CARDIAC PET

TO BE COMPLETED BY THE REFERRING PHYSICIAN

Tel.: (905) 855-1860 • Toll Free: 1-877-564-5227 • Fax: (905) 855-1863 • Toll Free Fax: 1-877-564-3297 • www.kmhlabs.com

Patient Demographics:

Surname: _____ First Name: _____ Middle Name: _____

Sex: ☐ M ☐ F Province: _____ Postal Code: _____ Phone: (_____) _____- _____

OHIP Number: _____ Date of Birth: _____

❍ **IA. FDG PET VIABILITY (complete sections IA, II, and III)**

Moderate to severe ischemic LV dysfunction (EF ≤ 40%): ❍Yes ❍ No

EF = _____% or LV Function Class ❍ III ❍ IV

Candidate for revascularization or heart transplant: ❍Yes ❍ No

❍ **IB. SPECIAL ACCESS REQUEST (complete sections IB, II, AND III)**

Pertinent test results/consults must accompany the request.)

☐ Sarcoidosis ☐ Viability LVEF ≥ 40%

☐ Sarcoidosis Follow-up ☐ Aortitis

☐ Infection/Inflammation (specify) ☐ Other (specify)

_____ _____

II. PRIOR CARDIAC TESTING ❍ Yes ❍ No

Special Access requests, attach reports. Check all that apply.

☐ Stress Perfusion ☐ MUGA ☐ Coronary Angio ☐ Pulmonary Testing

☐ Stress MRI ☐ MRI ☐ Cardiac CTA ☐ Thoracic CT

☐ Stress Echo ☐ ECHO ☐ WBC Scan ☐ Other Test (specify) _____

III. PERTINENT CLINICAL INFORMATION (please indicate "Yes" or "No" for all)

NYHA Class ❍ II ❍ III ❍ IV MI in last 30 days ❍ Yes ❍ No Previous PCI ❍ Yes ❍ No

Diabetes ❍ Yes ❍ No Pacemaker/AICD/CRT ❍ Yes ❍ No Previous CABG ❍ Yes ❍ No

Clinical Information:

****All cardiac FDG PET Sarcoidosis investigations require clinical referral to a cardiac sarcoidosis specialist.** Please indicate Cardiac Sarcoidosis Referral Clinic of choice:

☐ Ottawa ☐ Toronto ☐ Hamilton ☐ London

Special Access Office Use Only

Tracking Number: _____

Date of Request: _____

Scheduled Date of FDG PET Scan: _____

Referring Physician Information:

Surname: _____

First Name: _____

Phone: (_____) _____ - _____ ext: _____

Fax: (_____) _____ - _____

Email: _____

C.C. Physician: _____

Next Consult Date: _____

Last Treatment Date: _____

Next Treatment Date: _____

Billing #: _____ CPSO #: _____

Date: _____ _____

Physician Signature

Note: Please provide the most recent and relevant imaging report(s) (e.g. CT, MRI, US), and digital images (CD/DVD), and pathology report(s), if applicable. As radiation therapy & chemotherapy may affect the sensitivity of the PET scan, it is strongly recommended to schedule PET at least 6 weeks after last round of therapy, if possible.

ORDERING CARDIAC FDG PET

CARDIAC VIABILITY ASSESSMENT is the only cardiac approved indication (INSURED) for FDG PET in the province of Ontario.

Your patient must meet insured criteria as follows:
- an EF <40% (or LV class III or IV) **AND**
- be a candidate for revascularization

INSTRUCTIONS

COMPLETE: Patient information, **all parts** of Section **I-A**, **II** and **III**. Provide relevant CLINICAL INFORMATION in the box provided and ensure the physician contact section is complete.

Submit to cardiac booking office.

CARDIAC SPECIAL ACCESS PROGRAM (SAP)

Requests for FDG PET imaging may be granted, for specific indications, via the Provincial Cardiac FDG PET Special Access program (UNINSURED). Such requests require submission of supporting evidence and review by an expert panel. Specific criteria for these indications may apply (*).

Special Access **indications** currently include (but may not be limited to):

Cardiac Sarcoidosis and follow up * **Aortitis ***
Device Infection * **ARVC, AIC ***
Endocarditis * **Myocarditis ***
Other Inflammatory processes *
Viability Assessment with EF > 40 (large fixed defect on perfusion imaging)

INSTRUCTIONS

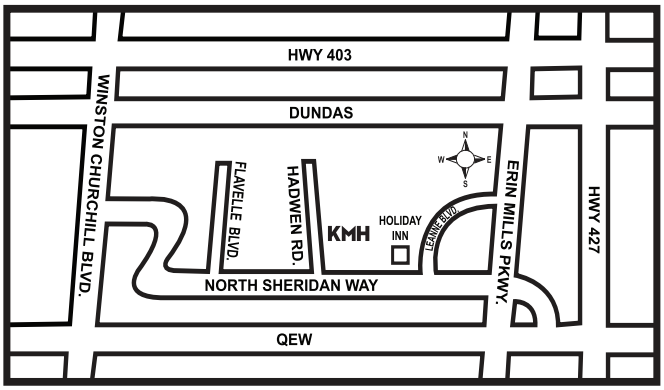
COMPLETE: Patient information, **all parts** of Section **I-B, II** and **III**. Provide relevant CLINICAL INFORMATION in the box provided and indicate the Sarcoidosis referral clinic of choice (requirement). Ensure the physician contact section is complete to allow SAP staff to communicate with the referring physician.

REQUIRED ATTACHMENTS: Pertinent clinical results ie consult, current medical treatment, rationale explaining need for FDG PET, relevant diagnostic tests (MR, CT, Echo, ECG, lab results).

Requests for FDG PET via Special Access will not be processed if the requisition is incomplete or supporting documentation is not attached.

For submission of Special Access Requests:

Complete the requisition and fax it along with supporting documents to 1-877-564-3297.



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INDICATIONS

☐ **Cardiac Sarcoidosis (CS) - All referrals for Cardiac FDG PET imaging for cardiac sarcoidosis MUST be accompanied by supporting documentation including, but not limited to clinical consults, Cardiac MR, thoracic CT, Echo (TEE, TTE), lab report, ECG's.**

Patients must meet presentation criteria for any given clinical indication

ACCEPTED CLINICAL INDICATION	PRESENTATION
1. Patients with biopsy proven or clinical diagnosis of pulmonary or systemic sarcoidosis **AND** **in whom obstructive coronary disease has been ruled out*** *Perfusion/FDG PET imaging may not be able to distinguish CS scar and inflammation from hibernating myocardium. This should be considered when ordering the test and interpreting the findings.	Supporting documents must include of positive biopsy or clinical consult demonstrating pulmonary or systemic sarcoid. **AND one or more *abnormal* initial screening tests to screen for cardiac involvement.** An Abnormal screening test is defined as one or more of the following: • abnormal ECG defined as complete left or right bundle branch block and/or presence of unexplained pathological Q waves in 2 or more leads • abnormal echo defined as RWMA and/or wall aneurysm and/or basal septum thinning and/or LVEF < 50% • abnormal Holter defined as sustained or nonsustained VT • cardiac MRI suggestive of cardiac sarcoid
2. In young patients (age < 60 years) with unexplained, new onset, significant conduction system disease, to screen for CS as underlying etiology. Supporting documents must include ECG or consult letter.	• Defined as sustained Mobitz II 2nd degree or 3rd degree AV block
3. In patients with idiopathic sustained ventricular tachycardia (VT), to screen for CS as underlying etiology. Supporting documents must include ECG or consult letter/clinic notes, Echo, other tests.	• idiopathic VT is defined as VT **not** fulfilling any of following criteria i. Typical outflow tract VT ii. Fascicular VT iii. VT secondary to other structural heart disease (coronary artery disease, any cardiomyopathy other than idiopathic).
4. In patients with proven CS to follow response to treatment with steroids and/or immuno suppressants. Supporting documents must include documentation of treatment to date, consult letter/clinic notes, Echo, other tests.	• Patients undergoing 3 or more FDG PET scans to access response to therapy will have PET scan series reviewed by expert PET reviewer and Cardiac Sarcoid Specialist.

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

As a condition of approval for cardiac FDG PET investigation of sarcoidosis, **all patients require** a clinical referral to a CS specialist, who is also involved with the MOH PET Cardiac Sarcoidosis Registry.

Note: Please provide the most recent and relevant imaging report(s) (e.g. CT, MRI, US), and digital images (CD/DVD), and pathology report(s), if applicable. As radiation therapy & chemotherapy may affect the sensitivity of the PET scan, it is strongly recommended to schedule PET at least 6 weeks after last round of therapy, if possible.

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INDICATIONS

☐ **Imaging in the detection of cardiac inflammation and infection -** FDG PET/CT may be indicated as an **adjuvant imaging** tool to existing standard institutional practice and is not meant to replace standard clinical investigation.

All referrals for Cardiac FDG PET imaging for cardiac infection/inflammation MUST be accompanied by supporting evidence such as clinical consults, Cardiac MR, CT, Echo (TEE, TTE), lab reports.

ACCEPTED CLINICAL INDICATION	PRESENTATION
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: • 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: • Suspected extra-cardiac complications (i.e. septic emboli)
2. Infective endocarditis (using modified modified Duke criteria) where there is a high clinical suspicion and/or laboratory evidence of infection	One or more of the following: • Possible infective endocarditis • Rejected infective endocarditis (according to modified Duke Criteria), but clinical suspicion is high • Definite infective endocarditis with: i) Suspicion of extra-cardiac complications (i.e. septic emboli) ii) Suspicion of cardiac complications (e.g. perivalvular abscess)
3. Pericarditis	One or more of the following: • 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	One or more of the following: • Recurrent myocarditis/symptoms despite adequate treatment of the initial episode • Lack of left ventricular function recovery • Troponin elevation out of keeping with the diagnosis of myocarditis
5. Patients with unexplained cardiomyopathy and ventricular arrhythmia (ARVC, AIC)	• Ventricular arrhythmia in the setting of unexplained cardiomyopathy, despite adequate investigation, including referral/consultation with an EP (electrophysiology) specialist.
6. Other Inflammatory process	*Compelling evidence must be provided. Suspicion of cardiac inflammatory processes ie multiple differential inflammatory diagnoses based on MRI/CT imaging. 3 reviewers for approval.*

*A special diet preparation (high fat, low carbohydrate, low protein) **is required** for optimal image results using FDG PET.

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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 Fluorodeoxglucose (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 enegy 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.

KMH

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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 ✓ 2 scrambled eggs with green peppers, mushrooms, onions ✓ 3 slices of bacon or 2 ounces of ham ✓ Coffee or tea × No milk or sugar	**LUNCH** ✓ Hamburger patty (no bun) or 3 ounces of roast beef or turkey ✓ 1 cup of salad ✓ Low carbohydrate vegetables – see list below	**DINNER** ✓ 4 to 6 ounces of steak or salmon or 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:				
× **NO fruits** × **NO sugar or any food containing sugar:** *Be careful – many processed products contain hidden sugars.*	× honey × syrup × jam/preserves × mayonnaise/Miracle Whip × commercial salad dressings (e.g. Ranch, Thousand Islands)	× ketchup × mustard × relish	× molasses × peanut butter × nut butter × Nutella	× BBQ sauce × beer nuts × candy/mints × chewing gum × cough drops
× **NO beverages containing sugar or Aspartame or alcohol:**	× soft drinks × flavoured water × juices	× fruit drinks (e.g. Kool-Aid, Tang) × sports drinks (e.g. Gatorade) × non-alcoholic beer		× beer × wine × spirits
× **NO dairy products:**	× milk × cheese	× yogurt × yogurt drinks	× frozen yogurt × ice cream	× pudding
× **NO processed meats:**	× deli meat	× hot dog	× breaded or battered meat/poultry/fish	
× **NO grains or starches:**	× wheat × rye × oats × barley	× rice × pasta × quinoa × buckwheat	× bread × bagels × buns × cereals	× granola bars × cakes × cookies × muffins
× **NO root or starchy vegetables:**	× carrots × turnips × parsnips	× potatoes × sweet potatoes × yams	× beets × acorn squash × butternut squash	× corn × green peas
× **NO beans or legumes:**	× black beans × kidney beans	× chick peas × split peas	× baked beans × lentils	× peanuts