

## MEDICAL IMAGING ACCESS ISSUES FOR NON-CANCER PATIENTS: PET IN DEMENTIA, HEART DISEASE AND INFLAMMATORY DISORDERS

Draft Briefing Note – not yet finalized

**PURPOSE:** Nuclear medicine physicians in regional health authorities are seeking clarity on a provincial strategy to provide PET-CT tests for non-cancer patients, which constitute approximately 1/3 of overall referrals for PET-CT nationwide.

### BACKGROUND: PET IMAGING FOR NON-CANCER INDICATIONS

- A PET radiopharmaceutical is a drug labeled with a small amount of radioactive material that is injected into a patient who is then imaged in a PET-CT scanner to diagnose various conditions
  - Examples include FDG, a radioactive sugar commonly used to diagnose cancers, infection and dementia, Rubidium 82 chloride used to diagnose heart disease
- In Canada, 34% of PET scans are for non-cancer related indications<sup>1</sup>.
- **Non-cancer related PET indications NOT accessible in BC include<sup>1</sup>:**
  - Assessment of dementia and movement disorders (available in 7/10 provinces)
  - Assessment of infectious and inflammatory conditions (available in 6/10 provinces)
  - Assessment of ischemic heart disease (available in Ontario, Alberta and Quebec)
- ***Older nuclear medicine tests used instead of PET have several disadvantages:***
  - Longer tests often performed over multiple days, ***harder for patients to tolerate***
  - Inferior diagnostic performance to PET, ***higher rates of missed or incorrect diagnoses***
  - ***Require more technologist work hours*** in a time of significant staff shortages<sup>2</sup>
  - Often have ***higher operational costs than PET*** (refer to Table 1 below)
- PHSA conducted extensive consultations with medical experts and healthcare administrators and concluded that at a Tier 4 facility (regional hospital providing comprehensive medical services), standard imaging services delivered should include access to PET for non-cancer indications<sup>3</sup>
- BC is the only province in Canada where PET is solely operated by a cancer agency. BC Cancer indicated they will not expand services at BCCA facilities to include PET for non-cancer patients without a directed mandate from the Ministry of Health.
- ***No systematic strategy has been identified by the Ministry of Health to address patient needs for non-cancer indications for PET in British Columbia.***

### OTHER CONSIDERATIONS: THE GENERAL STATE OF NUCLEAR MEDICINE IN BRITISH COLUMBIA

- Nuclear medicine physicians both diagnose and treat diseases using radiopharmaceuticals.
- Approval of a new radiopharmaceutical treatment for prostate cancer (Pluvicto) has meant rapid expansion of services in community nuclear medicine departments over the last 6 months.
- We face a ***substantial national and provincial shortage of nuclear medicine technologists<sup>2</sup>***, this has been exacerbated by therapy expansions and is expected to worsen in coming years.
- In a 2022-2023 national survey, ***over 64% of medical imaging equipment in Nuclear Medicine in BC was above the recommended replacement age<sup>4</sup>***. Many older generation SPECT-CT units could be transitioned to PET-CT to modernize departments to meet current practice standards.

## NUCLEAR MEDICINE SPECIALISTS UNITE TO CALL FOR ACTION ON UNMET PATIENT CARE NEEDS:

Given our common concern over these issues, nuclear medicine specialists from all regional health authorities and BC Cancer have partnered with our national specialty association, the Canadian Association of Nuclear Medicine to form a provincial chapter with the goal of advocating for unmet needs of the patients we serve in British Columbia.

We understand the challenges of the current fiscal environment, however if we work smarter, modernizing the field of nuclear medicine has the potential to not only improve clinical outcomes, but also save money, as ***most PET-CT tests conducted in the evaluation of infection, dementia and heart disease have lower or comparable operational costs to existing tests.***

**Table 1: Examples of local cost comparisons PET vs SPECT in British Columbia (Island Health Data):**

| Clinical Question        | Comparable Tests                         | Days in department | Time on equipment                                            | Operational Costs*                                                                              | Relative test performance                     |
|--------------------------|------------------------------------------|--------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Spinal Infection         | <b>Old test:</b> Bone and Gallium scan   | <b>3</b>           | 68 minutes**                                                 | <b>\$1063.41</b>                                                                                | PET more accurate                             |
|                          | <b>New test:</b> FDG PET-CT              | <b>1</b>           | 20 minutes                                                   | <b>\$625</b>                                                                                    |                                               |
| Vascular Graft Infection | <b>Old test:</b> White cell scintigraphy | <b>2</b>           | 114 minutes**                                                | <b>\$853.11</b>                                                                                 | Similar accuracy, PET more convenient         |
|                          | <b>New test:</b> FDG PET-CT              | <b>1</b>           | 20 minutes                                                   | <b>\$625</b>                                                                                    |                                               |
| Dementia Imaging         | <b>Old test:</b> ECD Brain SPECT-CT      | <b>1</b>           | 30 minutes                                                   | <b>\$585</b>                                                                                    | PET substantially more sensitive and specific |
|                          | <b>New test:</b> FDG PET-CT Brain only   | <b>1</b>           | 10 minutes                                                   | <b>\$600</b>                                                                                    |                                               |
| Ischemic Heart Disease   | <b>Old test:</b> Sestamibi SPECT-CT      | <b>2</b>           | 20 minutes in stress lab<br>40 minutes on camera over 2 days | <b>\$334.88</b>                                                                                 | PET substantially more sensitive and specific |
|                          | <b>New test:</b> Rubidium PET-CT         | <b>1</b>           | 30 minutes on equipment including stress                     | 8 scans/day <sup>+</sup> :<br><b>\$366.06</b><br>12 scans/day <sup>+</sup> :<br><b>\$257.36</b> |                                               |

\*Operational costs include cost of radiopharmaceutical, consumables and technologist and nursing work hours in Island Health. Estimates for FDG PET are based on communications with BCCA in July 4, 2022 on per scan costs at BCCA Victoria, \*\*Time on equipment variable for individual patients, based on average results of a 2020 internal audit <sup>+</sup>Rubidium 82 comes from a generator and has lower costs if used more frequently in the day

## WHY SHOULD BC PATIENTS AND TAXPAYERS CARE ABOUT PET FOR NON CANCER PATIENTS?

- PET can lower operational costs compared to existing tests:** Capital equipment investment costs are higher for PET-CT cameras than SPECT-CT cameras (older generation equipment), but most studies performed on SPECT-CT are performed substantially faster using PET-CT with lower operational costs per scan than PET studies. Differences in capital costs for modern equipment can be raised through community support or CFI grants.

- **A better test means fewer missed, delayed or incorrect diagnoses:** PET is both better at picking up many diseases earlier and is more specific than existing tests. Patients get needed care faster for less money, also eliminating patient hardship and added system costs of misdiagnosis
- **PET frees up technologists for new nuclear medicine cancer therapies:** Short term workforce demand for technologists can only be met by working smarter. PET studies use less manpower than older techniques, freeing up more technologists to deliver emerging cancer therapies.

#### **NEXT STEPS: HOW CAN GOVERNMENT ADDRESS THIS UNMET PATIENT CARE NEED?**

To our knowledge, the Ministry of Health has never actually denied access to PET for non-cancer indications, rather it has never been asked to develop a plan to address this unmet care access need.

A dedicated Cardiac PET program at St. Paul's set to launch in 2027 has been approved by the Ministry of Health. Apart from this, no engagement has been attempted with stakeholders providing nuclear medicine services in other health authorities on implementing PET access for non-cancer patients.

A specific list of unmet clinical needs is best summarized in a publication of the Institut national d'excellence en santé et services sociaux (INESSS) in Quebec<sup>5</sup>. This document provides a comprehensive evidence-based list of PET indications outside the cancer setting.

In order to bridge existing care gap for access to PET in these vulnerable patient populations, **the undersigned nuclear medicine physicians recommend the following actions:**

1. We recommend adoption of the Quebec guidelines<sup>5</sup> as a list of appropriate indications for PET in neurologic disorders, heart disease and inflammatory conditions.
2. We ask the Ministry of Health to facilitate an arrangement to have these services provided on existing BC PET-CT cameras, with wait-time targets as outlined in the Quebec guidelines.
3. The Ministry of Health should develop specific policy addressing the mandate of regional health authorities in provision of PET services for non-cancer related indications.
4. Decisions on location and operational management of future planned PET scanners deploying in BC should include input from nuclear medicine medical leaders and operational management staff in regional health authorities to ensure they align with broader goals of service provision of PET-CT for both cancer and non-cancer patients.

Thank you for your consideration,

Dr. James Curtis

MDCM, MSC, FRCPC Diagnostic Radiology and Nuclear Medicine

On behalf of the British Columbia Chapter, Canadian Association of Nuclear Medicine

Medical Lead, Nuclear Medicine | Island Health

Nuclear Medicine Physician, Department of Molecular Imaging and Therapy | BC Cancer Victoria

[james.curtis@islandhealth.ca](mailto:james.curtis@islandhealth.ca)

## **ADDITIONAL PROPOSED SIGNATORIES WHO ARE SUBJECT MATTER EXPERTS WILLING TO COMMENT FURTHER ON THESE ISSUES: (final wording not yet finalized)**

Dr. Moira Stilwell

Medical Director, Nuclear Medicine, St. Paul's Hospital - Providence Health  
[drmstilwell@gmail.com](mailto:drmstilwell@gmail.com)

Dr. Philip Cohen

Head of Doctors of BC Nuclear Medicine Section  
Division Head of Nuclear Medicine, Lion's Gate Hospital - Vancouver Coastal Health  
[nukdoc@gmail.com](mailto:nukdoc@gmail.com)

Dr. Kathryn Darras

Program Director – UBC Nuclear Medicine Residency Program  
Radiologist and Nuclear Medicine Physician, Vancouver General Hospital - Vancouver Coastal Health

Dr. George Sexsmith,

Medical Director, Nuclear Medicine , Fraser Health Authority  
[sexsmith@telus.net](mailto:sexsmith@telus.net)

Dr. Urvi Joshi

Medical Lead , Nuclear Medicine - Royal Columbian Hospital , Fraser Health Authority  
[urviroo@gmail.com](mailto:urviroo@gmail.com)

Dr. Dan Worsley

Medical Lead, Nuclear Medicine - Vancouver General Hospital  
Nuclear Medicine Physician, Department of Molecular Imaging and Therapy, BCCA Vancouver  
[Dan.worsley@vch.ca](mailto:Dan.worsley@vch.ca)

Dr. Silvia Riccio

Medical Lead, Nuclear Medicine – Kelowna General Hospital, Interior Health  
Site Medical Lead, Department of Molecular Imaging and Therapy, BC Cancer Kelowna  
[Silvia.riccio@interiorhealth.ca](mailto:Silvia.riccio@interiorhealth.ca)

Dr. Curtis Mohamed

Medical Lead, Nuclear Medicine – Royal Inland Hospital, Interior Health  
[Curtis.mohamed@interiorhealth.ca](mailto:Curtis.mohamed@interiorhealth.ca)

Dr. Kevin Forkheim

Radiologist and Nuclear Medicine Physician | Island Health  
Site Medical Lead , Department of Molecular Imaging and Therapy, BC Cancer Victoria  
[Kevin.forkheim@islandhealth.ca](mailto:Kevin.forkheim@islandhealth.ca)

Nicolas Rondeau-Lapierre

General Manager, Canadian Association of Nuclear Medicine  
[nlapierre@canm-acmn.ca](mailto:nlapierre@canm-acmn.ca)

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