

**Virtual Respiratory Assessments***CPG: Virtual Health*

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Author: Chris Michel

**Introduction:**

Virtual care is healthcare at a distance and many assessments need to be adapted in the absence of a face-to-face interaction<sup>1</sup>. General respiratory assessments involve using a stethoscope to listen for lung sounds, which is not available in virtual healthcare settings. Information will need to be gathered in other ways, such as listening to the patient's cough, or the audible presence of adverse breath sounds, such as wheezing. As with conventional assessments, determine if the patient is experiencing a particular problem and focus on that area first. If no particular problem is present, complete a generalized assessment of the respiratory system<sup>2</sup>.

**Essentials<sup>3</sup>:**

1. **Set-up:** Before initiating a virtual visit, make sure you are set up properly, have access to the patient chart, and any additional information that may be required.
2. **Connect:** Determine the most appropriate method for communicating with the patient (either phone or video chat). Confirm that your audio and video connections are working properly.
3. **Get started:** Once you begin the visit, perform a rapid assessment to determine if any immediate interventions are needed. For example, does the patient appear very sick or are they too short of breath to speak? If so, go directly to asking key clinical questions. If no immediate interventions are required, establish what the patient hopes to gain from the visit (i.e., clinical assessment, referral, reassurance).
4. **History:** Ask questions to determine a history of the present illness.
5. **Examination:** Perform a modified physical exam and ask functional inquiry questions.
6. **Vitals:** The patient may be able to take their own measurements if they have access to vitals equipment at home (i.e., blood pressure monitor, pulse oximeter, scale). Interpret results with caution and use them to support findings in the context of your wider assessment.
7. **Decision and action:** Based on your findings, decide if you should report to the patient's most responsible provider, or if the patient requires immediate conveyance to hospital.



#### Assessment Overview:

1. Because the respiratory system includes two sets of structures, the assessment should be divided into two parts. This assessment can be challenging as it may be difficult to visualize:
  - Nasal flaring
  - Nasal drainage, colour, and consistency
  - Edematous sinus areas
  - Chest drainage, colour, and consistency
  - Chest diameter
  - Nail bed clubbing
2. Paramedics traditionally use a stethoscope to listen for lung sounds, but this may not be available when providing virtual care. What will be audible is the presence of a cough and the "noisiness" of breath sounds. The microphone will serve as the "virtual" stethoscope. As with all major body system assessments, determine first if the patient is experiencing any particular respiratory problem. If so, focus on that area first. If not, complete a general assessment of this system<sup>2</sup>.

#### Virtual Assessments:

Upper Respiratory		
Section	Component	Question
MODIFIED EXAM	Voice Quality	Does the patient’s voice sound clear?
		Does the patient sound “congested” or does the voice have a “nasal” quality?
		Is the patient “clearing the throat” while talking?
FUNCTIONAL INQUIRY	General	Have you noticed or experienced any changes in your breathing? <ul style="list-style-type: none"><li>If so, please describe the changes.</li></ul>
		How many pillows do you need or use to sleep and breathe comfortably? <ul style="list-style-type: none"><li>Has there been a change in the number of pillows you use?</li></ul>
		Have you ever been diagnosed with a respiratory problem? <ul style="list-style-type: none"><li>If so, what is the problem?</li></ul>
	Nose	Do you breathe through your nose?
		Have you experienced any nasal stuffiness or congestion? <ul style="list-style-type: none"><li>Do you have associated symptoms, such as fever, cough, headache, or sinus pressure?</li></ul>
		Are you experiencing any nasal drainage? <ul style="list-style-type: none"><li>If so, what is the color of the drainage?</li></ul>
		Is there any particular pattern to your sneezing?
	Mouth	Do you breathe through your mouth? <ul style="list-style-type: none"><li>If so, what is the primary reason for mouth-breathing?</li></ul>
	Pharynx, larynx	Have you noticed any changes in your ability to swallow?
		Have you noticed any changes in your voice quality? <ul style="list-style-type: none"><li>If so, describe the changes.</li></ul>
FOCUSED ASSESSMENT	Nose	Have you ever had a nosebleed? <ul style="list-style-type: none"><li>What did you do to control the bleeding?</li></ul>
	Throat	How long has your voice sounded hoarse or raspy? <ul style="list-style-type: none"><li>Has this ever happened to you before?</li><li>What did you do to make the sound of your voice better?</li></ul>
		Are you experiencing any other symptoms like upper chest pain or swelling of the neck, face, or arms? <ul style="list-style-type: none"><li>Do you have swelling to your neck, face, or arms?</li></ul>
Lower Respiratory		

Lower respiratory		
Section	Component	Question
MODIFIED EXAM	Work of Breathing	Can the patient complete a sentence without having to stop and take a breath?
		Ask the patient to walk to another part of the room. Listen to their ability to breath and talk while walking.
		After walking, ask the patient if he or she feels short of breath. You will be able to hear or determine this by the patient's ability to talk, walk, or breathe.
		Does the patient feel the need to sit down after walking a short distance?
	Lung Sounds	<p>Ask the patient to take a deep breath in through the nose and exhale through the mouth.</p> <ul style="list-style-type: none"> <li>Are there any audible lung sounds? <ul style="list-style-type: none"> <li>Wheezes?</li> <li>Rhonchi?</li> </ul> </li> <li>Does the action of taking a deep breath in and out cause the patient to cough</li> </ul>
FUNCTIONAL INQUIRY	Bronchi, Lungs	<p>Have you been experiencing a cough?</p> <ul style="list-style-type: none"> <li>If so, how long have you had the cough? <ul style="list-style-type: none"> <li>What causes the cough to occur?</li> <li>What makes the cough better?</li> <li>Are you coughing up any phlegm? <ul style="list-style-type: none"> <li>If so, how often</li> <li>Describe the color of the phlegm.</li> </ul> </li> <li>What does the cough sound like? <ul style="list-style-type: none"> <li>Dry?</li> <li>Hacking/barking?</li> <li>Moist/gurgling?</li> </ul> </li> <li>Does the cough cause you any pain? <ul style="list-style-type: none"> <li>If so, describe the pain</li> </ul> </li> <li>Do you ever wake up from sleep coughing? <ul style="list-style-type: none"> <li>If so, what do you do to stop coughing?</li> </ul> </li> </ul> </li> </ul>
FOCUSED ASSESSMENT	Shortness of Breath	<p>Do you feel like you can't catch your breath?</p> <ul style="list-style-type: none"> <li>Has this ever happened before?</li> <li>Do you feel short of breath when you are moving?</li> <li>Do you feel short of breath at rest?</li> <li>What did you do to help it in the past?</li> </ul>
	Cough	<p>What color is your phlegm?</p> <ul style="list-style-type: none"> <li>Have you coughed up this color of phlegm before?</li> <li>Is there blood in your phlegm? <ul style="list-style-type: none"> <li>How long has this been going on?</li> <li>Are you having any chest pain?</li> <li>Describe the color: <ul style="list-style-type: none"> <li>Dark red</li> <li>Light pink</li> <li>Streaks of blood</li> </ul> </li> <li>What medications are you taking? (assess for</li> </ul> </li> </ul>

		anticoagulants, aspirin)
<b>General Concerns</b>		
<b>Section</b>	<b>Component</b>	<b>Question</b>
<b>MODIFIED EXAM</b>		
<b>FUNCTIONAL INQUIRY</b>	<b>Environment</b>	Do you have, or have you been diagnosed with allergies? <ul style="list-style-type: none"> <li>• What are you allergic to?</li> <li>• Have you been prescribed medication to treat the allergies?</li> <li>• How frequently do you experience respiratory effects from the allergies?</li> </ul>
		Are you exposed to items in your work or home environment that affect your breathing or cause you to cough?
		Do you smoke? <ul style="list-style-type: none"> <li>• How much do you smoke? (Packs per day)</li> <li>• When did you start smoking? (Pack years)</li> <li>• Have you attempted smoking cessation? <ul style="list-style-type: none"> <li>○ If so, when was the last time you stopped smoking?</li> </ul> </li> </ul>
		Do you use any other inhalants such as marijuana, vaping, glue, or spray paint? <ul style="list-style-type: none"> <li>• If so, how frequently do you use these inhalants?</li> </ul>
	<b>Preventative Measures</b>	Do you receive an annual influenza vaccination?
		Have you ever received a vaccination for pneumonia?
	<b>Physical</b>	Have you noticed if your shirts or blouses are more snug across your chest?
		Have you noticed any changes in your fingernails? <ul style="list-style-type: none"> <li>• Are the tips of your fingers becoming thicker?</li> <li>• Are the nails growing over the tips of the fingers?</li> <li>• What is the color of your nail beds? <ul style="list-style-type: none"> <li>○ Pink, pale, whitepale, blue?</li> </ul> </li> </ul>
<b>FOCUSED ASSESSMENT</b>		

Risk Identification:



Traffic light system for identifying risk in COPD patients			
	<ul style="list-style-type: none"> <li>• <b>Green Flag - Low Risk</b></li> <li>• Document visit and report as normal</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Yellow Flag - Medium Risk</b></li> <li>• Report to Primary Care Provider</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Red Flag - High Risk</b></li> <li>• Arrange Transport to Hospital</li> </ul>
Colour (of skin, lips, fingers)	<ul style="list-style-type: none"> <li>• Normal Colour**</li> </ul>	<ul style="list-style-type: none"> <li>• Pallor**</li> </ul>	<ul style="list-style-type: none"> <li>• Pale**</li> <li>• Mottled**</li> <li>• Ashen**</li> <li>• Cyanosis**</li> </ul>
Activity	<ul style="list-style-type: none"> <li>• Appetite is normal</li> <li>• Ability to exercise</li> <li>• Normal ADL's</li> <li>• No trouble sleeping</li> </ul>	<ul style="list-style-type: none"> <li>• Feeling run down or tired</li> <li>• Breathlessness walking 100m on level ground</li> <li>• Increasing limitation of ADL's</li> <li>• Past history of exacerbations requiring corticosteroids and/or antibiotics.</li> </ul>	<ul style="list-style-type: none"> <li>• Confusion</li> <li>• Agitation</li> <li>• Drowsy</li> <li>• Decreased LOC</li> </ul>
Respiratory	<ul style="list-style-type: none"> <li>• Breathing problems have not changed               <ul style="list-style-type: none"> <li>◦ SOB</li> <li>◦ Cough</li> <li>◦ Sputum</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• More SOB than usual</li> <li>• Coughing more than usual</li> <li>• Wheezing more than usual</li> <li>• Increased sputum production</li> <li>• Green, yellow, or rust coloured sputum</li> </ul>	<ul style="list-style-type: none"> <li>• Extreme or abnormal shortness of breath</li> <li>• RR &gt;30**</li> <li>• O<sub>2</sub>&lt;88%*</li> <li>• Haemoptysis</li> <li>• Copious sputum production</li> <li>• Ineffective respirations**</li> <li>• Silent chest</li> </ul>
Circulatory	<ul style="list-style-type: none"> <li>• Normal skin colour**</li> </ul>		<ul style="list-style-type: none"> <li>• Sudden onset abnormal chest pain or pressure</li> <li>• Peripheral edema</li> <li>• Ascites</li> <li>• Hypotension*</li> <li>• Heart palpitations</li> <li>• Unstable arrhythmia</li> <li>• Bradycardia &lt;40bpm*</li> <li>• Tachycardia &gt;100bpm*</li> </ul>
Other		<ul style="list-style-type: none"> <li>• New cold or flu</li> <li>• Weather changes</li> <li>• Exposure to air pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Marked weight loss</li> <li>• Night sweats</li> <li>• Persistent morning headaches</li> <li>• Light-headedness</li> <li>• Dizziness</li> <li>• Fainting</li> </ul>

5,6,7,8,9,10,11,12,13

\* If able to measure using the patient's supplied equipment

\*\* If able to assess using video conferencing tools

**Decision and Action:**

1. All patients with worsening respiratory symptoms (yellow) should be referred to their primary care provider for assessment.
2. If the paramedic does not have an existing history with the patient, they should strongly consider emergency conveyance to hospital for any patients experiencing yellow flag symptoms.
3. Patients with red flag symptoms should be conveyed to the emergency department for assessment and treatment. Severe respiratory symptoms include:
  - Severe shortness of breath at rest
  - Painful respirations
  - Chest pain or pressure
  - Cold/clammy skin
  - New onset of confusion
  - Decreased level of consciousness
  - Central cyanosis

**Additional Treatment Information:**

1. Many patients living with COPD utilize a COPD flare-up action plan<sup>4</sup> which is provided by their primary care provider. Patients should be encouraged to follow their action plan when and if they become symptomatic.

#### References & Further Reading:

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