

Chaire pharmaceutique AstraZeneca

en santé respiratoire

Bilan 2024-2025

Lucie Blais, PhD, titulaire de la Chaire

David Williamson, BPharm, PhD, professeur
de clinique de la Chaire

Faculté de pharmacie

Université 
de Montréal

Enseignement/Supervision

■ Supervision des étudiants (David Williamson)

- ◆ Projets de la chaire: 1 stagiaire premier cycle (BSBP) et une stagiaire premier cycle de France (U de Montpellier)
- ◆ 1 étudiante au PhD impliquée dans le projet OPI-PK
 - Johannie Beaucage-Charron
- ◆ 1 étudiant en co-direction projet encéphalopathie COVID
 - Nicoals Gagnon
- ◆ Autres projets de mon programme: 2 PhD, 1 PhD en co-direction
 - Hadjer Dahel : Fragilité, polypharmacie et risque de traumatisme crânien
 - Mar Saavedra Mitjans,
 - Camille Leduc-Livernoche. Université du Québec à Montréal, Faculté de psychologie, programme de neuropsychologie. Gestion de l'agitation durant la phase aiguë du traumatisme craniocérébral
- ◆ Autres étudiants en direction MPA:
 - Sophia Groguhé, Olivier Landry, Christine Sirmalis (CHUM)
 - André Allaf, Amélie Allaire, Cassandra Biron, Alexandre Borgia, Vy Nguyen Chau, Guillaume Roy (HMR)

Soins intensifs

Projets en cours

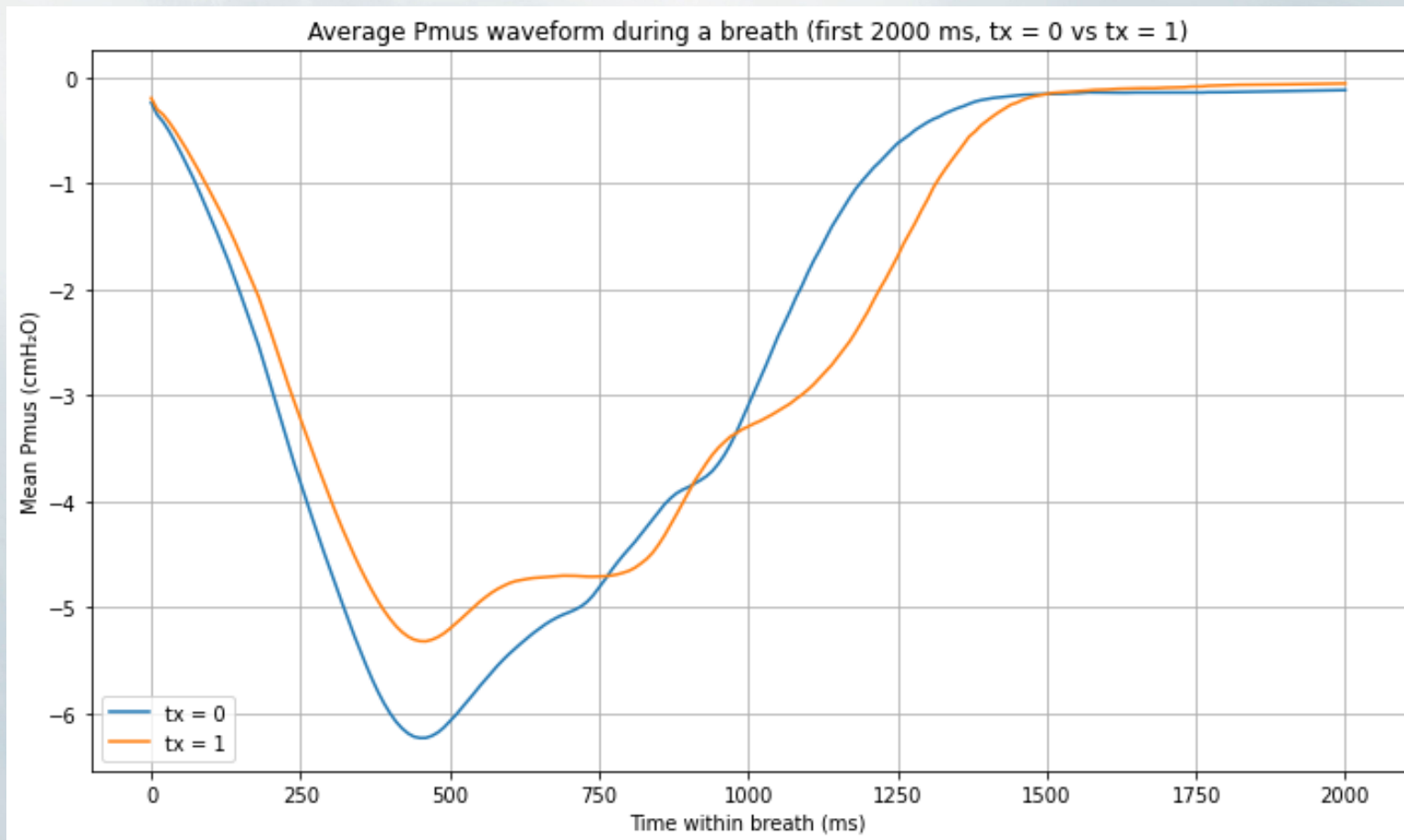
- Optimal dosing of anti-infective agents in critically ill patients undergoing extracorporeal membrane oxygenation therapy
 - ◆ Recrutement
 - 30 patients recrutés depuis le 1^{er} septembre 2023 (HSCM) et depuis le 1^{er} janvier 2024 (CHUM/CUSM) : 9 du HSCM, 11 du CHUM et 11 du CUSM
 - 19 pipéracilline, 5 méropénem, 4 caspofongin, 2 non-identifiés pour l'instant
- Effect of a 5-HT₃ receptor antagonist on respiratory drive in spontaneously breathing mechanically ventilated patients with acute respiratory distress syndrome (ARDS): a pilot proof-of-concept trial
 - ◆ Recrutement du 10^{ième} patient en mai 2025
 - ◆ Analyses des résultats sur le > 50 000 respirations
 - ◆ Résultats positifs – manuscrit en préparation

Overall Respiratory Effect of Ondansetron

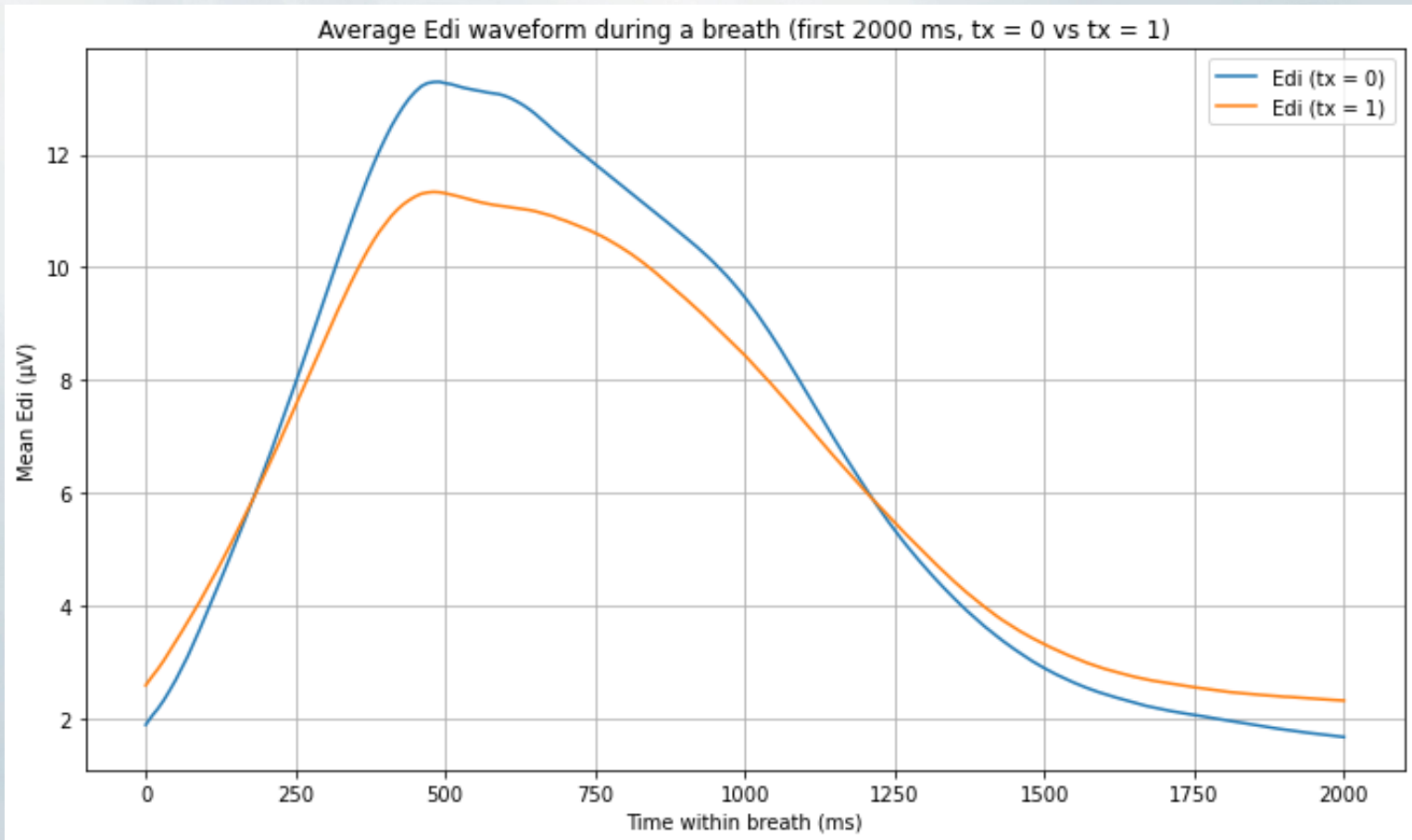
Parameters	Placebo Mean (95% CI)	Ondansetron Mean (95% CI)	Mean difference (MEM coefficient)	p-value for coefficient
Respiratory Rate (breaths/min)	21.4 (20.9, 21.8)	18.7 (18.2, 19.2)	-1.5 (-1.7,-1.2)	p < 0.001
Tidal Volume (mL)	542 (540, 544)	555 (552, 557)	0 (-2, 2)	p = 0.829
Minute Ventilation (L/min)	11.8 (11.6, 11.9)	10.6 (10.4, 10.8)	-0.9 (-1.0, -0.8)	p < 0.001
Max Electrical Activity of Diaphragm (μ V)	19.0 (18.9, 19.2)	17.2 (17.1, 17.3)	-2.0 (-2.2, -1.9)	p < 0.001
Esophageal Pressure Swings (cmH ₂ O)	9.8 (9.7, 9.9)	8.2 (8.1, 8.3)	-1.9 (-2.1, -1.8)	p < 0.001
P_{mus} (cmH ₂ O)	8.5 (8.4, 8.6)	7.9 (7.8, 9.0)	-1.1 (-1.0, -1.1)	p < 0.001
PTP of P_{eso} per minute (cmH ₂ O*sec*min ⁻¹)	102 (99, 104)	88 (85, 91)	-20 (-22, -17)	p < 0.001

MEM = Mixed-Effect Model; P_{eso} = Esophageal pressure; P_{mus} = Inspiratory pressure generated by the muscles (estimated from the P_{eso})

Respiratory Effect of Ondansetron on an average breath (Pmus)



Respiratory Effect of Ondansetron on an average breath (Edi)



Mean expiratory Edi: placebo 3.01 (2.97, 3.05) vs ondansetron 3.25 (95% CI: 3.20, 3.30)

MEM Coefficient = 0.30 (0.24, 0.35)

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Soins intensifs

- **Ondansetron to prevent Self-inflicted lung Injury by Respiratory drive Inhibition during Spontaneous breathing in patients with ARDS: A Pilot Randomized-Controlled Trial (OSIRIS-1)**
 - ◆ Soumis IRSC 2024
 - ◆ Présenté au CCCTG Magog en mai 2025
 - ◆ Re-soumission prévue automne 2025
 - ◆ Soumission éthique juillet 2025
 - ◆ Soumission Santé Canada juin 2025

Publications dans le programme

- Duceppe MA, Duceppe MA, Kanji S, Ruo N, Do A, Cavayas YA, Robert-Halabi M, Albert M, Zavalkoff S, Samoukovic G, Williamson DR. Alterations in the pharmacokinetics and pharmacodynamics of commonly used antimicrobials in pediatric critical care patients during extracorporeal membrane oxygenation: A systematic review. *Pediatric Drugs* 2023;25:515-535
- El-Haffaf I, Williamson D, Cavayas YA, Duceppe MA, Simard C, Thiboutot Z, Marsot A. Impact de l'ECMO (thérapie d'oxygénation par membrane extracorporelle) sur la pharmacocinétique de la caspofongine : une étude de cas avec deux patients. Réseau AIRS (Réseau Air, intersectorialité, recherche respiratoire et sonore) du FRQ (2024)
- Cavayas YA, St-Pierre M, Charbonney E, Williamson D. Effect of a 5-HT3 receptor antagonist on respiratory drive in spontaneously breathing mechanically ventilated patients with acute respiratory distress syndrome (ARDS): a pilot proof-of-concept crossover non-randomized controlled trial. Canadian Critical Care Forum. Toronto, Canada. Nov 18-21 2024.
 - ◆ En rédaction pour soumission dans *Am J Res Crit Care*

Autres publications

1. Badie, SR, Mujtaba M, Williamson D, Burry L. Pharmacology of sedatives. Crit Care Clinics 2025; ePub June 14th.
2. Grogue S, Landry O, Sirmalis C, Williamson D, Stortini A, Fortier M. Eco-responsible Awareness Raising interventions To reduce the use of long-acting MDIs and carbon footprint in a university Hospital center (EARTH). Ann Pharmacother 2025; ePub June 4th.
3. Girard Pepin, R., Seyfzadeh, F., Williamson, D., Gosseries, O., & Duclos, C. (2025). Pharmacological therapies for early and long-term recovery in disorders of consciousness: current knowledge and promising avenues. Expert Review of Neurotherapeutics, 1–21.
4. Williamson DR, Dryden L, Cheng W, Hutton B, Skidmore B, Mehta S, Golan E, Turgeon AF, Adhikari NKJ, Rose L, Burry L. Sedation for moderate-to-severe traumatic brain injury in adults (Protocol). Cochrane Database of Systematic Reviews 2025, Issue 5. Art. No.: CD012639.
5. Deane AM, Lauzier F, Adhikari NKJ, Lamontagne F, Heels-Ansdell D, Thabane L, Williamson D, Kanji S, Barletta JF, Finfer S, Arabi Y, Ostermann M, Marshall J, Zytaruk N, Hardie M, Hammond N, Gyatt G, White K, Burns K, Dionne J, Young P, Cook D. Risk Factors for Patient-Important Upper Gastrointestinal Bleeding. Am J Resp Crit Care
6. Martineau J, Bernard F, Gagnon A, Williams V, Araujo de Franca S, Williamson D, Cavayas YA. Variation in carbon dioxide is a stronger determinant of the brain tissue oxygenation than its synchronous value in critically ill patients with acute brain injury. Crit Care Explorations 2025; 7:e1241.
7. Azimzadeh D, Lapierre A, Bouaouina Z, Williamson D, Mailhot T, Arbour C. ICU nurses' perspectives on family involvement in delirium care for postoperative cardiac surgery patients. Intensive Crit Care Nursing 2025; 88:104001.
8. St-Jean I, Hachemi D, Friciu M, Forest JM, Belliveau M, Williamson D, Leclair G. Stability of dexmedetomidine, ketamine and lidocaine combined injectable solution. Eur J Hosp Pharm 2025; ePub 5 mars.
9. Beaucage-Charron J, Rinfret J, Trottier G, Sevigny MM, Burry L, Marsot A, Williamson D. Pharmacokinetics of opioid infusions in the intensive care unit setting – A systematic review. Clin Pharmacokinetics 2025; ePub 1 mars.
10. Brazeau D, Deshaies AA, Williamson DR, Bernard F, Arbour C, Lavigne G, Pinard AM, Rouleau D, de Beaumont L. Impact of an acute 1-month cannabidiol treatment on pain and inflammation after a long bone fracture: a triple-blind randomized, placebo controlled, clinical trial protocol. BMJ Open 2025; 15:e092919.

11. Saavedra-Mitjans M, David PM, Arbour C, Perreault M, Roux M, Frenette AJ, Khwaja K, Bernard F, Williamson DR. EXperienceS and percepTions towards Agitated behaviours in Tbi ICu patients: qualitative interviews with nurses. *Brain Injury* 2025; ePub Feb 3rd
12. Burry LD, Williamson DR, Detsky M, Bernard F, Mehta S, Scales D, Rose L. Feasibility of melatonin for prevention of delirium in critically ill patients. *Chest* 2025; ePub Jan 10th.
13. Daoust R, Paquet J, Williamson D, Huard V, Arbour C, Perry JJ, Emond M, Berthelot S, Archambault P, Rouleau D, Morris J, Cournoyer. Impact of Vitamin C on the Reduction of Opioid Consumption for Acute Musculoskeletal Pain: A Double-Blind Randomized Control Pilot Study. *Plos One* 2024;19:e0316450.
14. Massé O, Mercurio CM, Dupuis S, Arruda A, Desforges K, Dugré N, Dallaire G, Williamson DR. Calcium and/or vitamin D to prevent fractures and falls in older adults: Protocol for a systematic review and meta-analysis. *BMJ Open* 2024;14:e085902.
15. Lapierre, A., Bérubé, M., Giroux, M., Tardif, P.-A., Turcotte, V., Mercier, É., Richard-Denis, A., Williamson, D., & Moore, L. Interprofessional interventions that impact collaboration and quality of care across inpatient trauma care continuum: A scoping review. *Injury* 2024;55(11):111873.
16. Mohktari KW, Wong A, Nguyen M, Giard A, Ly B, Wazzan D, Williamson D, Dagenais-Beaulé V. Post-discharge opioid prescription and consumption in surgical inpatients: the POPCORN observational Study. *Can J Hosp Pharmacy* 2024;77:e3574.
17. Dahel H, Burry L, Tabbara N, Williamson D, Hornstein G, Wang HT. Optimizing Subsequent CARdiovascular Medication Re-introduction in the Intensive Care Unit (OSCAR-ICU). *Can J Kidney Disease* 2024;11:Sept 5th.
18. Daoust R, Paquet J, Emond M, Iseppon M, Williamson D, Yan J, Perry JJ, Huard V, Lavigne G, Lee J, Lessard J, Lang E, Cournoyer A. Opioids for acute pain: how much to prescribe to minimize unused medication? (OPUM Study). *CMAJ* 2024;196:E866-E874.
19. De Koninck B, Brazeau D, Apinis-Deshaies A, Briand MM, Maschke C, Williams V, Arbour C, Williamson D, Duclos C, Bernard F, Blain-Moraes S, De Beaumont L. Modulation of brain activity in brain-injured patients with a disorder of consciousness in intensive care with repeated 10-Hz transcranial alternating current stimulation (tACS): a randomised controlled trial protocol. *BMJ Open* 2024;14:e07828.
20. Wang Y, Parpia S, Ge L, Heels-Ansdell D, Lai H, Esfahani MA, Pan E, Alhazzani W, Schandelmaier S, Lauzier F, Arabi Y, Barletta J, Deane A, Finfer S, Williamson D, Kanji S, Moller MH, Perner A, Krag M, Young PJ, Dionne JC, Hammond N, Ye Z, Ibrahim Q, Cook, D. Proton Pump Inhibitors for Prophylaxis Against Gastrointestinal Bleeding in Critically Ill Patients: A Systematic Review with Meta-Analysis. *NEJM Evid* 2024;3: EVIDoa2400134.

21. Cook D, Dean A, Lauzier F, Zytaruk N, Guyatt G, Saunders L, Hardie M, Heels-Ansdell D, Alhazzani W, Marshall J, Muscedere J, Myburgh J, English S, Arabi Y, Ostermann M, Knowles S, Hammond N, Byrne KM, Chapman M, Venkatesh B, Young P, Rajbhandari D, Poole A, Al Fares A, Reis G, Johnson D, Iqbal M, Hall R, Meade M, Hand L, Duan E, Clarke F, Dionne JC, Tsang JLY, Rochwerf B, Karachi T, Lamontagne F, D'Aragon F, St-Arnauld C, Reeve B, Geagea A, Niven F, Vasquez-Grande G, Zarychanski R, Ovakim D, Wood G, Burns K, Goffi A, Wilcox E, Henderson W, Forrest D, Fowler R, Adhikari N, Ball I, Mele T, Binnie A, Trop S, Mehta S, Morgan I, Loubani O, Vanstone M, Fiest K, Charbonney E, Cavayas A, Archambault P, Rewa O, Lau V, Kristoff AS, Khwaja K, Williamson D, Kanji S, Sy E, Dennis B, Reynolds S, Marquis F, Lellouche F, Rahman A, Hosek P, Barletta J, Cirone R, Tutschka M, Xie F, Billot L, Thabane L, Finfer S, for the REVISE Trial Investigators. Stress Ulcer Prophylaxis for Invasively Ventilated Patients: A Randomized Trial. *N Engl J Med* 2024;391:9-20
22. Burry LD, Bell C, Hill A, Pinto R, Scales D, Bronskill S, Rose L, Williamson D, Fowler R, Wunsch H. Trends in Sedative Prescription Among Older Adults after Critical Illness: A Population-Based Cohort Study. *Am J Resp Crit Care* 2024;ePub June 11th
23. Lapierre A, Proulx A, Gélinas C, Dollé S, Alexander S, Williamson D, Bernard F, Arbour C. Association between pupil light reflex measurements during mechanical ventilation and post-extubation delirium in adults with traumatic brain injury: Preliminary findings. *J Neuroscience Nursing* 2024;ePub June 3rd.
24. Saavedra-Mitjans M, Van der Maren S, Gosselin N, Duclos C, Frenette AJ, Arbour C, Burry L, Williams V, Bernard F, Williamson D. Use of actigraphy for monitoring agitation in patients with Acute Traumatic Brain Injury in the Intensive Care Unit. *Brain injury* 2024;38:692-698
25. Cataford G, Monton LA, Livernoche-Leduc C, Karzon S, Saavedra-Mitjans M, Potvin MJ, Bernard F, Burry L, Arbour C, Williamson DR. Cognitive and motor function effects of antipsychotics in traumatic brain injury: a systematic review of preclinical studies. *Neurotrauma Reports* 2024;5:1.
26. El-Hattaf I, Marsot A, Hachemi D, Pesout T, Williams V, Smith MA, Albert M, Williamson D. Exposure Levels and Target Attainment of Piperacillin/Tazobactam in Intensive Care Unit Adult Patients: a Prospective Observational Study. *Can J Anesth* 2024; 71:511-522.
27. Saavedra-Mitjans M, Frenette AJ, McCredie V, Arbour C, Charbonney E, Albert M, Mehta S, Wang HT, Burry L, Bernard F, Williamson D. ICU physicians' beliefs and perceived importance of agitation in TBI patients: A survey of Canadian intensivists. *Can J Anesth* 2024;71:264-73.

Étudiantes et étudiants

- **Stagiaires du 1^{er} cycle**
 - ◆ Anaëlle Trottier
- **Étudiante étrangère**
 - ◆ Camille Poyé
- **Maitrise en pharmacothérapie avancée**
- **Doctorat**
 - ◆ Johannie Beaucage-Charron
 - ◆ Nicolas Gagnon

Le personnel de recherche

- Coordonnatrice /Agente de recherche
 - ◆ Virginie Williams, PhD
 - ◆ Maude St-Pierre, inhalothérapeute, B.Sc.
 - ◆ Audrey Lachapelle, M.Sc.
 - ◆ Sabrina Auraujo de Franca, B.Sc.inf.

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