, lateral chest	Retrosternal, anterior chest	Anterior, lateral and/or posterior chest wall	Retrosternal, epigastric, left chest, left or right upper quadrant	Variable; anterior chest, left chest	Muscle ache in chest wall	Retrosternal, epigastric, back, posterior and / or anterior chest, abdominal
Radiation	Left arm, left shoulder, neck, jaw, back, upper abdomen	Left arm, left shoulder, neck, jaw, back, upper abdomen	Anterior chest, shoulder, neck	Variable	Variable: shoulder tip, neck	Arm, shoulder, neck, back, abdomen	May be felt in back or arm	Usually none	Usually none	Often radiates to thoracic back, or abdomen
Duration	> 20 min	Usually < 1-2 min	Hours	Variable	Hours to days	Minutes or hours	Minutes or hours	Minutes or hours	Hours to days, usually with coughing	>20 minutes to hours
Intensity	Severe	Mild to moderate	Moderate	Absent or mild to moderate	Usually moderate, but may be severe	Mild to moderate	Moderate	Mild to moderate	Mild to moderate	Excruciating
Quality	Sensation of squeezing, pressure	Sensation of tightness, pressure	Constant ache, with intermittent knife-	Dull ache; knifelike pain may also be present	Sharp	Dull ache; sharp pain may also be present	Burning (usually), tightness	Achy, stabbing	Aching	Knifelike, tearing. May be nagging.

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			like pain							
Relief	May be relieved with sublingual nitroglycerin	Rapid relief with rest and/or sublingual nitroglycerin	None	None	Sitting up and leaning forward often helps; other changes in position may alter the pain	Rest, mild analgesics	Antacids, milk, sitting up or standing up	Rest, relaxation, distraction	Rest, control of cough	None
Precipitating or aggravating factors	None may be obvious	Exertion, heavy meal, walking uphill against a cold wind, occasionally from laying down	Increased pain with coughing or deep inspiration; recently ill with a cold	Immobilization, estrogen or CA therapy. None may be obvious. Pain may be worse with deep inspiration or coughing	Previous infection of upper respiratory tract; pain worse with deep inspiration or coughing	History of unaccustomed physical work; pain worse with arm action	Certain foods, a large meal, bending over; pain may awaken person from sleep and may occur when stomach is empty	Stressful situations, fatigue	Cough	Aortic aneurysm (often unknown).
Associated signs and symptoms	Nausea, sweating, shortness of breath, anxiety, palpitations	Typically none	Fever, cough, sputum, shortness of breath, malaise, fatigue	Shortness of breath, sweating, hemoptysis, leg pain (rare), leg edema	Symptoms of infection of upper respiratory tract may be present; malaise; usually occurs in	Localized chest wall tenderness, tender costochondral area	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,	Malaise, fever, long standing productive cough, possibly wheezes in chest	Widening pulse pressure, dissociation of brachial blood pressures, absent pulses, hypotension paralysis,

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					younger adults		test of stool for occult blood may be positive	dizziness, hyperventilation symptoms		pulsus paradoxus, aortic insufficiency, murmur.

Adapted from First Nations, Inuit and Aboriginal Health. 2010. Clinical Practice Guidelines for Nurses in Primary Care.