

# ADULT RESPIRATORY SCENARIO

## Raya Hope - Rural Setting during a Pandemic

It is important to comply with **current** Public Health guidelines for group gatherings related to the running of this scenario.

### General Description

This scenario involves the presentation of an adult with moderate to severe Influenza Like Illness (ILI) during the COVID-19 pandemic in a rural setting.

### Progressions

There are two potential progressions for this scenario:

1. The patient stabilizes following maximal oxygenation techniques
2. The patient progresses to need intubation

### Notes

Highlighted facilitator notes are hints at how a scenario might progress and are **not** designed to be read aloud. The facilitator could use these to nudge the team in this direction but should not direct or lead the participants.

Included are a few useful “resources” on the bottom right-hand side of this page. These relate to the case and it would be helpful to review these topics prior to the simulation. The simulation will help bring the learning to life!

Vital signs are given as a guide. It is impossible, when writing a scenario, to predict how the scenario will progress, so please feel free to alter them, within reason, to fit the clinical situation. Changing vital signs should not be a way of playing games or 'punishing' actions.

### Last Minute Reminders

- Make it fun & fast
- No one 'on the spot' too much
- Never 'punish' an action (team or individual)
- It's about relationships, team working, and team success!
- Foster group problem solving
- The time scale can be compressed to fit whatever time is available – patient could deteriorate faster, or it can be verbalized that time has passed
- The written scenario is a 'guide'. Adjust it to fit clinical interventions, learners' needs, emotion of the moment etc.
- Keep it positive!

### Resources

- BCCDC Oxygenation and Threshold Guidance for Intubation in the Rural Setting: <http://bit.ly/bccdc-intubation>
- Aerosol Generating Medical Procedures (AGMP) guidelines and policies from your local Health Authority
- Medications in COVID-19: <http://bit.ly/covid-19-medications>
- Real Time Virtual Supports (RTVS): <https://rccbc.ca/rtvs/>



## Learning Opportunities

- Team briefing and debriefing (Crisis Resource Management)
- Personal and room/space management
- COVID-19 safety & PPE
  - Practice of donning & doffing
  - Buddy/coach system
- Differential diagnosis of respiratory distress
  - Diagnosis other than COVID-19
  - Consideration of multiple/concomitant pathologies (e.g., bacterial pneumonia, myocarditis, pericarditis, PE, other sepsis, etc.)
- Anticipation, preparation for progression, non-progression of respiratory distress
- Practising safe intubation procedures, including:
  - Crisis Resource Management, including the use of checklists/references
  - PPE & COVID-19 safety
  - Maximizing pre-oxygenation prior to Rapid Sequence Intubation (RSI)
  - Optimizing hemodynamics prior to RSI
  - Post-intubation care: maintenance sedation, analgesia +/- paralysis, ventilator settings
- Decision making about transfer
  - Transport availability, timeline, mode, staff availability
  - Oxygen supply, device availability
  - Triage of patients for care (ventilator availability, etc.)
- How to access remote resources and supports
  - Your local ICU
  - Real-Time Virtual Supports: ROSe, RUDi (<https://rccbc.ca/rtvs/>)

## Clinical Learning Objectives

1. To practice personal and team safety (including full PPE) while assessing and providing care to a patient with a potentially airborne respiratory illness
2. To provide safe oxygenation/ventilation/airway management in a local low-resource setting

## Team-Based Learning Objectives

1. To capture some of the nuances around decision-making and optimal transfer/transport in your rural environment
2. To build effective interprofessional teamwork and communication (Crisis Resource Management)
3. Using the team to increase situational awareness, self-awareness, collaborative decision-making, use of checklists

# Raya Hope

## Background (read aloud at outset)

It is a weekend evening. A 56-year-old woman, **Raya Hope**, is brought in by her husband. He drove them in from their home, about 35 minutes away.

**If your door is unlocked:** As they are entering the building, her husband shouts for some help because she is almost collapsing as she tries to walk.

**If the door is locked at your facility:** The patient is almost collapsing when you let them into the building.

She had a mild sore throat three days ago and had a COVID-19 test two days ago because she “felt she should” (out of diligence because she is babysitting later this week for her daughter).

She received a positive COVID-19 test result by text message yesterday. She has been isolating at home and felt okay until this morning.

Today she has been feeling “achy all over” and has noticed that she is breathing faster. This has slowly progressed throughout the day and she is now feeling very breathless.

## Initial Appearance & Vitals

She is sweaty, weak, and walking with assistance. Her mask keeps falling off her nose and she tries to fix it every time. She is breathing rapidly and feels warm.

**Initial Vitals** (Once sitting on a bed/stretchers)

|   |               |                 |                 |                |                  |  |
|---|---------------|-----------------|-----------------|----------------|------------------|--|
| <b>Appears:</b><br>sweaty, mask now in place, looks tired | <b>HR</b> 94  | <b>BP</b> 74/53 | <b>RR</b> 28    |                | <b>Temp</b> 37.8 | <b>O<sub>2</sub> Stat</b> 88%<br>on room air |
|   | <b>GCS</b> 15 | <b>Eyes</b> 4   | <b>Verbal</b> 5 | <b>Motor</b> 6 | <b>Gluc</b> 6.2  |  |

## Facilitator Notes

- Participants might announce to all care providers that this is potentially a COVID-19 positive patient
- Ensure staff are in droplet PPE (mask, gown, gloves) - Move patient into a closed room - Masks on patient and husband
- Address decontamination if health care provider(s) are possibly exposed as patient arrives
- Call in help – consider asking paramedics to come and assist

## Facilitator Notes

- Start O<sub>2</sub> by NP (nasal prongs) with surgical mask over the mask – titrate O<sub>2</sub> flow rate
- Give IV access

## Additional History (info given *if* participants ask)

|                             |   |
|-----------------------------|---|
| <b>Symptoms/Story</b>       | <ul style="list-style-type: none"> <li>○ Slight cough today but mostly “just out of breath”</li> <li>○ Feels worse laying down, better sitting up</li> <li>○ No chest pain. No palpitations. No hemoptysis. No oedema or DVT symptoms. Nil else</li> <li>○ Psycho-social history: Non-smoker, drinks little alcohol, lives with husband. Runs the house.</li> </ul> |
| <b>Allergies</b>            | <ul style="list-style-type: none"> <li>○ None known</li> </ul>  |
| <b>Meds</b>                 | <ul style="list-style-type: none"> <li>○ Lipidil 160 mg OD, Ramipril 10 mg OD, ASA 81 mg OD</li> </ul>  |
| <b>Past Medical History</b> | <ul style="list-style-type: none"> <li>○ Type II diabetes – diet controlled</li> </ul>  |
| <b>Last Meal</b>            | <ul style="list-style-type: none"> <li>○ Ate some breakfast (tea and toast), but no lunch</li> </ul>  |
| <b>Events</b>               | <ul style="list-style-type: none"> <li>○ As above</li> </ul>  |

### Facilitator Notes

- Assign roles – plan for who is going to be in the room
- Plan ahead for any potential AGMPs – have N95 masks ready or don now
- Draw labs – ECG – call x-ray tech – start IV fluid (RL or NS) – consider/anticipate the need for pressor support

## Initial Assessment/Primary Survey

- Diaphoretic. Sitting up at 45’ in bed. Speaking in short sentences. Mouth looks dry.
- **Airway:** Fully patent
- **Breathing:** RR = 28, laboured (working hard to breathe). Bilateral air entry
- **Circulation:** Radial pulse barely palpable. No apparent blood loss.
- **Disability:** Awake and alert but drifts off briefly. Moving all four limbs.

## Repeat Vitals 1

|   |                  |                 |                    |                   |                  |  |
|---|------------------|-----------------|--------------------|-------------------|------------------|--|
| <b>Appears:</b> still appears sweaty, increased work of breathing, has a look/tone of “I am not sure I can do this much longer” | <b>HR</b><br>96  | <b>BP</b> 88/58 | <b>RR</b> 28       |                   | <b>Temp</b> 38.1 | <b>O<sub>2</sub> Stat</b><br>89% if on room air  |
|   | <b>GCS</b><br>15 | <b>Eyes</b> 3   | <b>Verbal</b><br>5 | <b>Motor</b><br>6 | <b>Gluc</b> 6.2  | 98% if on O <sub>2</sub> 2L/min via nasal prongs |

## Further Examination/Secondary Survey (if performed)

*Anything not noted can be assumed as “normal”.*

- Significantly increased work of breathing. Sweaty.
- Oropharynx looks dry
- Alert to voice. Will often close eyes because tired, but always opens when approached.
- **Resp:** tachypnoeic, scattered crepitations bilaterally
- **CVS:** normal – no JVD – no oedema
- **Abdo:** soft, non-tender
- **Neuro:** moving all 4 limbs when asked, no lateralizing signs, PEARL.

## Point-of-Care Ultrasound (if performed)

- No pneumothorax
- Thickened pleural line
- Loss of normal A-lines
- Lots of B-lines (‘search lights’ down from pleural line, spread out as go deeper by don’t fade)
- ‘skip’ lesions – normal appearing areas of lung, adjacent to areas with lots of B-lines

## Facilitator Notes

- Start to plan transfer/transport – PTN call
- Consider contacting RUDi (remote generalists/ER support) or ROSe (ICU support): can test this mechanism and make a real call
- Consider Dexamethasone – consider antibiotics (see note below)

## Repeat Vitals 2

|  |               |   |                    |                   |                  |   |
|--|---------------|---|--------------------|-------------------|------------------|---|
| <b>Appears:</b> Remains tired looking with significant work of breathing | <b>HR</b> 102 | <b>BP</b><br>103/62 if IV fluid given<br>94/65 if no IV fluid given | <b>RR</b> 28       |                   | <b>Temp</b> 38.2 | <b>O<sub>2</sub> Stat</b><br>89% if on room air<br>98% if on O <sub>2</sub> 2L/min via nasal prongs |
|  | <b>GCS</b> 15 | <b>Eyes</b> 4   | <b>Verbal</b><br>5 | <b>Motor</b><br>6 | <b>Gluc</b> 6.2  |   |

## Repeat Vitals 3

|  |               |                     |                    |                   |                  |  |
|--|---------------|---------------------|--------------------|-------------------|------------------|--|
| <b>Appears:</b> Remains exhausted looking with significant work of breathing | <b>HR</b> 104 | <b>BP</b><br>112/62 | <b>RR</b> 32       |                   | <b>Temp</b> 38.2 | <b>O<sub>2</sub> Stat</b><br>97% on O <sub>2</sub> 2L/min via nasal prongs |
|  | <b>GCS</b> 15 | <b>Eyes</b> 4       | <b>Verbal</b><br>5 | <b>Motor</b><br>6 | <b>Gluc</b> 5.9  |  |

## Initial Labs

*provide only those available in your facility*

|       |        |       |       |                |              |                        |           |
|-------|--------|-------|-------|----------------|--------------|------------------------|-----------|
| Hgb   | 122    | Na+   | 132   | Trop           | Slightly ↑ * | <u>Venus Blood Gas</u> |           |
| WBC   | 12.6 * | K+    | 4.4   | Lactate        | 2.6 *        | pH                     | 7.36      |
| Neut  | 10.3 * | Crept | 109 * | CRP            | Pending      | pCO <sub>2</sub>       | 44 mmHg   |
| Lymph | 1.6    | eGFR  | 49 *  | Blood cultures | Drawn        | HCO <sub>3</sub>       | 23 mEq/L  |
| Plt   | 264    |       |       | Urinalysis     | Normal       | BE                     | -1 mmol/L |

Over 30-60 minutes, requires increasing O<sub>2</sub> to maintain O<sub>2</sub> sat > 90%

Stabilizes on NRB mask at 15 L/minute **OR** if available in the facility, continues to deteriorate to require High Flow Nasal Oxygenation (HFNO<sub>2</sub>)

## Case Branch

1. If wanting the patient to stabilize following maximal oxygenation techniques: **continue on page 8**
2. The patient progresses to need intubation: **skip to page 9**

### Facilitator Notes

- Increase O<sub>2</sub> to 6L/min via NP – then switching to NRB mask up to 15L/min as O<sub>2</sub> requirements increase
- Once O<sub>2</sub> > 6L/min – consider position and proning – move patient every 30-120 minutes – fully prone, right side, sitting up at 30-60 degrees, left side

### Facilitator Notes

- HFNO<sub>2</sub> if available – participants should set this up

## Progression 1

### Stabilization after maximal oxygenation techniques

#### Repeat Vitals 4

|  |               |                  |                 |                |                  |  |
|--|---------------|------------------|-----------------|----------------|------------------|--|
| <b>Appears:</b> Work of breathing decreased. Looks more comfortable. | <b>HR</b> 97  | <b>BP</b> 106/71 | <b>RR</b> 28    |                | <b>Temp</b> 37.9 | <b>O<sub>2</sub> Stat</b><br>91% on O <sub>2</sub> |
|  | <b>GCS</b> 15 | <b>Eyes</b> 4    | <b>Verbal</b> 5 | <b>Motor</b> 6 | <b>Gluc</b> 6.2  |  |

O<sub>2</sub> sat stabilizes at around 92%. Work of breathing starts to decrease – patient appears to be improving over 30 minutes. Ongoing plan for care in facility and/or transfer.

#### Repeat Labs

*Provide only those available in your facility*

|       |        |       |      |                |              |                        |           |
|-------|--------|-------|------|----------------|--------------|------------------------|-----------|
| Hgb   | 118    | Na+   | 135  | Trop           | Slightly ↑ * | <u>Venus Blood Gas</u> |           |
| WBC   | 11.4 * | K+    | 4.0  | Lactate        | 2.8 *        | pH                     | 7.38      |
| Neut  | 9.9 *  | Crept | 98 * | CRP            | 78           | pCO <sub>2</sub>       | 41 mmHg   |
| Lymph | 1.2    | eGFR  | 55 * | Blood cultures | Drawn        | HCO <sub>3</sub>       | 23 mEq/L  |
| Plt   | 235    |       |      | Urinalysis     | Normal       | BE                     | -1 mmol/L |

#### Outcome

Positive outcome – patient stabilizes on NRB mask / HFNO<sub>2</sub> with no further deterioration. A successful ending achieves best learning!

#### Facilitator Notes

Predict the next 24-48 hours for this patient's care.

#### Transfer

- When? How? Weather window?
- What if transfer might not be possible? Await critical care or go with the patient (physician and RN?)

#### HFNO<sub>2</sub>

- If on HFNO<sub>2</sub> is this available during transfer?
- If not, then consider waiting to see if patient improves and thus may avoid intubation.
- Or if worsens, then needs intubation prior to transport

#### Medications

- Dexamethasone
- Consider remdesivir (antiviral) – how to access?
- Consider tocilizumab if not transferred and if not improving on dexamethasone after 24-48 hours? (see notes below)
- Consider broad spectrum antibiotics (not usually recommended but if uncertain diagnosis, and uncertain transport, this may be reasonable)



## Progression 2

### Progresses to needing intubation

Patient is tiring rapidly. Work of breathing is increasing, and patient appears as if they will not be able to maintain this.

### Repeat Vitals 4

|  |               |                 |                 |                |                  |   |
|--|---------------|-----------------|-----------------|----------------|------------------|---|
| <b>Appears:</b> Work of breathing increased. Is fatiguing, eyes closed, just tiring out. | <b>HR</b> 106 | <b>BP</b> 90/61 | <b>RR</b> 32    |                | <b>Temp</b> 38.3 | <b>O<sub>2</sub> Stat</b><br><b>83%</b> on NRB or HFNO <sub>2</sub> |
|  | <b>GCS</b> 14 | <b>Eyes</b> 3   | <b>Verbal</b> 5 | <b>Motor</b> 6 | <b>Gluc</b> 5.3  |   |

### Arterial Blood Gas (if available)

|                  |           |
|------------------|-----------|
| pH               | 7.28      |
| pO <sub>2</sub>  | 51 mmHg   |
| pCO <sub>2</sub> | 46 mmHg   |
| HCO <sub>3</sub> | 20 mEq/L  |
| BE               | -4 mmol/L |

## Intubation

Intubation success is important! Assist the learner, if necessary, to ensure that success.

Post-intubation care:

- Medications
- Ventilator settings
- Transport

### Facilitator Notes

- Based on clinical picture, will need intubation. Use the notes below or your facility guidelines on protected intubation in COVID-19
- Can discuss trying to improve BP and oxygenation prior to intubation (pressors and support respiration with well-sealed BVM or CPAP (+viral filter) between mask and bag)
- RSI medications – ketamine and rocuronium are probably ideal – use resource for dosing

## Repeat Labs

*Provide only those available in your facility*

|       |        |       |      |                |              |                        |           |
|-------|--------|-------|------|----------------|--------------|------------------------|-----------|
| Hgb   | 118    | Na+   | 135  | Trop           | Slightly ↑ * | <u>Venus Blood Gas</u> |           |
| WBC   | 11.4 * | K+    | 4.0  | Lactate        | 2.8 *        | pH                     | 7.38      |
| Neut  | 9.9 *  | Crept | 98 * | CRP            | 78           | pCO <sub>2</sub>       | 41 mmHg   |
| Lymph | 1.2    | eGFR  | 55 * | Blood cultures | Drawn        | HCO <sub>3</sub>       | 23 mEq/L  |
| Plt   | 235    |       |      | Urinalysis     | Normal       | BE                     | -1 mmol/L |

## Repeat Arterial Blood Gas (if available)

|                  |           |
|------------------|-----------|
| pH               | 7.36      |
| pO <sub>2</sub>  | 76 mmHg   |
| pCO <sub>2</sub> | 39 mmHg   |
| HCO <sub>3</sub> | 22 mEq/L  |
| BE               | -1 mmol/L |

## Outcome

A positive outcome with patient stabilizing post-intubation with no further deterioration.

A successful final outcome achieves best learning.

## Facilitator Notes

- Use of local ICU, ROSe, RUDi online advice for ventilator settings and ongoing care.
- Ongoing sedation, analgesia, paralysis
- Transport: mode, go with? What factors will influence your decision

## Protected Rapid Sequence Intubation (RSI) principles:

- **Be prepared** for all possible eventualities within the room
- **Fully debrief** with the team before commencing including all possible eventualities (such as protected CPR)
- **Slow down.** Don't wait too long, but don't intervene too early. It is important to avoid mechanical ventilation for those patients who can avoid it.
- **Factor in the transport:** mode, timing, availability of High Flow Nasal Oxygenation (Optiflow/Airvo) Chanson-route. Might need to have transport discussion prior to the decision to intubate. Conversation with transport (PTN/EPOS) physician
- **Support:** Good to discuss with local Health Authority pathways (receiving ICU physician, on-call COVID-19 physician) or RUDi/ROSe
- **Full airborne level PPE.** N95, eye protection, gown, gloves, hood (if available). Use a buddy or coach system for donning and doffing
- **Closed room or negative pressure room.** Keep the door shut. Will need to keep shut for 35 minutes after intubation/other AGMP.
- **Have the least number of people in the room.** Ideally 3 people, but physician and nurse team can do this if well prepared.
- **Have a runner** outside the door to fetch anything, communicate out, etc. They should also be in airborne level PPE so they can enter if needed.
- Take a **communication device** into the room (phone, tablet, telehealth cart)
- **Avoid Bag-Valve-Mask (BVM) if possible,** but if required for good pre-oxygenation, then use good mask/face grip/seal (2 person, if possible, for 2 handed grip). Try to breathe with the patient's breathing. Use lowest tidal volumes to "assist" their own breathing. Use a viral filter between mask and bag. Disconnect at end of expiration only and take bag off the filter before lifting mask so that any other expiration happens via the filter.
- **Use video laryngoscopy,** if available.
- **Keep your face as far away as possible** from the airway. Use screen, plastic drape or "intubation box" as per your facility.
- **Confirm tube with End Tidal CO<sub>2</sub> rather than auscultation.** Keep distance from patient. Ensure viral filter is in place. Clamp ET tube if possible before any disconnection. Disconnect at end of expiration. If possible, disconnect above the viral filter.
- In the event of cardiac arrest, quickly **secure the airway first** and then start compressions.
- Use an **intubation checklist** (see below) for equipment and the procedure, if available
- Assess for "difficult airway" features and discuss with team
- Set-up three trays and check them with the checklist
  - Main intubation tray: includes a viral filter
  - Rescue airway tray: iGel or King Tube and surgical airway equipment
  - Drug tray: induction agent, paralytic, push-dose pressor, atropine and maintenance anaesthesia/analgesia/paralysis
- Optimize oxygenation and hemodynamics (fluid status, BP, heart rate). There is usually time to do this and it makes intubation much safer, reducing the risk of aspiration, can't intubate/ventilate/oxygenate, and hypotension.

## Sample RSI Checklist

### Covid-19 DSI-RSI Checklist

Do we need to intubate?

- O<sub>2</sub> requirements, Work of breathing O<sub>2</sub> sat., blood gas?
- Now vs Later? Me vs Someone Else? Best intubator vs. Time.

Review factors for possible Difficult Airway -MMAP, BOOTS, MoODS, DART

**\*\*Optimize physiology\*\***

**20 Second Review**

**Team roles**

**Least people in room**

### THREE TRAYS Checklist

**Airborne PPE**

**Runner outside room in PPE**

| <b>Main</b>                   |  | <b>Rescue</b>           | <b>Drugs (pre-drawn)</b> |
|-------------------------------|--|-------------------------|--------------------------|
| Video laryngoscope            | ET CO <sub>2</sub> device              | King Tube / Igel / LMA  | Induction agent          |
| + direct laryngoscope         | ET tube securing device                | (+/- inflation syringe) | Paralytic agent          |
| 2 blades (Mac 3 & 4)          | or twill tape                          | Surgical airway equip't | BP rescue                |
| Magill Forceps                | Bite block (OPA)                       |                         | <u>Maintenance:</u>      |
| 3 ET tube sizes (check cuffs) | BVM (viral filter & O <sub>2</sub> on) |                         | Sedation                 |
| Stylet in ET tube             | Suction                                |                         | Analgesia                |
| Lube'd tube                   | Bougie on chest                        |                         | +/- Paralysis            |
| 10mL syringe                  | Stethoscope                            |                         |                          |

### Final Check: **Drape/screen/shield in place**

- |                                  |                                      |
|----------------------------------|--------------------------------------|
| -physiology optimized?           | -review drug doses                   |
| -ready to switch to nasal prongs | -patient roll is planned/briefed     |
| -3 trays set-up                  | -BURP prepared                       |
| -bougie to hand                  | -C-Spine immobilization if necessary |
| -suction to hand                 | -IV running well                     |

**\*\* Sterile Cockpit\*\***

**Clamp ET tube if disconnecting**

the  
**CARE** course

## Chest X-Ray



ECG

