

CARDIAC FDG PET REQUISITION

SPECIAL ACCESS INDICATIONS

Submission (with supporting document) / Information

 CardiacFDGPET@ottawaheart.ca

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*Last Name _____ *First Name _____ Middle Initial _____

*OHIP # _____ Version _____ *Postal Code _____ *Phone# (xxx) xxx-xxxx

M F Other

Preferred language English French Other

*Date of Birth (yyyy-mm-dd) _____ *Sex _____

* Choose a PET centre below:

- | | |
|--|--|
| <input type="checkbox"/> Ottawa – University of Ottawa Heart Institute | <input type="checkbox"/> Hamilton – McMaster University Medical Centre |
| <input type="checkbox"/> Mississauga – KMH Cardiology Centres Inc. | <input type="checkbox"/> London – St. Joseph's Health Care London |
| <input type="checkbox"/> Toronto – Princess Margaret Cancer Centre | <input type="checkbox"/> Toronto – Sunnybrook Health Sciences Centre |

*Priority:

- Inpatient
 Outpatient-Urgent
 Outpatient

SUPPORTING DOCUMENTATION MUST ACCOMPANY ALL REQUESTS including recent (< 12 months) clinical/consult notes and investigations ie. MR, thoracic CT, echo, lab reports, holter, ecg.

I. Indications (choose only one indication and check all applicable boxes per indication)

A. MYOCARDIAL VIABILITY ASSESSMENT

- Revascularization candidate with ischemic LV dysfunction (EF >40%)

B. CARDIAC SARCOIDOSIS (CS)

- Patients with idiopathic sustained or non-sustained VT and/or high PVC burden >10%
 Patients with a clinical diagnosis of non-ischemic cardiomyopathy to screen for underlying etiology
 Patients with possible arrhythmogenic right ventricular cardiomyopathy
 Follow up of patient who does not meet routine criteria

Required documentation for cardiac sarcoid evaluation must include a recent clinic/consult note and one or both of the following:

- Abnormal CT thorax OR MRI with findings suggestive of pulmonary sarcoidosis and/or hilar or mediastinal lymphadenopathy
 Cardiac MRI suggestive of cardiac sarcoid

C. CARDIAC INFLAMMATION AND INFECTION

- | | |
|---|---|
| <input type="checkbox"/> Infection of Implantable Cardiac Devices | <input type="checkbox"/> Aortitis |
| <input type="checkbox"/> Infection Endocarditis | <input type="checkbox"/> ARVC, AIC |
| <input type="checkbox"/> Myocarditis | <input type="checkbox"/> Vasculitis |
| <input type="checkbox"/> Pericarditis | <input type="checkbox"/> Other Inflammatory process (specify) _____ |

**Ketogenic diet prep is required for all sarcoidosis or inflammation imaging



Note: Cardiac FDG PET imaging may not be able to distinguish CS scar and inflammation from hibernating myocardium or other forms of myocardial inflammation. This should be considered when ordering the test and interpreting the findings

II. Prior Cardiac Testing (CHECK ALL THAT APPLY)

- | | | | | |
|--------------------------------------|---|---|--|---|
| <input type="checkbox"/> Cardiac MRI | <input type="checkbox"/> ECHO | <input type="checkbox"/> Coronary Angio | <input type="checkbox"/> Pulmonary Testing | <input type="checkbox"/> Other Test (specify below) _____ |
| <input type="checkbox"/> Thoracic CT | <input type="checkbox"/> Stress Imaging | <input type="checkbox"/> Cardiac CTA | <input type="checkbox"/> MUGA | |

III. Pertinent Clinical Information (INDICATE 'Yes' or 'No' FOR ALL)

- NYHA Class II III IV MI in past 30 days Yes No Previous PCI Yes No
Diabetes Yes No Pacemaker/AICD/CRT Yes No Previous CABG Yes No

Physician Contact:

*Name (print) _____
Last Name First Name
*Phone # _____ ext. _____
*Fax # _____ (xxx)-xxx-xxxx
*Email @ _____
*Date of request _____ (yyyy-mm-dd)

Data Centre Use Only

Date Received: []/[]/[] Reviewers Approved Yes No
Date Authorized: []/[]/[] Yes No
(yyyy-mm-dd) Yes No
Authorized by: _____
Final Approved : Yes No Incompleted
FDG-PET ID: [] - [] - []
PET centre number ID (ver.2022-06)

Indications for Cardiac FDG PET in the evaluation of CARDIAC SARCOIDOSIS (CS)*

All supporting documentation must be obtained within 12 months of the request for imaging.

Part 1 – DIRECT TO PET CENTRE INDICATIONS: Cardiac FDG PET Special Access Program review IS NOT required. Complete the Cardiac FDG PET requisition and submit to your local PET centre.

1. Patients presenting with biopsy proven or clinical diagnosis of pulmonary/systemic sarcoidosis with MRI findings suggestive of cardiac sarcoidosis **AND in whom obstructive coronary disease has been ruled out as the primary cause***

Submit cardiac MRI suggestive of CS and current clinical consult and/or biopsy report

2. Patients, presenting at age ≤ 70 years, with unexplained, high grade conduction system disease (Mobitz II 2nd or 3rd degree AV block) Submit ECG/holter AND current consult/document history

3. FOLLOW UP RESPONSE TO TREATMENT in patients with positive baseline FDG PET consistent with cardiac sarcoidosis

- **To assess response to treatment and/or when considering a change in treatment** (add or remove immunosuppressants and/or steroids; trial therapy cessation).
- **To assess for disease relapse after a period of planned therapy cessation** (previously suppressed FDG uptake required)
- **To assess for disease relapse, after a period of therapy cessation AND new clinical deterioration** (new ventricular arrhythmia and/or deterioration in RV or LV function; previously suppressed FDG uptake required)

A maximum of 3 follow-up scans may be booked up to 3 years post initial diagnostic FDG PET scan.

PART 2. SPECIAL ACCESS APPROVAL REQUIRED: Cardiac FDG PET Special Access Program approval IS REQUIRED if your patient meets the following criteria. Supporting documentation MUST be submitted and include recent (≤ 12 months) clinical/consult notes, investigations including Cardiac MR, thoracic CT, echo (TEE, TTE), lab report, holter report &/or ECG's.

CLINICAL INDICATION	PATIENTS MUST MEET THE FOLLOWING CRITERIA
4. In patients with idiopathic sustained or non-sustained ventricular tachycardia (VT) and/or high PVC burden $>10\%$, to screen for CS as underlying etiology.	Idiopathic sustained VT is defined as VT not fulfilling any of the following criteria <ul style="list-style-type: none"> • Typical outflow tract VT • Fascicular VT • VT secondary to other structural heart disease (coronary artery disease, any cardiomyopathy other than idiopathic). AND ONE OR BOTH OF <ul style="list-style-type: none"> • Abnormal CT OR MRI THORAX showing findings suggestive of pulmonary sarcoidosis and/or hilar or mediastinal lymphadenopathy • Cardiac MRI suggestive of cardiac sarcoid
5. In patients with a clinical diagnosis of non-ischemic cardiomyopathy, to screen for CS as underlying etiology.	AND ONE OR BOTH OF <ul style="list-style-type: none"> • Abnormal CT OR MRI THORAX showing findings suggestive of pulmonary sarcoidosis and/or hilar or mediastinal lymphadenopathy • Cardiac MRI suggestive of cardiac sarcoid
6. In patients with possible arrhythmogenic right ventricular cardiomyopathy, to screen for CS as possible alternative diagnosis	AND ONE OR BOTH OF <ul style="list-style-type: none"> • Abnormal CT OR MRI THORAX showing findings suggestive of pulmonary sarcoidosis and/or hilar or mediastinal lymphadenopathy • Cardiac MRI suggestive of cardiac sarcoid

* **Note:** Cardiac FDG PET imaging may not be able to distinguish CS scar and inflammation from hibernating myocardium or other forms of myocardial inflammation. This should be considered when ordering the test and interpreting the findings.

Diet preparation (high fat, low carbohydrate, low protein) is a requirement for optimal image results using FDG PET.

Click here for the required [Ketogenic Diet](#) preparation.



As a condition of special access approval for FDG PET investigation of cardiac sarcoidosis, **all patients should be referred** to a CS specialist.

Please forward questions or concerns to cardiacfdgpet@ottawaheart.ca

CARDIAC FDG PET SPECIAL ACCESS PROGRAM

INDICATIONS FOR FDG PET FOR CARDIAC INFLAMMATION AND INFECTION

All requests MUST be accompanied by supporting documentation, obtained within the past 12 months, including clinical/ consult notes, recent investigations ie. Cardiac MR, thoracic CT, echo (TEE, TTE), lab report, holter report &/or ECG's.

ACCEPTED CLINICAL INDICATION	PATIENTS MUST MEET THE FOLLOWING CRITERIA
1. Infection in Implantable Cardiac Devices such as pacemaker, ICD, CRT where there is a high clinical suspicion and/or laboratory evidence of infection	One or more of the following is suspected: <ul style="list-style-type: none"> generator pocket infection without endovascular lead infection endovascular lead infection without generator pocket infection generator pocket infection and endovascular lead infection OR The diagnosis of infection has been made and there is: <ul style="list-style-type: none"> Suspected extra-cardiac complications (i.e. septic emboli)
2. Infective endocarditis (using modified Duke criteria) where there is a high clinical suspicion and/or laboratory evidence of infection	One or more of the following: <ul style="list-style-type: none"> Possible infective endocarditis Rejected infective endocarditis (according to modified Duke Criteria), but clinical suspicion is high Definite infective endocarditis with: <ol style="list-style-type: none"> Suspicion of extra-cardiac complications (i.e. septic emboli) Suspicion of cardiac complications (e.g. perivalvular abscess)
3. Pericarditis	One or more of the following: <ul style="list-style-type: none"> Persistent symptoms despite 2 weeks of adequate therapy Recurrent pericarditis/symptoms despite adequate treatment of the initial episode Assess response to therapy 4 weeks after therapy initiation
4. Myocarditis, Aortitis, Vasculitis	One or more of the following: <ul style="list-style-type: none"> Recurrent symptoms despite adequate treatment of the initial episode Lack of left ventricular function recovery Troponin elevation in keeping with the diagnosis of myocarditis Chest pain or shortness of breath, signs and symptoms of myocarditis post mRNA vaccine where knowledge of extent of inflammation would change management.
5. Patients with unexplained cardiomyopathy and ventricular arrhythmia (ARVC, AIC)	<ul style="list-style-type: none"> Ventricular arrhythmia in the setting of unexplained cardiomyopathy, despite adequate investigation, including referral/consultation with an EP (electrophysiology) specialist.
6. Other Inflammatory process	<i>Compelling evidence must be provided. Suspicion of cardiac inflammatory processes ie multiple differential inflammatory diagnoses based on MRI/CT imaging. 3 reviewers for approval.</i>

***Diet preparation (high fat, low carbohydrate, low protein) is absolutely essential for optimal image results using FDG PET. Click here for required [Ketogenic diet prep](#).**



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UNIVERSITY OF OTTAWA
HEART INSTITUTE
INSTITUT DE CARDIOLOGIE
DE L'UNIVERSITÉ D'OTTAWA



University of Ottawa Heart Institute Ketogenic diet (high fat, high protein, low carbohydrate) preparation for FDG PET Imaging of cardiac inflammation

The Ketogenic diet is a high fat, high protein, and low carbohydrate diet that you need to follow for one day before your scan. Following this diet will help improve the imaging pictures obtained from your scan. The Ketogenic diet is safe to follow and is approved for use for one day as preparation for the scan.

Why do I need to change my diet the day before the scan?

The purpose of the scan is to find abnormal areas in your heart. The muscle cells of the heart absorb and use glucose (sugar) for energy. The PET imaging scan uses Fluorodeoxyglucose (FDG), a sugar based tracer. When we inject FDG, normal healthy heart muscle cells will absorb FDG because it is a sugar. FDG PET imaging allows the doctors to see areas of the heart that are normal or abnormal.

In certain conditions, such as sarcoidosis or other inflammatory conditions, we do not want the normal heart muscle cells to absorb the FDG because it interferes with the imaging pictures. The ketogenic diet helps ensure high quality images because the high fat content of the diet forces the body to choose fats for fuel and energy rather than carbohydrates (sugars). Therefore, the normal cells are 'tricked' into using fat as energy and the FDG is not absorbed. As a result, only the abnormal areas of the heart are seen.

To follow the ketogenic diet, you must choose high fat and protein foods and avoid carbohydrate foods for the entire day before your scan. High fat and protein foods include meat, fatty fish such as salmon and tuna, eggs, vegetable oil, margarine, and butter. Carbohydrate (sugar) is found in all grains, starchy vegetables, all fruit and dairy products. We have provided a sample menu and food choices below to help you with your food choices.

If you have diabetes, please contact your diabetes doctor or nurse. Your diabetes medications and/or insulin will need to be adjusted so you do not get low blood sugars while following this diet. This diet is only for one day and your diabetes can be managed while you follow the diet.

In addition to following the ketogenic diet, you must also avoid strenuous exercise the day before your scan. You must not eat or drink anything (except water) before the scan. It is important that you drink two to three -12 ounce (355 ml) glasses of water through the day to stay adequately hydrated.



Diet preparation for FDG PET Imaging of cardiac inflammation

FOR 1 DAY BEFORE YOUR SCAN: Follow a high fat, high protein, low carbohydrate diet as described below.

FOR 12 HOURS BEFORE YOUR SCAN: Do not eat or drink anything (except water).

SAMPLE MENU FOR THE DAY BEFORE YOUR SCAN

BREAKFAST	LUNCH	DINNER
<ul style="list-style-type: none"> ✓ 2 scrambled eggs with green peppers, mushrooms, onions ✓ 3 slices of bacon <u>or</u> 2 ounces of ham ✓ Coffee or tea ✗ No milk or sugar 	<ul style="list-style-type: none"> ✓ Hamburger patty (no bun) <u>or</u> 3 ounces of roast beef or turkey ✓ 1 cup of salad ✓ Low carbohydrate vegetables – see list below 	<ul style="list-style-type: none"> ✓ 4 to 6 ounces of steak <u>or</u> salmon <u>or</u> chicken (skin on) ✗ No breading or batter ✓ 1 cup of salad ✓ Low carbohydrate vegetables – see list below

✓ YOU CAN EAT/DRINK THE FOLLOWING:

✓ Beverages without sugar:	✓ water, mineral water, seltzer, coffee or tea or herbal tea (no milk or sugar*) * you can use Equal, NutraSweet, Splenda, Stevia, Sweet'N Low
✓ Meat and alternatives:	✓ eggs, bacon, ham, fatty red meat, chicken or turkey (skin on), salmon, tuna, sardines, anchovies (Fry or broil your meat. Do not grill. Do not bread or batter.)
✓ Fats/Oils and seasonings:	✓ butter, margarine, canola oil, olive oil, salt, pepper
✓ Nuts:	✓ ¼ cup of almonds or walnuts or pistachios
✓ Low carb vegetables in moderation:	✓ ½ to 1 cup of any of the following: arugula, asparagus, broccoli, Brussels sprouts, cabbage, cauliflower, celery, cucumber, green beans, green peppers, kale, lettuce, onions, radishes, spinach, white mushrooms, zucchini

✗ DO NOT EAT/DRINK THE FOLLOWING:

<ul style="list-style-type: none"> ✗ NO fruits ✗ NO sugar or any food containing sugar: <i>Be careful – many processed products contain hidden sugars.</i> 	<ul style="list-style-type: none"> ✗ honey ✗ syrup ✗ jam/preserves ✗ mayonnaise/Miracle Whip ✗ commercial salad dressings (e.g. Ranch, Thousand Islands) 	<ul style="list-style-type: none"> ✗ ketchup ✗ mustard ✗ relish ✗ Nutella 	<ul style="list-style-type: none"> ✗ molasses ✗ peanut butter ✗ nut butter ✗ Nutella 	<ul style="list-style-type: none"> ✗ BBQ sauce ✗ beer nuts ✗ candy/mints ✗ chewing gum ✗ cough drops
<ul style="list-style-type: none"> ✗ NO beverages containing sugar or Aspartame or alcohol: 	<ul style="list-style-type: none"> ✗ soft drinks ✗ flavoured water ✗ juices 	<ul style="list-style-type: none"> ✗ fruit drinks (e.g. Kool-Aid, Tang) ✗ sports drinks (e.g. Gatorade) ✗ non-alcoholic beer 	<ul style="list-style-type: none"> ✗ beer ✗ wine ✗ spirits 	
<ul style="list-style-type: none"> ✗ NO dairy products: 	<ul style="list-style-type: none"> ✗ milk ✗ cheese 	<ul style="list-style-type: none"> ✗ yogurt ✗ yogurt drinks 	<ul style="list-style-type: none"> ✗ frozen yogurt ✗ ice cream 	<ul style="list-style-type: none"> ✗ pudding
<ul style="list-style-type: none"> ✗ NO processed meats: 	<ul style="list-style-type: none"> ✗ deli meat 	<ul style="list-style-type: none"> ✗ hot dog 	<ul style="list-style-type: none"> ✗ breaded or battered meat/poultry/fish 	
<ul style="list-style-type: none"> ✗ NO grains or starches: 	<ul style="list-style-type: none"> ✗ wheat ✗ rye ✗ oats ✗ barley 	<ul style="list-style-type: none"> ✗ rice ✗ pasta ✗ quinoa ✗ buckwheat 	<ul style="list-style-type: none"> ✗ bread ✗ bagels ✗ buns ✗ cereals 	<ul style="list-style-type: none"> ✗ granola bars ✗ cakes ✗ cookies ✗ muffins
<ul style="list-style-type: none"> ✗ NO root or starchy vegetables: 	<ul style="list-style-type: none"> ✗ carrots ✗ turnips ✗ parsnips 	<ul style="list-style-type: none"> ✗ potatoes ✗ sweet potatoes ✗ yams 	<ul style="list-style-type: none"> ✗ beets ✗ acorn squash ✗ butternut squash 	<ul style="list-style-type: none"> ✗ corn ✗ green peas
<ul style="list-style-type: none"> ✗ NO beans or legumes: 	<ul style="list-style-type: none"> ✗ black beans ✗ kidney beans 	<ul style="list-style-type: none"> ✗ chick peas ✗ split peas 	<ul style="list-style-type: none"> ✗ baked beans ✗ lentils 	<ul style="list-style-type: none"> ✗ peanuts