

DMNB QUARTERLY REPORT

Q3: October – December 2021

RESEARCH

General Update

- Dr. Daniel Dutton launched a new website: www.danieldutton.com

Metrics

Funding Awarded to Principal Investigators (PIs)

PI	Amount	Funding Agency	Project Title	Principal or Co-Applicant	Length
Brunt, Keith	\$49,425	NBHRF	Determining the prevalence and outcomes of transthyretin amyloidosis cardiomyopathy-aortic stenosis patients undergoing valve intervention in New Brunswick.	Co	2022-2025
	\$131,902	NBHRF	Clinical Calibration & Validation of Non-Invasive Health Monitoring Devices for Virtual Patient Care	Principal	2022-2025
Dutton, Dan	\$296,487	Canadian Cancer Society Atlantic Cancer Research Grant (ACR-21)	Cancer prevention potential in Atlantic Canada – Informing local actions on lifestyle, equity, and risk.	Co	2021-2024

Principal Investigator (PI) Peer-Reviewed Publications

- **Atkinson, Paul** – 7 publications
 1. Atkinson PR. Ultrasound: Skills of carrying out abdominal aortic aneurysm assessment (AAA) [Internet]. RCEM Learning 2021 [cited 2021Nov24]. Available from:



<https://www.rcemlearning.org/modules/ultrasound-skills-of-carrying-out-abdominal-aortic-aneurysm-assessment-aaa/>

2. Atkinson PR, Connolly JA, Jarman RD, Sloan JP, Wright J. Abdominal and cardiothoracic evaluation with sonography in shock (ACES) [Internet]. RCEM Learning . 2021 [cited 2021Nov24]. Available from: <https://www.rcemlearning.org/reference/abdominal-and-cardiothoracic-evaluation-with-sonography-in-shock-aces/>
 3. Olszynski P, Marshall RA, Olver TD, Oleniuk T, Auser C, Wilson T, Atkinson P, Woods R. Performance of an automated ultrasound device in identifying and tracing the heart in porcine cardiac arrest. *Ultrasound J* [Internet]. 2022;14(1):1. Available from: <https://doi.org/10.1186/s13089-021-00251-5>
 4. Lalande E, Burwash-Brennan T, Burns K, Harris T, Thomas S, Woo MY, Atkinson P. Is point-of-care ultrasound a reliable predictor of outcome during traumatic cardiac arrest? A systematic review and meta-analysis from the SHoC investigators. *Resuscitation*. 2021 Oct 1;167:128-36.
 5. Bell C, Murray H, Atkinson P. Is cardiothoracic point-of-care ultrasonography the future of heart failure diagnosis?. *CMAJ*. 2021 Nov 8;193(44):E1702-3.
 6. Gaspari, R., Weekes, A., Adhikari, S., Noble, V.E., Nomura, J.T., Theodoro, D., Woo, M.Y., Atkinson, P., Blehar, D., Brown, S.M. and Caffery, T., 2021. Comparison of outcomes between pulseless electrical activity by electrocardiography and pulseless myocardial activity by echocardiography in out-of-hospital cardiac arrest; secondary analysis from a large, prospective study. *Resuscitation*.
 7. Stiell, I.G., For the Canadian EM Writing Group. Paul Atkinson, Peter Cameron, Alix Carter, Warren Cheung, Ryan Chuang, Kerstin Wit, Quynh Doan, Ian Drennan, Debra Eagles, Andrew Hall, Ariel Hendin, Grant Innes, Eddy Lang, Patrick McLane, Andrew McRae, Catherine Patocka, Jeffrey J. Perry, Naveen Poonai, Venkatesh Thiruganasambandamoorthy, Daniel Ting, Christian Vaillancourt, Robert Woods, Krishan Yadav, Peter Zed. Guide to writing and publishing a scientific manuscript: Part 1—The structure. *Can J Emerg Med* (2021). <https://doi.org/10.1007/s43678-021-00241-5>
- **Brunt, Keith** – 4 publications
 1. Virtual care with digital technologies for rural Canadians living with cardiovascular disease: <https://doi.org/10.1016/j.cjco.2021.09.027>
 2. Guidelines for in vivo mouse models of myocardial infarction: <https://doi.org/10.1152/ajpheart.00459.2021>
 3. An age-independent hospital record-based frailty score correlates with adverse outcomes after heart surgery and increased health care costs: <https://doi.org/10.1016/j.xjon.2021.10.018>
 4. An evaluation of cardiac health in the spontaneously hypertensive rat colony: implications of evolutionary driven increases in concentric hypertrophy: <https://doi.org/10.1093/ajh/hpab155>
 - **Dutton, Daniel** – 3 publications
 1. Alcohol access and purchasing behaviour during COVID-19 pandemic restrictions: An exploration of sociodemographic, health and psychosocial correlates in two Canadian provinces. K MacNabb, S Blades, K Thompson, DJ Dutton, T Liu, M Asbridge. *Drug and alcohol review*.
 2. Drug use, homelessness and health: responding to the opioid overdose crisis with housing and harm reduction services. K Milaney, J Passi, L Zaretsky, T Liu, CM O’Gorman, L Hill, D Dutton. *Harm reduction journal* 18 (1), 1-10.

3. An age-independent hospital record-based frailty score correlates with adverse outcomes after heart surgery and increased health care costs. S Sarkar, JB MacLeod, A Hassan, DJ Dutton, KR Brunt, JF Légaré. JTCVS Open.
- **Reiman, Tony** – 4 publications
 1. Nanoparticle surface-enhanced Raman spectroscopy as a noninvasive, label-free tool to monitor hematological malignancy. Grieve S, Puvvada N, Phinyomark A, Russell K, Murugesan A, Zed E, Hassan A, Legare JF, Kienesberger PC, Pulinilkunnil T, Reiman T, Scheme E, R Brunt K. Nanomedicine (Lond). 2021 Oct;16(24):2175-2188. doi: 10.2217/nnm-2021-0076. Epub 2021 Sep 22. PMID: 34547916
 2. The future of myeloma research in Canada and beyond: results of a James Lind Alliance priority setting partnership. Fowler S, McLaughlin L, Bridges S, Robichaud M, Ridgway B, Reece D, Song K, Dalrymple L, Sully R, Nason S, Rowland S, MacDonald T, Paine W, Reiman A. Br J Haematol. 2021 Nov 6. doi: 10.1111/bjh.17946. Online ahead of print. PMID: 34741302 No abstract available.
 3. Considerations for Developing a Reassessment Process: Report from the Canadian Real-World Evidence for Value of Cancer Drugs (CanREValue) Collaboration's Reassessment and Uptake Working Group. Dai WF, Arciero V, Craig E, Fraser B, Arias J, Boehm D, Bosnic N, Caetano P, Chambers C, Jones B, Lungu E, Mitera G, Potashnik T, Reiman A, Ritcher T, Beca JM, Denburg A, Mercer RE, Parmar A, Tadrous M, Takhar P, Chan KKW, On Behalf Of The CanREValue Collaboration Reassessment And Uptake Working Group. Curr Oncol. 2021 Oct 16;28(5):4174-4183. doi: 10.3390/currenco128050354. PMID: 34677272 **Free PMC article.**
 4. Retrospective study of treatment patterns and outcomes post-lenalidomide for multiple myeloma in Canada. Reece DE, Masih-Khan E, Atenafu EG, Jimenez-Zepeda VH, McCurdy A, Song K, LeBlanc R, Sebag M, White D, Cherniawsky H, Reiman A, Stakiw J, Louzada ML, Kotb R, Aslam M, Gul E, Venner CP. Eur J Haematol. 2021 Oct;107(4):416-427. doi: 10.1111/ejh.13678. Epub 2021 Jun 27. PMID: 34129703

Presentations by Principal Investigators (PIs)

- Dutton DJ, Belanger M, Gander S, Plourde V. Panelist. New Brunswick Health Research Foundation's Health Research Week 2021. "Preventing Disease: Supporting Health Behaviours". November 16, 2021. Online.

Dalhousie Faculty of Medicine New Brunswick
Researcher Profile

Dr. Tony Reiman, MD, SM, FRCPC

*Department of Medicine, Division of Medical
Oncology*

As a medical oncologist, the work Dr. Anthony (Tony) Reiman does in a clinical setting drives the research he does in the lab and the clinic, bridging the gap between those two places by asking questions like: “What patient is going to benefit from which treatment? Can we try and understand the biology of their cancer? Can we use that information to figure out what treatment that patient should get?”

To work out new ideas for cancer drug treatments or treatments that work by harnessing the immune system to manage and treat cancer, Dr. Reiman involves his patients in his research by linking together information about their cancer, treatment, and outcomes to gain a better understanding of their disease.



When asked what continues to draw him to his research, Dr. Reiman credits his patients.

“On a regular basis, I’m faced with sitting in front of a patient, telling them we’ve done what we can and don’t think they’re going to live much longer with this cancer,” he says. “I think where there’s such a big problem, there’s also a huge opportunity for improvement and patients are very enthusiastic and motivated to participate in research that might benefit future patients – if not themselves – and that’s very noble. So, it’s those difficult conversations with patients that motivate me to try and be a part of the solution. I believe research is a big part of that solution.”

One of the cancers Dr. Reiman is particularly interested in is multiple myeloma, which is a largely incurable bone marrow cancer. He is part of a strong multiple myeloma research community nationally and internationally, and it is with the Canadian team that Dr. Reiman works together on several projects. One of these projects is the Terry Fox Pan-Canadian Multiple Myeloma Molecular Monitoring (or M4) study and it is being led from the Dalhousie Medicine New Brunswick laboratory in partnership with the Terry Fox Research Institute, the University of New Brunswick, and cancer centres and academic/research institutions across the country.

Dr. Reiman’s work with multiple myeloma is keeping his lab busy. “Samuel Abegunde, our PhD student, is studying something called the Hippo pathway and myeloma,” Dr. Reiman explains. “And we’ve got Helmi Alfarra, our postdoctoral fellow, who’s studying something called natural killer cells and their interaction with myeloma. His work actually links to our M4 study.”

He is also part of a group called the Atlantic Cancer Consortium, which includes researchers in New Brunswick, Nova Scotia, and Newfoundland. They collaborate on research involving

patients with different types of cancer in hopes of building an infrastructure for cancer research that can be shared across the region and the country and, in so doing, become a part of something called the Marathon of Hope Cancer Centres. With funding from the Terry Fox Foundation, federal government, and local funders, this national initiative is an exciting one that Dr. Reiman believes Dalhousie Medicine New Brunswick will become more involved in as it goes along.

As the founding Assistant Dean of Research at DMNB, Dr. Reiman is extremely proud of the research program at Dalhousie Medicine New Brunswick.

“I grew up in Saint John, left for a while, and came back,” he says. “In the time since I returned, we’ve built the DMNB research facility and recruited a team of researchers who have been very successful in obtaining external funding from national organizations to do their excellent work, to train the next generation of researchers, and to contribute important research at the same time. I’m pleased that this has come along from the ground up and added a meaningful dimension to the research community in Saint John, in New Brunswick, and at Dalhousie. I’m proud that, in Saint John, with the growth of academic medicine and DMNB that we’ve been able to extend that into the clinical setting to the benefit of patients and clinicians as well as researchers.”

As Dr. Reiman looks toward 2022, he hopes that the new year will present more opportunities to be able to reconnect with people a little more as we make our way through the pandemic. He notes that some of the best vacations he has ever been on are the ones where he visited with family and friends across Canada and is hopeful that those kinds of trips will be able to happen again soon.

Dr. Reiman loves to spend his free time with his family and enjoys skiing with his son when the weather is snowier. Partial to music from the 60s and 70s, he is also currently learning how to play the guitar by “listening to old music and then trying to figure out how I can make it myself.”

Coming back to his work, at the heart of what makes Dr. Reiman a truly exceptional researcher and clinician is his devotion to his patients.

“I’m just really pleased with the opportunities to continue to serve our patients both with patient care and research,” he notes. “I think it’s exciting that there’s new developments happening on a daily, sometimes weekly, basis that we’re a part of and I think that this work provides more than a lifetime worth of stuff to look forward to.”

Helmi Alfarra

Name of Supervisor & Department: Dr. Tony Reiman, Department of Medicine

Name of Co-Supervisors: (NA)

Career stage: Postdoctoral fellow

What did you do before coming to DMNB? After I received my Ph.D. degree, I did 2.5 years of postdoctoral training on cancer immunotherapy in the Department of Microbiology and Immunology at Dalhousie University in Halifax.

Why did you choose to come to DMNB? When I was towards the end of my first postdoctoral training, a senior professor at Dal advised me to apply for a job at DMNB. I was told that the DMNB research lab is growing, it is a productive research environment, and it could be an opportunity to gain new experience and skills. I believe I am fortunate that I got that advice. She was right, and I want to thank her!

What sparked your interest in scientific research? When I was in high school, I came across an interesting article about genetic engineering and its promises to solve health and agricultural issues. That article sparked my curiosity in scientific research, and I wanted to make it my life-long career. So, in university, I chose the biological sciences field in the hope that I could continue in the field and one day become a scientist. Today, I am doing something I love, planned for, and working in an exciting research field hoping that the outcome of my research could contribute to a discovery that saves people's lives.

What is your research about? I study Multiple Myeloma (MM), a deadly bone marrow cancer treated by several potent drugs. However, patients eventually relapse, and their disease becomes resistant to the drugs. Activating the immune system to attack the cancer cells is one of the exciting advancements that have been made in cancer treatment. I focus on an immune cells type called natural killer (NK) cells that can recognize and kill virus-infected and cancer cells. The main goal of my project is to study the [NK cell characteristics in MM patients -check our article-](#) and the strategies to improve the NK cell's ability to attack the MM cells. I am focusing on several proteins on the surface of the NK cell that can receive deactivating signals from the cancer cells. These signals allow the cancer cell to escape the NK cell attack. Our studies could assist in developing strategies to block these signals, allowing the NK cells to detect and attack the cancer cells.



What excites you most about your research? Thinking about my research as a giant puzzle and filling any gap in that puzzle could guide to solve it. That excites me because it makes me feel that we the are close to solving a life-threatening issue.

What it is like to be a trainee at DMNB? Other than challenging my experiments, working in a shared lab of four PIs with each one having a unique research interest and applying different research techniques makes my work at DMNB a worthwhile experience. That makes me knowledgeable on various research techniques, equipment, and tools that I could use in the future. Trainees and people at DMNB are epic and interacting with them is great.

If you could go back in time, what advice would you give your "younger self"? I wish. So, I would advise the younger Helmi to do many things. Use the time adequately. Put first things first. Learn and acquire new skills. Be kind, try first to understand, then to be understood. Believe win-win and use it. Be proactive. Know it's okay to be different, it's okay to try a different direction, don't be afraid of making a mistake(s). It's okay to not know the answer, don't be reluctant to ask. The worst they can say is "No."

Where do you see yourself five years from now? Honestly, it's hard to know exactly where I see myself or where I will be in five years. But I do know that I love being a scientist and an educator. Researching and exploring new methods to prevent and cure diseases like cancer and transfer knowledge to students and trainees and help them understand things to solve health issues. So, in five years, I still want to do scientific research, mentoring and educating students to help them improve their skills and scientific research experience.

What do you like to do in your spare time for fun? I love to spend my spare time at home with my children, playing board games and watching kids' animations with them and go with them for ice skating and a family swim. In the summer I love to do gardening. I find it is a good therapy and stress relief.

Dalhousie Faculty of Medicine New Brunswick Researchers

1. Canada East Spine Centre

Funding/Awards:

Mentorship Award (1st). Erin Bigney*, 2021 Women of Inspiration- Universal Womens Network [Erin Bigney – 2021 Women of Inspiration™ Mentorship Award - Universal Womens Network™](#)

Best Poster Presentation Award (1st). McPhee R*, Rogers S, Manson N, Bigney E, Vandewint A, Richardson E, El-Mughayyar D, Abraham E. Impact of Undergoing Thoracolumbar Surgery on Patient Psychosocial Profiles. Poster. Health Research Week 2021- New Brunswick Health Research Foundation, Nov 2021.

Best Poster Presentation Award (2nd). El-Mughayyar D*, Adams T, Cunningham E, Bigney E, Richardson E, Abraham E, Manson N, Attabib N, Hebert J. Healthcare Utilization and Surgical Wait Time Predict Postoperative Trajectories of Disability and Arm Pain Following Anterior Cervical Discectomy and Fusion Surgery for Cervical Radiculopathy. Poster. Health Research Week 2021, New Brunswick Health Research Foundation, Nov 2021.

Best Abstract Award (2nd). Hathi K, Bigney E, Richardson E, Alugo T, El-Mughayyar D*, Vandewint A, Manson N, Abraham E, CSORN Investigators, Abraham E & Attabib N. Minimally Invasive vs. Open Surgery for Lumbar Spinal Stenosis in Patients with Diabetes - A CSORN Study. Podium. 5th Saudi Spine Society Annual Conference, Nov 2021.

Publications:

Charalampidis A, Canizares M, Kalsi PS, Wu PH, Johnson M, Soroceanu A, Nataraj A, Glennie A, Rasoulinejad P, Attabib N, Hall H. Differentiation of pain related functional limitations in surgical patients with lumbar spinal stenosis (LSS) using the Oswestry Disability Index: a Canadian Spine Outcomes and Research Network (CSORN) study. *The Spine Journal*. 2021 Oct 23. <https://doi.org/10.1016/j.spinee.2021.10.008>

Karim SM, Cadotte DW, Wilson JR, Kwon BK, Jacobs WB, Johnson MG, Paquet J, Bailey CS, Christie SD, Nataraj A, Attabib N, Phan P, McIntosh G, Hall H, Rampersaud R, Manson N, Thomas KC, Fisher CG, Dea N, on behalf of the Canadian Spine Outcomes and Research Network (CSORN). Effectiveness of Surgical Decompression in Patients With Degenerative Cervical Myelopathy: Results of the Canadian Prospective Multicenter Study. *Neurosurgery*. 2021 Nov;89(5):844-51. <https://doi.org/10.1093/neuros/nyab295>

Evaniew N, Charest-Morin R, Jacobs WB, Johnson M, Bailey CS, Christie S, Paquet J, Nataraj A, Cadotte DW, Wilson JR, Craig M, Xu M, Manson N, Hall H, Thomas KC, Rampersaud YR, McIntosh G, Fisher CG, Dea N, Canadian Spine Outcomes and Research Network (CSORN). Cervical Sagittal Alignment in Patients with Cervical Spondylotic Myelopathy: An Observational Study from the Canadian Spine Outcomes and Research Network. *Spine (Phila Pa 1976)*. 2021 Nov <https://doi.org/10.1097/brs.0000000000004296>

MacLennan, M. H., El-Mughayyar, D., & Attabib, N. (2021). Double-level noncontiguous thoracic Chance fractures treated with percutaneous stabilization: illustrative case, *Journal of Neurosurgery: Case Lessons*, 2(23), CASE21564. Dec 2021 <https://thejns.org/caselessons/view/journals/j-neurosurg-case-lessons/2/23/article-CASE21564.xml>

Presentations:

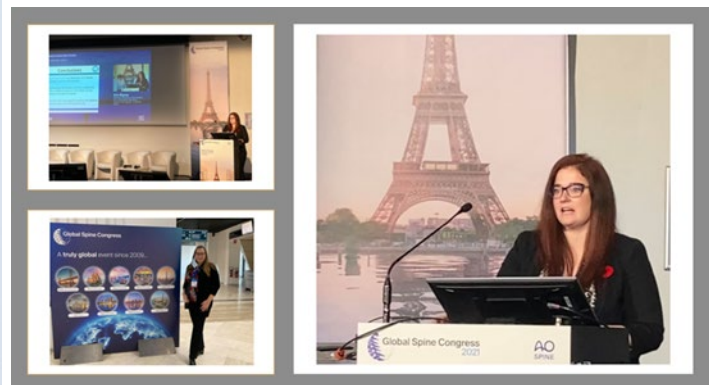
Hathi K, Bigney E*, Richardson E, Alugo T, El-Mughayyar D, Vandewint A, Manson N, Abraham E, CSORN Investigators, Abraham E & Attabib N. Minimally Invasive vs. Open Surgery for Lumbar Spinal Stenosis in Patients with Diabetes - A CSORN Study. Podium. AO Global Spine Congress. Nov 2021, Paris, France.

Hathi K, Bigney E, Richardson E, Alugo T, El-Mughayyar D*, Vandewint A, Manson N, Abraham E, CSORN Investigators, Abraham E & Attabib N. Minimally Invasive vs. Open Surgery for Lumbar Spinal Stenosis in Patients with Diabetes - A CSORN Study. Podium. 5th Saudi Spine Society Annual Conference, Nov 2021.

McPhee R*, Rogers S, Manson N, Bigney E, Vandewint A, Richardson E, El-Mughayyar D, Abraham E. Impact of Undergoing Thoracolumbar Surgery on Patient Psychosocial Profiles. Poster. Health Research Week 2021- New Brunswick Health Research Foundation, Nov 2021.

El-Mughayyar D*, Adams T, Cunningham E, Bigney E, Richardson E, Abraham E, Manson N, Attabib N, Hebert J. Healthcare Utilization and Surgical Wait Time Predict Postoperative Trajectories of Disability and Arm Pain Following Anterior Cervical Discectomy and Fusion Surgery for Cervical Radiculopathy. Poster. Health Research Week 2021, New Brunswick Health Research Foundation, Nov 2021.

Pictures:



2. SJRH Emergency Medicine Team

Recruitment:

- Code MI study site - investigating use of new troponin threshold for female patients, lab will report new cut offs (female <10 ng/L) (Dr. Chandra)
- Ongoing recruitment for ED fascia iliaca blocks (Drs. Edgar and Goss)
- Prospective data collection for airway registry is on-going (Drs. Chandra and Mekwan)
- Quality Assurance study in PoCUS archiving beginning January (Drs. Al Rashed and Lewis)
- Canadian COVID19 Rapid Response Network - continue to recruit COVID positive patients in the ED, please document vaccine status, type and date in ED chart (Dr. Chandra and Jackie Fraser)

Publications:

Olszynski P, Marshall RA, Olver TD, Oleniuk T, Auser C, Wilson T, Atkinson P, Woods R. Performance of an automated ultrasound device in identifying and tracing the heart in porcine cardiac arrest. *Ultrasound J* [Internet]. 2022;14(1):1. Available from: <https://doi.org/10.1186/s13089-021-00251-5>

Gaspari R, Weekes A, Adhikari S, Noble VE, Nomura JT, Theodoro D, Woo MY, Atkinson P, et al. Comparison of outcomes between pulseless electrical activity by electrocardiography and pulseless myocardial activity by echocardiography in out-of-hospital cardiac arrest; secondary analysis from a large, prospective study. *Resuscitation* [Internet]. 2021;169:167–72. Available from: <https://www.sciencedirect.com/science/article/pii/S0300957221003646>

Bell C, Murray H, Atkinson P. Is cardiothoracic point-of-care ultrasonography the future of heart failure diagnosis? *Can Med Assoc J* [Internet]. 2021 Nov 8;193(44):E1702 LP-E1703. Available from: <http://www.cmaj.ca/content/193/44/E1702.abstract>

Hohl CM, Rosychuk RJ, Hau JP, Hayward J, Landes M, Yan JW, Ting DK, Welsford M, Archambault PM, Mercier E, Chandra K, Davis P, Vaillancourt S, Leeies M, Small S, Morrison JM. Treatments, resource utilization, and outcomes of covid-19 patients presenting to emergency departments across pandemic waves: an observational study by the canadian covid-19 emergency department rapid response network (ccedrrn). Accepted *CJEM*

Atkinson PR. Ultrasound: Skills of carrying out abdominal aortic aneurysm assessment (AAA) [Internet]. *RCEM Learning* 2021 [cited 2021Nov24]. Available from: <https://www.rcemlearning.org/modules/ultrasound-skills-of-carrying-out-abdominal-aortic-aneurysm-assessment-aaa/>

Atkinson PR, Connolly JA, Jarman RD, Sloan JP, Wright J. Abdominal and cardiothoracic evaluation with sonography in shock (ACES) [Internet]. *RCEM Learning* . 2021 [cited 2021Nov24]. Available from: <https://www.rcemlearning.org/reference/abdominal-and-cardiothoracic-evaluation-with-sonography-in-shock-aces/>

