Comprehensive Research Experience for Medical Students (CREMS)
2022 Supervisor and Project Information Form

Please complete and return via email ONLY to crems.programs@utoronto.ca by **February 18, 2022**.

Supervisor Information

NOTE: CREMS will not support pre-determined pairings of students and supervisors. Supervisors must agree to open their projects to all students and interview all that are interested.

Name:
Antoine Eskander

Email:
antoine.eskander@mail.utoronto.ca

Department:
Otolaryngology-Head nd Neck Surgery

Hospital/Research Institution:
Sunnybrook

SGS Department(s) (if applicable):
IHPME

ORCID ID (see https://orcid.org/ - If you do not have an ORCID ID we encourage you to sign up for one)**:**
0000-0003-4326-1393

Location of Work:
Sunnybrook

Field of Research (up to 4 keywords):
patient reported outcomes, health services research, quality improvement, implementation science

Student contact time (number of hours per week YOU are available to the student for any concerns or to review progress)**:**
5

Project Information

NOTE: If this project is selected, this information will be posted on CREMS website for interested student applicants to view research opportunities.

PROJECT TITLE:

Enhanced Symptom Monitoring for Patients with Head and Neck Cancer

PROJECT DESCRIPTION:

Including background, aim(s), methodS and significance of the project. **Maximum 300 words.**

Background/Aim: Patients with cancer are faced with substantial treatment related adverse effects[1]. These adverse effects are often magnified for patients with head and neck cancer (HNC), a population which faces high rates of speech and swallowing impairments, facial disfigurement, and psychologic distress[2-5].

Increasingly, patients and oncologists are managing symptoms on an outpatient basis. Prompt symptom management in this environment is challenging but paramount. Ontario cancer patients currently struggle to quickly connect with providers between outpatient visits[6]. COVID-19 accelerated the adoption of digital health solutions to enable remote monitoring and patient-clinician communication [7 8]. Building off this momentum, we aim to develop a mobile app-based platform to facilitate real time symptom monitoring.

Methods: We have modified a platform for oncology patient symptom management, featuring artificial intelligence and evidence-based chatbot to automate symptom triage process (Figure). A web-based dashboard is available for providers to manage symptoms and analyze trends. When a concerning symptom is reported, the team is notified, and an automatic follow up protocol is triggered.

Over the course of the summer, the CREMS student will help further develop a bespoke version of this platform for Ontario HNC patients. This system will incorporate symptom severity scores, to further facilitate home symptom monitoring. A core multidisciplinary project team will lead the development, with the CREMS student playing a key role in gathering stakeholder perspectives. Stakeholder requirements will be elicited via interviews and summarized to inform technical specifications. The product will be pilot tested amongst patients, nurses and clinicians to ensure its seamless integration into clinical workflow.

Significance: Our goal is to lay the foundation for a next generation standardized symptom assessment program. Our research and knowledge translation team includes leaders within government and international cancer societies. This work will facilitate future quality improvement studies with opportunities to create a learning healthcare system.

References:

1. Cleeland CS. Symptom burden: multiple symptoms and their impact as patient-reported outcomes. *Journal of the National Cancer Institute Monographs* 2007;2007(37):16-21.
2. Bubis LD, Davis L, Mahar A, et al. Symptom burden in the first year after cancer diagnosis: An analysis of patient-reported outcomes. *Journal of Clinical Oncology* 2018;36(11):1103-11.
3. Noel CW, Sutradhar R, Zhao H, et al. Patient-Reported Symptom Burden as a Predictor of Emergency Department Use and Unplanned Hospitalization in Head and Neck Cancer: A Longitudinal Population-Based Study. *Journal of Clinical Oncology* 2021:JCO. 20.01845.
4. Noel CW, Forner D, Wu V, et al. Predictors of surgical readmission, unplanned hospitalization and emergency department use in head and neck oncology: A systematic review. *Oral Oncology* 2020;111:105039.
5. Noel CW, Eskander A, Sutradhar R, et al. Incidence of and Factors Associated With Nonfatal Self-injury After a Cancer Diagnosis in Ontario, Canada. *JAMA Network Open* 2021;4(9):e2126822-e22.
6. Noel CW, Du, J., Baran, E., Forner, D., Husain, Z., Higgins, K., Karam, I., Chan, K.W., Hallet, J., Wright, F., Coburn, N.G., Eskander, A., & Gotlib-Conn, L. . Enhancing Outpatient Symptom Management in Patients with Head and Neck Cancer: A Qualitative Analysis. . *JAMA Otolaryngology–Head & Neck Surgery* 2022

7. Marandino L, Necchi A, Aglietta M, et al. COVID-19 emergency and the need to speed up the adoption of electronic patient-reported outcomes in cancer clinical practice. *JCO oncology practice* 2020;16(6):295.
8. Ma D, Orner D, Ghaly MM, et al. Automated health chats for symptom management of head and neck cancer patients undergoing radiation therapy. *Oral Oncology* 2021;122:105551.

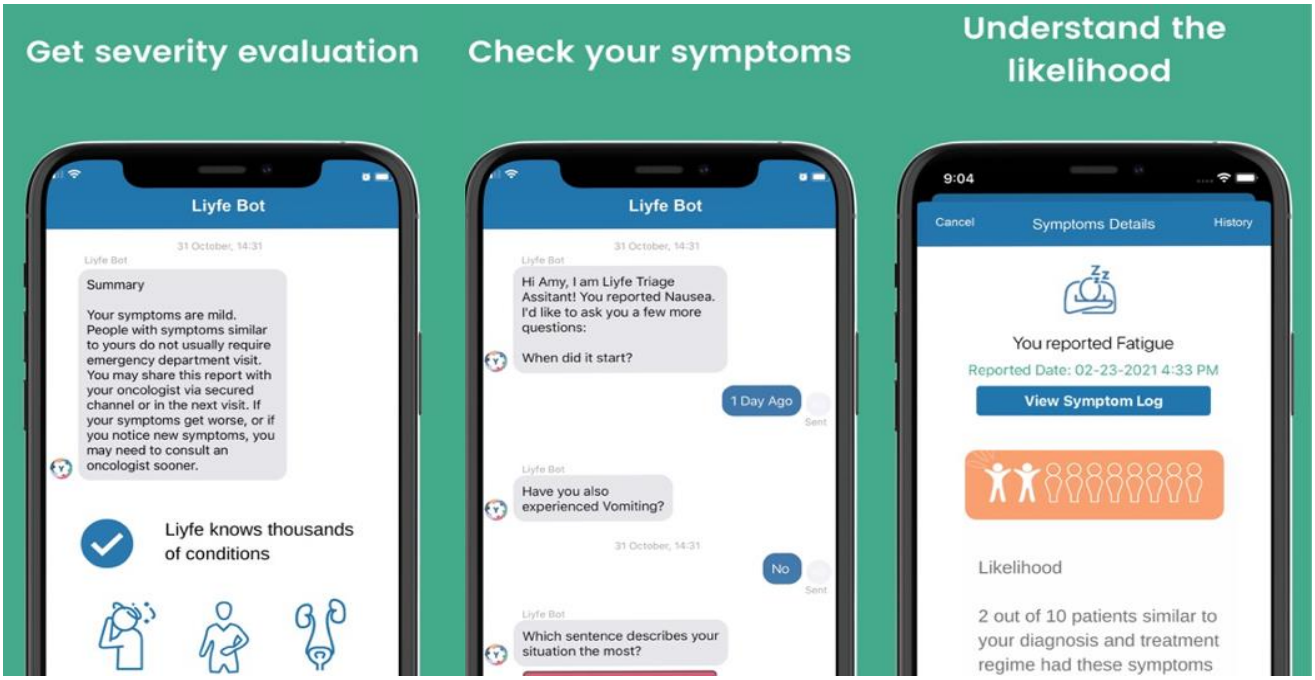

Figure: Remote symptom monitoring platform. The platform is a cloud-based app, available in both iOS and Android.

Is this project remote-capable (in case of new restrictions) or have an alternative remote option?

☒ Yes, remote capable ☐ No

☐ Yes, alternate remote option. Please specify (100 words max): Click or tap here to enter text.

If human subjects are involved, have the appropriate Research Ethics Board approvals been obtained?

☐ Yes ☒ No ☐ Not Applicable

If yes, please list the application submission date:

Do you expect this work will be published?

☒ Yes ☐ No ☐ Uncertain / Other

Research Environment and Student Roles and Responsibilities

Please be specific as possible. Please describe the research environment, including availability of required facilities/equipment/expertise, supervisor's experience and mentorship plans. Please clearly outline the student role(s) and responsibilities related to the project, potential educational value, and indicate who will serve as the student's direct report for daily oversight (PI, PHD student, technician, etc.). **Maximum 300 words.**

This project is fully supported through a Canadian Cancer Society Challenge Grant - #707299 ($439,095 CAD, January 2020-2023). The student would be working with Dr. Antoine Eskander who is a former CREMS scholar and UofT graduate – 1T0. The student will also be working with Dr Chris Noel, PGY3 Resident in ENT Surgery, 1T6 and former CREMS Scholar, as well as PhD Candidate in Clinical Epidemiology at IHPME. The student will therefore benefit from working with 2 previous graduates of the program with CREMS experience.

The project is planned to start and finish during the allotted time for CREMS. REB approval has already been obtained.

Prior CREMS students have had success in our lab, publishing in several high impact journals including, most recently, *JAMA Otolaryngology-Head and Neck Surgery*.

Dr. Eskander is an internationally recognized health services researcher with expertise in cancer system improvement. He has over 150 publications and 1.7 million dollars in active peer-reviewed grants as a principal investigator. He has published in some of medicines most recognized journals including *the New England Journal of Medicine, the Journal of Clinical Oncology, JAMA Oncology and JNCCN*.