



## **2024 UPDATE ON PRINCIPLES AND PRACTICE OF MECHANICAL VENTILATION WORKSHOP**

**Friday, June 7, 2024**  
**Toronto Airport Marriott Hotel, Toronto**

### **Overall Learning Objectives**

At the end of this workshop participants will be able to:

- describe basic principles of patient-ventilator interactions, including respiratory mechanics, patient-ventilator synchrony, and control of breathing;
- apply basic and advanced principles of respiratory monitoring for difficult to ventilate/oxygenate patients, with a focus on PEEP and recruitment optimization, and respiratory drive assessment;
- describe management options in patients experiencing difficult ventilation and liberation from mechanical ventilation.

### **Accreditation Statement**

This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification program of the Royal College of Physicians and Surgeons of Canada.

This activity was approved by the Canadian Society of Internal Medicine for a maximum of 4.75 hours.

Through an agreement between the Royal College of Physicians and Surgeons of Canada and the American Medical Association, physicians may convert Royal College MOC credits to *AMA PRA Category 1 Credits™*. Information on the process to convert Royal College MOC credits to AMA credits can be found at [www.ama-assn.org/go/internationalcme](http://www.ama-assn.org/go/internationalcme).

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*Physicians should only claim credit commensurate with the extent of their participation in the activity.*

*A minimum of 25% of each session is dedicated to participant interaction.*



| Time          | Session  | Speaker(s)                                      | Location                   |
|---------------|--|---|----------------------------|
| 12:00 - 12:30 | Registration Check-In  |   | British Columbia Foyer     |
| 12:30 – 12:45 | <b>Welcome and Introduction</b>  | Alberto Goffi,<br>Thomas Piraino,<br>Matthew Ko | British Columbia / Alberta |
| 12:45 – 13:15 | <b>The Equation of Motion and Respiratory Mechanics</b><br><br>At the end of this session, the participant will be able to: <ul style="list-style-type: none"> <li>describe the overall goal of mechanical ventilation;</li> <li>review the role of compliance and resistance in setting the ventilator;</li> <li>review the importance of breath timing for various modes; and</li> <li>discuss suggested ventilator settings and how to monitor the patients for required changes.</li> </ul>              | Thomas Piraino                                  |                            |
| 13:15 – 13:45 | <b>Control of Breathing During Mechanical Ventilation</b><br><br>At the end of this session, the participant will be able to: <ul style="list-style-type: none"> <li>describe basic neuroanatomical structures participating in control of breathing;</li> <li>analyze how control of breathing is affected by critical illness; and</li> <li>list available interventions to modulate control of breathing based on physiological principles.</li> </ul>  | Irene Telias                                    |                            |
| 13:45– 14:15  | <b>Diagnosing and Managing Patient-Ventilator Dyssynchrony</b><br><br>At the end of this session, the participant will be able to: <ul style="list-style-type: none"> <li>distinguish the different forms of abnormal Patient-Ventilator interactions and their mechanisms;</li> <li>discuss the respective role of ventilatory settings, sedation and intrinsic characteristics of the patient;</li> <li>determine the best strategy to adopt in the presence of Patient-Ventilator Dyssynchrony</li> </ul> | Laurent Brochard<br><i>Presenting virtually</i> |                            |
| 14:15 – 14:30 | Break  |   |                            |
| 14:30 – 16:30 | <b>Concurrent Workshops: participants will attend 3 workshops (40 min) out of the 6 offered</b>  |   |                            |
|               | <b>#1 – Basic Principles of Electrical Impedance Tomography</b>  | Matthew Ko                                      | British Columbia / Alberta |



|  |  |                |                            |
|--|--|----------------|----------------------------|
|  | <p>At the end of this session, the participant will be able to:</p> <ul style="list-style-type: none"> <li>describe basic principle of EIT and lung image generation;</li> <li>identify patients with recruitable/non-recruitable lungs – recruitment assessment via EIT; and</li> <li>describe decremental PEEP titration and identify crossover point of overdistension and atelectasis on PEEP titration report.</li> </ul>   |                |                            |
|  | <p><b>#2 - Assessing Respiratory Drive and Effort</b></p> <p>At the end of this session, the participant will be able to:</p> <ul style="list-style-type: none"> <li>interpret the ventilator tracings and particularly the inspiratory and expiratory holds performed during spontaneous breathing to assess and quantify patients' drive and effort;</li> <li>assess the presence of excessive or inadequate effort, based on thresholds established in the literature; and</li> <li>describe the role of other available tools that can complement the assessment of drive and effort at the bedside (the gold standard esophageal manometry, respiratory muscles ultrasound, distribution of ventilation by EIT...)</li> </ul> | Alice Grassi   | British Columbia / Alberta |
|  | <p><b>#3 – A Picture is Worth a Thousand Words (Waveforms Interpretation)</b></p> <p>At the end of this session, the participant will be able to:</p> <ul style="list-style-type: none"> <li>recognize basic respiratory waveforms (flow, airway pressure, volume) during passive mechanical ventilation during the most used ventilation modes (VCV, PCV, PSV, PAV+-NAVA);</li> <li>identify the presence of breathing effort based on deformation of the basic respiratory waveforms; and</li> <li>list most common abnormal patient-ventilator interaction and identify them on the respiratory waveforms.</li> </ul>   | Irene Telias   | Salon H                    |
|  | <p><b>#4 – Recruitability Maneuvers and Assessment of Airway Opening Pressure: Rationale and Technique</b></p> <p>At the end of this session, the participant will be able to:</p>   | Thomas Piraino | Quebec                     |



|                             |  |  |                                       |
|-----------------------------|--|--|---------------------------------------|
|                             | <ul style="list-style-type: none"> <li>• explain recruitment potential and its importance;</li> <li>• describe methods of assessing recruitment potential at the bedside, in particular the recruitment-to-inflation ratio.</li> <li>• explain the importance of assessing airway opening pressure and its impact on respiratory system measurements and the recruitment-to-inflation ratio; and</li> <li>• describe how airway opening pressure is measured at the bedside.</li> </ul>  |  |                                       |
|                             | <p><b>#5 – Esophageal Pressure Monitoring</b></p> <p>At the end of this session, the participant will be able to:</p> <ul style="list-style-type: none"> <li>• discuss physiological and technical principles on esophageal pressure measurements in mechanically ventilated patients;</li> <li>• describe current evidence supporting the use of esophageal pressure to set PEEP at the bedside in patients with ARDS;</li> <li>• describe other indications for the use of use of esophageal pressure measurements in mechanically ventilated patients.</li> </ul> | <p>Alberto Goffi,<br/>Georgiana<br/>Roman-Sarita</p> | <p>British Columbia<br/>/ Alberta</p> |
|                             | <p><b>#6 – Introduction to PAV and NAVA</b></p> <p>At the end of this session, the participant will be able to:</p> <ul style="list-style-type: none"> <li>• describe how positive pressure breaths are generated on PAV and NAVA;</li> <li>• choose initial settings for a patient on PAV or NAVA; and</li> <li>• adjust settings to optimize patients on PAV and NAVA.</li> </ul>  | <p>Karen Bosma,<br/>Matthew Ko</p>                   | <p>Quebec</p>                         |
| <p><b>16:30 – 16:45</b></p> | <p>Break</p>   |  |                                       |
| <p><b>16:45-17:15</b></p>   | <p><b>Management of Difficult Weaning</b></p> <p>At the end of this session, the participant will be able to:</p> <ul style="list-style-type: none"> <li>• apply a structured approach to assess patients experiencing weaning failure;</li> <li>• describe methods to assess work of breathing during weaning;</li> </ul>   | <p>Karen Bosma</p>                                   | <p>British Columbia<br/>/ Alberta</p> |



|                    |   |                               |  |
|--------------------|---|-------------------------------|--|
|                    | <ul style="list-style-type: none"> <li>describe management strategies of patients experiencing difficult weaning.</li> </ul>  |                               |  |
| <b>17:15-18:00</b> | <p><b>Tips and Tricks of MV - How I Ventilate Patients with Asthma, ARDS, High-Respiratory Drive, Elevated ICP...</b></p> <p>At the end of this session, the participant will be able to:</p> <ul style="list-style-type: none"> <li>discuss strategies for managing complicated mechanical ventilation scenarios;</li> <li>describe approaches to ventilating patients.</li> </ul> | Thomas Piraino,<br>Matthew Ko |  |
| <b>18:00</b>       | Adjourn   |                               |  |



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