Queen's University
February 5, 2025

Subject: Letter of Intent for Lung Ambition Awards

We are submitting this letter of intent to express our commitment to conducting research on healthcare disparities faced by immigrants and the impact of these potential disparities on healthcare access. Our research team consists of individuals with diverse backgrounds and expertise who are united in their goal to address the disparities in healthcare, particularly in lung cancer, and to inform policies that promote equitable access to care.

Our nominated principal investigator (PI), Dr. Bishal Gyawali (BG), is an early career clinician scientist with world-renowned expertise in health care disparities and cancer policy. Dr. Gyawali has practiced oncology in various healthcare settings, including Nepal, Japan, the US, and Canada. Dr. Gyawali's research has emphasized disparities in cancer care access and outcomes, both in high-income and low- and middle-income countries, as well as the financial toxicities associated with cancer treatments. Despite being early in his career, Dr. Gyawali has already published nearly 200 peer-reviewed papers, many in prestigious journals, such as *The Lancet*, *JAMA*, *NEJM*, *BMJ*, *JCO*, and others. His work has been instrumental in identifying inequities in cancer care, particularly in low-resource settings. Additionally, he has authored or coauthored several papers using the ICES database examining cancer outcomes in Ontario. Dr. Gyawali is deeply involved in international cancer policy work, contributing to committees at ASCO, ESMO, and the WHO, while also serving locally on the Patent Medicines Pricing Review Board, the CIHR-ICR Institute Advisory Board, and the GI Drug Advisory Committee for Cancer Care Ontario. His leadership role in the co-founding of the global patient-centric movement, *Common Sense Oncology*, aligns with his commitment to transforming cancer care globally.

Our nominated co-principal investigator (Co-PI), Dr. Don Wijeratne (DW), is a clinician scientist and associate professor who specializes in survivorship and healthcare access in chronic diseases. Having migrated from Sri Lanka, Dr. Wijeratne's clinical training and epidemiological expertise have guided his research focus on health inequities, especially regarding cancer survivorship. He has conducted numerous systematic reviews and population-level studies utilizing healthcare databases in Ontario. As part of pilot work for this proposal, Dr. Wijeratne has already published research on healthcare access among immigrants using population-level data.

Our diverse and highly skilled team also includes several co-investigators, each contributing expertise in areas such as cancer, health services research, health policy and knowledge translation, and population research. Several team members are ICES scientists, and others have experience working with the CIC database. Our team also boasts expertise in quantitative research methodology, qualitative and mixed-methods research, statistical analysis, and sex and gender analysis. All co-investigators have committed their time and resources to this project. Furthermore, our stakeholder group includes patient groups who are empowered by knowledge translation groups. In line with our commitment to equity, diversity, and inclusion, our research group includes multiple BIPOC members who bring valuable perspectives to the project.

We look forward to the opportunity to collaborate and contribute to this important work. Please do not hesitate to contact us should you need further information.

Sincerely,

Drs. Bishal Gyawali, Principal Investigator and Don Wijeratne, Co-Principal Investigator

Summary of proposal:

Understanding Disparities in Receipt of Guideline-Concordant Care Among Immigrants with Lung Cancer in Ontario- A mixed-method study.

There is strong evidence that immigrants, who comprise 1 in 5 individuals in Canada, are vulnerable to receiving poor patient-centered health care (Figure 1)[1]. While this question has been explored among immigrants broadly, there is a paucity of evidence focused on the Canadian immigrant population with cancer given their unique and complex care needs. Our project is designed to better understand potential disparities in access to cancer care among recent immigrants in comparison to longstanding Ontario resident counterparts by using Non-Small Cell Lung Cancer (~80% of lung cancers)[2], hereafter referred to as lung cancer, as the case example. Lung cancer was chosen given its high incidence, mortality, relevance to patients of all genders, and established standards of care for treatment that are well captured in population-level databases. This study will facilitate informed decision-making and changes to policy, education, and research.

We have two objectives:

1) To explore disparities in receipt of guideline-concordant care in recent immigrant vs longstanding Ontario resident patients with lung cancer
2) To explore and understand socio-demographic factors associated with healthcare access among recent immigrant patients with lung cancer,

Our study will employ a mixed-method design, drawing on the strengths of both quantitative [population-based retrospective cohort, using administrative data available at the Institute of Clinical Evaluative Sciences (ICES)] and qualitative methodologies. This approach was chosen to leverage the strengths of administrative databases in terms of study power, treatment, and outcome data while addressing limitations in the availability of immigrant-relevant variables related to health equity. This combined approach will inform our discussion on the effects of immigrant status and relevant variables on patient access to healthcare, the quality of care received, and survival. Our accrual window will include those who have a new diagnosis of lung cancer from 2013 to 2020. Individuals who meet our inclusion criteria will be followed up until a maximum of December 2024. A look-back window of two years prior to study inclusion will be done to help inform baseline characteristics and study inclusion.

For objectives 1, a quantitative study design will be employed. For objective 2, we plan to employ an explanatory multi-method design. For objective 2, a quantitative study will explore disparities in healthcare access unique to immigrant patients and will be followed by a qualitative study. The qualitative study will explore the unique experiences of immigrants with lung cancer accessing health services informed by the quantitative study to understand what services are not accessible for immigrants and why, and their interaction with sex and gender. In addition, we will explore immigrants' perspectives on how services can be improved to be more inclusive. The findings from both studies collectively will shed light on not only the current problems in accessing services but also understand what works and what needs to be improved.

Objective 1 will compare the following outcomes between recent immigrants vs longstanding Ontario resident patients with lung cancer. i) Receipt of guideline-concordant adjuvant systemic therapy for stage II and III lung cancer patients. Guideline-concordant adjuvant systemic therapy will be defined as the first receipt of adjuvant chemotherapy within 4 months after surgical resection, consistent with the recommendations from major lung cancer guidelines[3]. Targeted therapy or immunotherapy will not be considered as adjuvant therapy as they have only been available in Canada since 2022. Stage I disease is not included here because the benefit of adjuvant systemic therapy is not straightforward[4] and guidelines are not necessarily consistent[5].

ii) Access to guideline-recommended early palliative care, defined as palliative care within 8 weeks of diagnosis of advanced lung cancer (stage IV), consistent with the definition used in the seminal Temel et al. trial and others that established early palliative care as the standard of care in patients with stage IV lung cancer[6,7]. Patients diagnosed with stage IV lung cancer have an estimated prognosis of less than one year, and should receive early palliative care within eight weeks of diagnosis[6]. The timing of delivery of palliative care will be identified based on a unique set of physician claim codes, which has been previously validated[8]. Bivariable and multivariable Poisson regression analyses with a modified robust variance will be used to independently assess these outcomes, while accounting for known confounding factors. Given the potential confounding effects of the COVID-19 pandemic on cancer care, a sensitivity analysis will be conducted by removing all patients with a diagnosis or follow-up occurring after March 2020, and those who die during the follow-up period. If there are no significant differences from the analysis, the full-cohort analysis will be presented. These methods have been used previously[9-11]. If deemed significant results of all additional analyses will be presented separately to describe variability in our results.

Objective 2 will seek to explore and understand socio-demographic factors associated with healthcare access among recent immigrant patients with lung cancer. Among recent immigrants, we will assess the effect of specific socio-demographic variables only available in the IRCC database in addition to known important prognostic factors on receipt of adjuvant systemic therapy and access to palliative care[12]. These variables of interest include Canadian language ability (language ability will be measured dichotomously as knowledge of an official language of Canada (English, French or not), date of landing (to determine duration of time spent in Canada), educational qualification (measured categorically), skill level of occupation (e.g., managerial, skilled/technical) measured categorically, region of origin, and family status (dichotomized as married/common-law or other)[13]. Confounders include age, sex, comorbidities, SES, stage, tumor grade, and area of residence will be evaluated[14]. We will analyze these associations using both bivariable and multivariable modified Poisson regression models accounting for potential confounding variables.

We will qualitatively explore the experience of immigrants accessing lung cancer-related services given the inherent limitations of ICES data in describing health equity. We will use the purposive (non-probability) sampling method to ensure the inclusion of diverse individuals in terms of ethnicity, sex, gender, age, and duration of time in Canada. Interviews will be conducted within 6-12 months of their lung cancer diagnosis. This period was selected as most patients would have completed the majority of their therapy and still recall their experiences in their cancer journey. The interviews will be audio-recorded and transcribed by a professional transcriptionist. Interview transcripts will be thematically analyzed[15]. Data will be analyzed as collected and data collection will stop when the last 3 interviews do not add to the study themes (i.e. data saturation).Gender constructs will be applied to the findings of our qualitative study by triangulating findings using available self-reported equity measures[16].

Knowledge translation - The findings obtained through this study will be communicated to provincial and national bodies such as Lung Cancer Canada and different patient advocacy groups to better inform future strategic planning of cancer care delivery to potentially vulnerable populations. These stakeholders have already partnered for this study as knowledge users. This project will be navigated through a strategic planning committee consisting of clinicians, researchers and patients from concept to completion, which consists of physicians and other healthcare workers, representatives of cancer care and immigrant health bodies, and patient partnerships.

Impact Statement:

Our knowledge of immigrant health in Canada is inconsistent. New immigrants arriving in Canada may be healthier than the general population, a phenomenon known as the healthy immigrant effect (HIE)[1-7]. A Canadian systematic review found evidence supporting the HIE among adult immigrants, specifically among those with chronic disease, mental health, disability, functional limitation, and risk behaviour outcomes. Individuals who choose to migrate are often in relatively good health and undergo prior health screening. Despite the initial HIE, evidence has shown that immigrant health worsens over time, narrowing the gap and sometimes even worse health outcomes than long-standing Ontario residents. Another school of thought is that immigrants, due to an array of reasons have poor access to healthcare and may have worse outcomes from the beginning. The timing of when this occurs, why it occurs, and for who it occurs is very poorly understood.

Healthcare access is conceptualized through five domains: i) Approachability; ii) Acceptability; iii) Availability and accommodation; iv) Affordability; and v) Appropriateness[8]. Immigrants are more susceptible to vulnerabilities in each of the above healthcare access domains. Immigrants' healthcare and well-being are strongly influenced by social, environmental, and personal factors. Linguistic and economic challenges as well as limited health literacy, difficulties with system navigation, or fear of stigma are barriers that may affect access to healthcare by recent immigrants to Canada. These adverse effects may be further compounded among specific sub-populations of immigrants, including the elderly and those living with chronic conditions.

Lung cancer screening is not a routine practice in Ontario, and only high-risk individuals qualify for the program. A lung cancer diagnosis is primarily made from symptomatic presentation. Furthermore, there is an unequivocal role for adjuvant systemic therapy after resection of early lung cancer. Therefore, lung cancer is an ideal disease to study disparities in cancer care across the journey of treatment- from presentation to treatment.

This study will help provide an in-depth understanding of potential disparities in lung cancer care in immigrant vs longstanding Ontario resident patients. This project has the potential to provide seminal results on an under researched, important topic regarding a potentially underserved and underrepresented marginalized population, addressing disparities to improve equity. This work will facilitate informed and actionable strategies targeted at immigrants to improve their access to lung cancer related healthcare. We consider this project the start of an integrated knowledge translation (KT) project[9], and we have established an advisory panel that comprises clinicians, researchers, representatives from lung cancer Canada, patient/immigrant advocates and representatives with lived experience. Through the production of KT material and in partnership with our stakeholders and Queen's University we believe the findings of this study will be used to help inform policies that are targeted at aiding patients with lung cancer from immigrant communities to receive the highest quality cancer care. This is a project that helps identify systemic barriers and ways to overcome them in cancer care provision. The generalizability of this study's findings will enable the future study of disparities in other immigrant populations and health conditions.

Figures:

HIE = Healthy Immigrant Effect; SES = Socioeconomic status

Figure 1: Conceptual model adapted from Levesque et al., of a patient's healthcare journey and associated factors

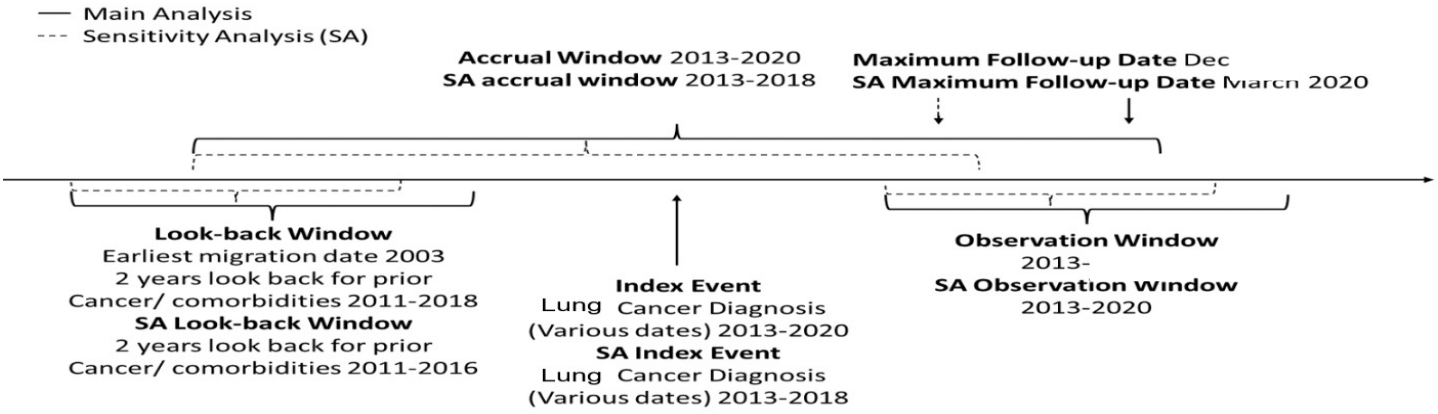

Figure 2: Timelines based on availability of variables in ICES databases

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References - Impact Statement

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2. Halli SS, Anchan JP. Structural and behavioural determinants of immigrant and non-immigrant health status: Results from the Canadian community health survey. Journal of International Migration and Integration / Revue de l'integration et de la migration internationale 2005;6:93.
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Non-scientific summary:

Immigrants make up a significant component of the Canadian population. However, they may experience environmental, personal, socioeconomic, and cultural barriers to receiving high-quality health care. This may also be worsened by other factors including language barriers, lack of understanding of the Canadian healthcare system, and financial status, among others. Such barriers can put immigrant populations at a higher risk for poor health outcomes. However, this has not been formally studied in the cancer population. Lung cancer provides a unique opportunity to study the inequities in access to cancer care by immigration status because it affects all genders and is a common cause of cancer and cancer-related death. Thus, it is important that we study the differences in receiving treatment, and follow-up among the immigrants versus longstanding Ontario residents. Our research team is made up of a diverse range of scientists with different skill sets including contributors with experience in immigrant research, cancer research, and different research methods. The perspective of immigrant patients and cancer groups will also be an integral component of this research. This study will be conducted using routinely collected healthcare data by the province of Ontario to assess differences in outcomes (such as receipt of treatment or death) between immigrants and longstanding Canadian residents. We will explore factors that may be contributing to these disparities, and conduct in-depth interviews with immigrant patients. The findings of this research will help to come up with an action plan to address any identified disparities and barriers to accessing health care. Ultimately, we hope to improve the quality of cancer care for immigrants.

Budget

Total: $50,000

Program Expenses and Services (totals will include HST where applicable)

Expenses

Digital Recorders

Sony digital recorders ICD-UX533 will be used to record (n=15) interviews with immigrant patient representatives. Equipment is valued at $500.00 each, and two devices are required.

Total: $1000.00

Laptop Computers

There is a requirement for one laptop for the project manager at the Queen's site, which is not covered by departmental operational budget at Queen's. There is a requirement for a second laptop for the Principal Investigator. The laptop will be used for research activities including data analysis, communications with the research team, and report writing. The laptop performance, including processing speed, was considered for selecting a suitable model. Each laptop is $983.00.

Total: $1,975.00

Honoraria

Gift cards valued at $50 will be provided to participants as compensation for their time participating in the study.
;
Total: $750.00

Knowledge Translation (counted under expendables)

Knowledge Translation Meetings

We propose three face to face meetings for the purpose of result interpretation and collation (see objective

3) and knowledge translation. The first focus group meeting will involve study team members and major stakeholder representatives held in Kingston, Ontario. The budgeted amount is $3000, which is inclusive of flight and travel costs, accommodations, and meals for the 5 stakeholder members travelling to Kingston.

The second meeting will involve PI Dr. Bishal Gyawali and a trainee travelling from Kingston, ON to meet with the Canadian partnership against Cancer (CPAC) colleagues in Toronto, ON. This meeting will be conducted on the same day as travel and will cost approximately $500.

The third, will involve PI Dr. Bishal Gyawali travelling from Kingston to meet with various immigrant groups and knowledge users with a student. The budgeted amount for this is $1,000, which includes travel costs, accommodations, and meals.

Total: $4,500

Publication Fees

It is anticipated that this study will produce four publications, with at least one major publication requiring open access fees. As per CIHR Open Access Policy, we will ensure these articles are freely available.

Fees for open access for various publications, such as The Lancet Oncology or JAMA Oncology are $5,000 USD ($6,500 CAD). The other publication fees are estimated at $1,500 each.

Year 4: An estimated 1 publications: $6500

Year 5: An estimated 3 publications: $4500

Total: $11,000

Services

ICES Contracted Data Services

Under Ontario Privacy legislation, the Institute for Clinical and Evaluative Sciences (ICES) is a Prescribed Entity, which permits ICES to hold and use administrative, population health, clinical and other data files for the purposes of analysis, evaluation, and decision support. Access to ICES data is governed by policies and procedures that comply with the requirements of the Information and Privacy Commissioner of Ontario. ICES is responsible for ensuring that the necessary infrastructure (i.e. privacy office, data linkage and security measures, data sharing agreements) is in place to comply with these policies and to maintain the integrated secure data platform.

This research project will be conducted at the ICES@Queen's Health Services Research Facility site, although some services and costs are incurred by the ICES-Central location where the data platform physically resides.

ICES is a non-profit corporation and presently must recover most of the costs of research (fixed and variable) through a charging process. ICES is not part of, or affiliated with, a university or major teaching hospital and does not benefit from large infrastructure investment. As a result, it is necessary to include some fixed as well as all variable costs in the charges for work done.

This project will require the resources of an ICES Analyst. This will include oversight and quality assurance costs. In the first year of the study, the time allocation is 0.5 FTE.

Year 1:

- Import ICES data to create the project cohort
- Assist with form completion
- Participate in the development and finalization of the Dataset Creation Plan including troubleshooting data definitions
- In consultation with study investigators, assist the statistical analysis

Year 2:

- In consultation with study investigators, conduct data analyses
- Produce Tables, Reports, etc.
- Participates in the production of manuscripts and reports

Analyst costs: $26,000.00

Total: $26,000

Interpreter Services

We estimate that half participants (15) will require interpretation service for the interviews. The estimated time to interview with support of an interpreter is twice as much needed for interviews in English. Interpreter services cost $100.00 per hour.

Year 3: 15 participants *1.5 hours * $100 = $2,250

Total: $2,250

Transcription Services

We estimate total transcription services for all recorded interviews to cost $1.5 per minute of audio. We will have 45 minutes-1.5 hour interviews with each participant and an estimated 15 participants

Year 3: 15 participants * 90 minutes* 1.5 = $2,025

Total: $2,025

Travel to Interviews

As not all interviews will take place in Kingston, travel to perform interviews will be requires. An estimated about of $500 is needed to cover travel expenses and meals while on route for our interviewers and interpreters

Year 3: $500.

Total: $500.00

February 28, 2024

DEPARTMENT OF ONCOLOGY
Kingston Health Sciences Centre
Cancer Centre of Southeastern Ontario
25 King Street West
Kingston, Ontario, Canada K7L 5P9
Tel 613-544-2631 x 4144
Fax 613-544-9708
E-mail: Khaled.Zaza@kingstonhsc.ca

LUNG CANCER CANADA
Lung Ambition Awards

RE: Letter of support for Dr. Bishal Gyawali's and Dr. Thiwanka Wijeratne's application to Lung Cancer Canada, Lung Ambition Awards

Dear Lung Ambition Awards Committee members,

I am pleased to write a very strong letter of support for Drs. Gyawali and Wijeratne's application to Lung Cancer Canada, Lung Ambition Awards.

The proposed project is designed to better understand potential disparities in access to cancer care among recent immigrants. This research project aligns well with our departmental priorities, is quite feasible and is well supported by our institution. Our department has a proven track record of health services research and collaboration using Queen's Institute for Clinical Evaluative Sciences (ICES) database.

Dr. Gyawali is as an Associate Professor in the Department of Oncology at Queen's University. He has a stellar research and publication portfolio and is one of a handful with proven ability to have a global impact on advancing cancer control.

Dr. Thiwanka Wijeratne, who will be supporting this project as a co-investigator, is an Associate Professor of General Internal Medicine at the Department of Medicine and the Department of Public Health, Queen's University. He is an Adjunct Scientist, Cancer Care and Epidemiology and has a great experience in immigration research. He will be collaborating with Dr. Gyawali on this project.

Both Drs. Gyawali and Wijeratne have the required protected time for this research as well as an excellent background of building successful and impactful collaborations with different stakeholders. The Department remains committed to providing maximal required support. This award will provide a much-needed operating support for this project to be successful.

I strongly endorse this application.

Sincerely,

Khaled Zaza, MB, BCh, MSc, FRCPC
Radiation Oncologist, Associate Professor
Interim Head, Department of Oncology
Faculty of Health Sciences, Queen's University

Kingston Health Sciences Centre
Centre des sciences de la santé de Kingston

Kingston Health Sciences Center
76 Stuart Street
Kingston, Ontario, Canada K7L 2V7
Tel 613-548-3232

August 29, 2024

Queen's University
Drs. Bishal Gyawali and Thiwanka Wijeratne

Re: Letter of support

Dear Drs. Bishal Gyawali and Thiwanka Wijeratne,

It is my pleasure to submit this letter as a statement of support as a stakeholder and knowledge user for your research being conducted on access to health care and the healthcare disparities experienced by immigrants.

I believe the knowledge and previous work of your team are uniquely suited to examine this research topic. As a member of the SouthEast Regional Cancer Program Patient and Family Advisory Council, research into this area is of great interest to me and we welcome the opportunity to support you in ensuring the perspective of those your research will serve be integral to your project.

In conclusion, I fully support the efforts of you and your team as you work to secure external funding to support this research targeting healthcare access among immigrants. If you are successful in getting it funded, we would like you to come to the Cancer PFAC, to share information about their next steps and how individuals from the patient population how they will serve and will be engaged.

Sincerely,

Marla Rosen

SouthEast Regional Cancer Program
Patient and Family Advisory Council

August 16, 2024

Dr. Jennifer Flemming, ICES Adjunct Scientist, Co-Investigator
Queen's University
Kingston, ON K7L 3N6

RE: Understanding Disparities in Receipt of Guideline-Concordant Care Among Immigrants with Lung Cancer in Ontario. A multi-method study

Nominated Principal Investigator: Dr. Thiwanka Wijeratne

Dear Drs. Flemming and Wijeratne,

ICES is pleased to support your funding application for the grant titled "Understanding Disparities in Receipt of Guideline-Concordant Care Among Immigrants with Lung Cancer in Ontario. A multi-method study." As an ICES Scientist named as a co-investigator on this application, you will be provided with access to ICES resources – including personnel and data – if your funding application is successful.

ICES' mission is research excellence resulting in trusted evidence that makes policy better, health care stronger and people healthier. ICES houses a vast and secure array of large, linkable and anonymized health-related databases including administrative and demographic datasets, population-based surveys, disease registries and electronic medical records. ICES goes to great lengths to protect privacy, follows provincial privacy legislation and is recognized as an international leader in maintaining the security of health information.

While your proposed project falls within the general mandate of ICES, it is not on our schedule of deliverables and therefore we cannot cover the costs from our own budget. In addition to including the cost of ICES research staff time to work on your project, the ICES Contracted Research and Data Services rates included in your budget include a portion of the personnel costs (proportional to the size and complexity of the project) of acquiring and preparing ICES data holdings for use by researchers. This includes staff time for data linkage, encoding of identifiers, documentation, quality assurance, technology services and privacy, legal and cybersecurity services. These rates do not include costs incurred for the indirect support of research or for non-research activities.

Thank you for taking the initiative to obtain funds from the Canadian Institutes of Health Research.
I wish you every success with your application.

Yours sincerely,

Michael J. Schull MSc, MD, FRCPC
CEO

LUNG CANCER CANADA
AWARENESS. SUPPORT. EDUCATION.

CANCER PULMONAIRE CANADA
SENSIBILISER. SOUTENIR. ÉDUQUER.

August 29, 2024

Dr. Don Thiwanka Wijeratne
Associate Professor
Department of Medicine, Division of General Internal Medicine
Queen's University
Kingston, ON K7L 3N6

RE: Understanding Disparities in Receipt of Guideline-Concordant Care Among Immigrants with Lung Cancer in Ontario. A multi-method study

Dear Dr. Wijeratne,

Lung Cancer Canada is pleased to support your funding application for a grant related to cancer care disparities among immigrants. Part of our mandate is "to support and advocate for lung cancer patients and their families,", and improve access to care. Understanding the cancer care journey for immigrant patients with lung cancer will help identify gaps where improvements can be tailored to ultimately improve lung cancer outcomes in these populations.

Sincerely,

Shem Singh
Executive Director
Lung Cancer Canada

List of Co-PI's: Drs. Bishal Gyawali, Principal Investigator and Don Wijeratne, Co-Principal Investigator

List of Co-Applicants: Matt Jalink, Meghan Bowman and Drs. Setareh Ghahri, Jennifer Flemming, Lu Zihang, Jean Mathews, Andrew Robinson, Paula Rochon, Aisha Lofters