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糖尿病患者的 PET/CT FDG 扫描

此份材料是提供给在华大医疗中心 UW Medical Center、港景医疗中心 Harborview Medical Center 或福瑞德·哈金森癌症中心 Fred Hutchinson Cancer Center 进行 PET/CT FDG 扫描的糖尿病患者的一份特别的说明。

您的医疗服务提供者为您预订了 PET/CT FDG 扫描检查。如果您还没有获得一份名为“PET/CT FDG 扫描”的派发材料，请向有关人员索取。

什么是 PET/CT FDG 扫描？

- PET 代表正电子发射断层扫描。
- CT 代表计算机断层扫描。
- FDG 代表氟脱氧葡萄糖剂 (2-Deoxy-2-[18 F] fluoro -D-Glucose)。

此检查使用 FDG-18 氟脱氧葡萄糖剂 fluorine-18 FDG，这是一种放射性示踪剂，在体内的作用类似于葡萄糖（糖分）。示踪剂帮助我们了解您的细胞吸收了多少能量。我们通过 FDG PET/CT 扫描来做这个测量。

PET/CT 造影机拍摄两种类型的影像：

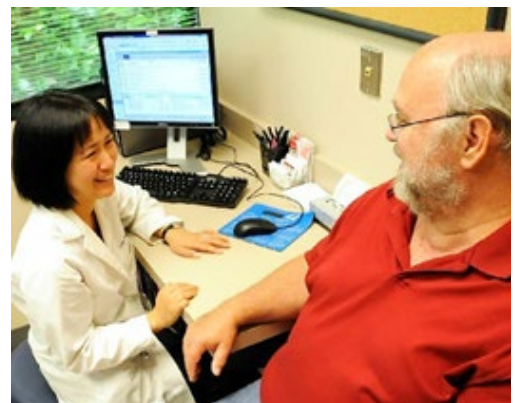
- PET 扫描显示示踪剂在您体内聚集的位置。
- CT 扫描提供您身体结构的影像。

PET 和 CT 图像结合在一起能帮助您的医生看到您细胞发生的变化。

如何做准备

糖尿病患者难以吸收葡萄糖。这意味着您需要按照特殊说明进行扫描。

请严格遵守本手册中的所有指示。这将有助于控制您的血糖，并为我们提供此次扫描的最清晰结果。



扫描前 2 周与您的糖尿病医疗服务提供者交谈。

- 请在扫描前 2 周致电您的糖尿病医疗服务提供者，讨论准备扫描的最佳做法。与该提供者一起查看本手册中的说明。
- 扫描约见前 24 小时内**请勿**做锻炼。
- 您将在扫描前禁食 6 小时。
- 6 小时禁食前的最后一餐必须是含高蛋白且不含碳水化合物食物。
- **多喝水**，让你保持水分充足。
- 在约见时间前 6 小时开始：
 - 不要通过“全胃肠外营养输送”（TPN）或静脉（IV）注射服用任何葡萄糖药物。
- 这 6 小时禁食期间，**不要吃东西或喝除了水以外的液体**。
- 您的扫描将安排在中午进行，以减少您需要禁食的时间。
- 在您隔夜禁食 6 小时后，您的葡萄糖（血糖）水平必须**低于 175 mg/dL**。
 - 如果您不确定自己能否做到这一点，请在预约前 3 天尝试做一个“预演练习”（请参阅第 4 页）。
 - 如果您在预演练习后的早晨的血糖水平不能**低于 175 mg/dL**，请致电安排您扫描的放射科/核医学诊所 Radiology/Nuclear Medicine clinic（请参阅第 5 页“有问题吗？”框中的电话号码）。
- 如果您在扫描当天的血糖水平**高于 175 mg/dL**，我们可能需要重新安排您的扫描日期。
- 如果您在空腹准备扫描时血糖水平低于 70 mg/dL 或出现低血糖症状（hypoglycemia）：
 - 请以通常的方式处理低血糖状况。不要让你的血糖低到不安全的地步！
 - 在您的血糖稳定后，请致电我们重新安排您的扫描日期。

扫描前的饮食

对于这个扫描，您必须严格遵循第 3 页上的指示。如果您不遵循或不能遵循这些说明，我们将需要重新安排您的扫描。

指示



在您禁食 6 小时之前
的那一餐中

- 你必须只吃蛋白质食物。
- 不要吃任何碳水化合物食物。

只吃:

- 原味肉（牛肉、牛排、猪肉、鸡肉或羊肉）、鱼和鸡蛋。如果你愿意，你可以用油煮肉。禁止培根烟肉、外卖熟肉或其他加工肉类。
- 素食者：只吃用油煮熟的原味豆腐（添加脂肪是需要的）。

“原味”是指没有添加酱汁、调味腌料、调味伴料或面包屑料。

只喝:

- 水

药物:

- 禁止咀嚼、液体或棒棒糖式的药物。用水服用所有其他药物。

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扫描前 6 小时开始

- 禁食。这意味着不要吃任何东西。
- 你可以喝水。
- 不要服用任何咀嚼、液体或棒棒糖式药物。仅用水服用所有其他药物。

如果您患有糖尿病:

- 从测试前 6 小时开始，不要服用胰岛素或其他糖尿病药物。



重要!

6 小时禁食之前的最后一餐，您必须只吃蛋白质食物。

糖尿病药物用药说明

查看下表，了解有关在做 PET 扫描前停止服药的说明。如果您有任何问题，请致电您的诊所。

糖尿病药物	做 PET 扫描前停止服用
速效或短效胰岛素： 供注射用的普通胰岛、Lispro (Humalog)、Novolog	在测试当天服用，测试约见前 6 小时随餐服用。
中长效胰岛素 （例如：来得时 Lantus、甘精胰岛素 insulin glargine）	测试前一天晚上服用。不要在测试当天服用。
二甲双胍 Metformin	可以在测试当天服用。如果您知道自己患有慢性肾病，请在测试前 48 小时停止服用。
Victoza 或 Byetta 注射剂	测试前一天晚上服用。不要在测试当天服用。
胰岛素泵	可以连续运行。

如何做一个“预演练习”

扫描前至少提前 3 天检查您的血糖水平。

- 为 6 小时禁食做准备：
 - 如果您服用**速效或短效胰岛素**，您可以在早上 6:00 吃早餐并服用胰岛素。在禁食 6 小时后检查您的血糖之前，只能喝水。
 - 如果您服用**长效或中效胰岛素**，在 PET 扫描前的一周内，改为在晚上服用胰岛素药物。如果您通常是在早上服用药物，请咨询您的初级医疗服务提供者。在扫描当天的早上 6:00 吃早餐。不要在早上服用长效胰岛素。在禁食 6 小时之后检查您的血糖之前，只能喝水。
 - 如果您服用**口服糖尿病药物或在注射胰岛素以外还服用糖尿病药物**（品牌名称 Victoza 或 Byetta），请在预演练习前的晚上服用您通常服用的剂量。
 - 禁食 6 小时。在此期间不要进食。

- 在禁食期间，您只能喝白开水。不要嚼口香糖，不要吃薄荷糖或糖果，也不要服用维生素。
- 禁食 6 小时后检查您的血糖水平，请在重新进食前检查。
- 致电安排您进行扫描的放射科/核医学中心，让他们知道您在 6 小时预演练习禁食后的血糖水平是多少（请参阅第 5 页的联系电话号码）。
- 如果您在预演练习后的血糖水平高于 175 mg/dL，我们需要至少在扫描前 24 小时知道这一点。这样我们就可以向您的糖尿病医疗服务提供者寻求指导。PET/CT FDG 扫描约见的血糖安全范围是低于 175 mg/dL 水平。

扫描前一天和扫描当天

- 扫描前禁食过夜 6 小时。有关糖尿病药物的说明，请参阅第 4 页的说明。
- 在禁食期间，您只可以喝白开水——不能喝其他饮料。
- 您不能嚼口香糖、薄荷糖或糖果。
- 不要服用任何维生素、咀嚼片或糖浆类药物，如止咳糖浆。
- 您可以在检查当天用水服用非糖尿病药物。如果您的药物需要与食物一起服用，请在禁食前最后一餐或扫描完成后用餐时服用药物。
- 禁食 6 小时后检查您的血糖水平。如果您的血糖水平是：
 - 低于 175mg/dL：如期赴约。
 - 低于 70 毫克/分升或您有低血糖症状：以通常的方式处理您的低血糖情况。不要让低血糖情况得不到处理。致电重新安排您的扫描（请参阅左侧“有问题吗？”框中的电话号码）。
 - 高于 175 mg/dL：致电我们。我们可能需要重新安排您的扫描。
- 在扫描当天，您必须保持禁食直到扫描结束，除非您的血糖水平低于 70 mg/dL 或出现低血糖症状。
- 您的扫描过程大约需要 2 小时。

有问题吗？

你的问题很重要。如果您有任何问题或疑虑，请致电您的医生或糖尿病护理人员。

- ☐ UWMC-蒙特湖 Montlake 院区 影像服务 Imaging Services: 206.598.6200
- ☐ 福瑞德·哈金森癌症中心 Fred Hutch Cancer Center: 206.606.7200

UW Medicine

PET/CT FDG Scan for Patients with Diabetes



Scan this QR code with your phone camera for a digital version of this handout.

This handout gives special instructions for patients with diabetes who are having a PET/CT FDG scan at UW Medical Center, Harborview Medical Center, or Fred Hutchinson Cancer Center.

Your provider has ordered an exam for you called a *PET/CT FDG scan*. Please ask for the handout called “PET/CT FDG Scan” if you do not already have it.

What is a PET/CT FDG scan?

- PET stands for *positron emission tomography*.
- CT stands for *computed tomography*.
- FDG stands for *2-Deoxy-2-[¹⁸F]fluoro-D-Glucose*.

This exam uses fluorine-18 FDG, a *radioactive tracer* that acts like glucose (sugar) in the body. The tracer helps us see how much energy your cells are using. We measure this with a FDG PET/CT scan.

A PET/CT camera takes 2 types of pictures:

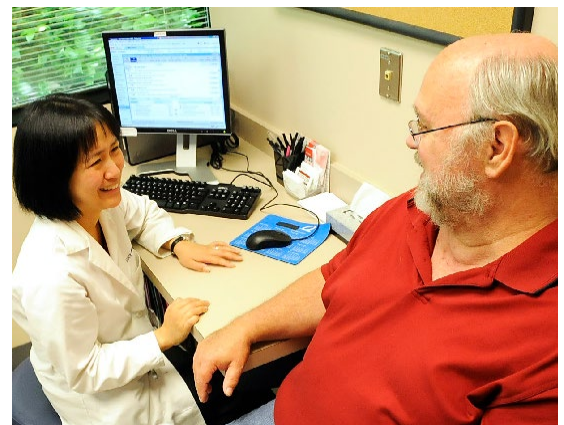
- The **PET scan** shows where the tracer has collected in your body.
- The **CT scan** provides pictures of your body structures.

Together, the PET and CT images will help your doctor see changes in your cells.

How to Prepare

People with diabetes have trouble processing glucose. This means you need to follow special instructions for your scan.

Closely follow all instructions in this handout. This will help keep your blood sugar under control and give us the clearest results from this scan.



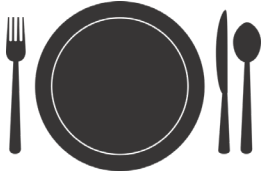
Talk with your diabetes care provider 2 weeks before your scan.

- Call your diabetes care provider **2 weeks before your scan** to talk about the best way to prepare for your scan. Review the instructions in this handout with this provider.
- **Do NOT exercise for 24 hours** before your scan appointment.
- You will fast for 6 hours before your scan.
- The last meal before your 6-hour fast must be high-protein and have NO carbohydrates.
- **Drink plenty of water** so that you stay hydrated.
- Starting 6 hours before your appointment time:
 - Do **not** take any dextrose medicines by *total parenteral nutrition* (TPN) or *intravenous* (IV) line.
- **Do NOT eat or drink liquids other than water** during this 6-hour fast.
- Your scan will be scheduled mid-day to reduce the amount of time you need to fast.
- After your 6-hour overnight fast, your *blood glucose* (blood sugar) must be **below 175 mg/dL**.
 - If you are not sure you can do this, try a “practice run” 3 days before your appointment (see page 4).
 - If you have any problems reaching a blood glucose level **below** 175 mg/dL in the morning after your practice run, call the Radiology/Nuclear Medicine clinic where your scan is scheduled (see phone numbers in the “Questions” box on page 5).
- If your blood glucose level is **above** 175 mg/dL on the day of your scan, we may need to reschedule your scan.
- If you have a blood glucose level lower than 70 mg/dL or symptoms of *hypoglycemia* (low blood glucose) while fasting for the scan:
 - Treat your low blood sugar in your usual way. Do not let your blood sugar go so low that you are unsafe!
 - After your blood sugar is stable, call us to reschedule your scan.

Food and Drink Before Your Scan

For this scan, you **must** strictly follow the instructions on page 3. If you do not or cannot follow these instructions, we will need to reschedule your scan.

Instructions



In the meal **BEFORE**
your 6-hour fast

- You **MUST** eat only proteins.
- Do **NOT** eat any carbohydrate foods.

Eat **ONLY**:

- Plain meat (beef, steak, pork, chicken, or lamb), fish, and eggs. You may cook the meat in oil, if you wish. **NO** bacon, deli meats, or other processed meats.
- **VEGANS**: Eat **ONLY** plain tofu that has been cooked in oil (added fat is needed).

“Plain” means NO sauces, seasonings, dressings, or breading.

Drink **ONLY**:

- Water

Medicines:

- **NO** chewable, liquid, or lollypop medicines. Take all other medicines with water.

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Starting 6 **HOURS**
BEFORE your scan

- **FAST**. This means do **NOT** eat anything.
- You may drink water.
- Do **NOT** take any chewable, liquid, or lollypop medicines. Take all other medicines with water only.

If you have diabetes:

- Starting 6 hours before the study, do **NOT** take insulin or other diabetes medicines.



IMPORTANT!

- You **MUST** eat **ONLY** proteins in your last meal before your 6-hour fast.

Instructions for Diabetes Medicines

Review the chart below for instructions about stopping medications before your PET. Call your clinic if you have any questions.

Diabetes Medications	To Be Stopped Before PET
Rapid or short-acting insulin: Injectable regular insulin, Lispro (Humalog), Novolog	Take on the day of your test, 6 hours before appointment, with a meal.
Intermediate & Long-acting insulin (such as Lantus, insulin glargine)	Take the night before. Do not take on the day of your test.
Metformin	Can be taken day of test. If you know that you have chronic kidney disease, then stop taking for 48 hours before your test.
Victoza or Byetta injectable	Take the night before. Do not take on the day of your test.
Insulin pump	Can run continuously.

How to Do a “Practice Run”

Check your blood glucose levels for at least 3 days before your scan.

- Preparing for your 6 hour fast:
 - **If you take a rapid-acting or short-acting insulin**, you can eat breakfast at 6:00 a.m. and take your insulin. Only drink water until you have checked your glucose after the 6-hour fast.
 - **If you take long-acting or intermediate-acting insulin**, switch to taking your medication in the evening the week before your PET scan. Talk to your primary care provider about this if you usually take this medication in the morning. Eat breakfast at 6:00 a.m. on the day of your scan. **Do not** take your long-acting insulin in the morning. Only drink water until you have checked your glucose after the 6-hour fast.
 - **If you take oral diabetes medicine or a diabetes medicine besides insulin that you inject** (brand names Victoza or Byetta), take your usual dose the evening before your practice run.

- Fast for 6 hours. Do not eat during this time.
- During your fast, you may **only** drink plain water. Do **not** chew gum, eat mints or candy, or take vitamins.
- Check your blood glucose level after your 6-hour fast, before eating again.
- Call the Radiology/Nuclear Medicine location where your scan is scheduled to let them know what your blood glucose level was after your 6-hour practice-run fast (see phone numbers on page 5).
- If your blood glucose level after your practice run was higher than 175 mg/dL, **we need to know this at least 24 hours before your scan.** This is so we can ask your diabetes care provider for instructions. A blood glucose level **below** 175 mg/dL is a safe range for your PET/CT FDG scan appointment.

The Day Before and Day of Your Scan

- Fast overnight for 6 hours before your scan. See the instructions on page 4 for diabetes medication instructions.
 - You may drink **only** plain water during your fast – **no other drinks.**
 - You may **not** have gum, mints, or candy.
 - Do **not** take any vitamins, chewable tablets, or syrup-based medicines such as cough syrup.
- You may take your **non-diabetes medicines** with water on the day of your exam. If you need to take your medicines with food, take them with your last meal before the fast, or after the scan is complete.
- Check your blood glucose level after your 6-hour fast. If your blood glucose is:
 - **Below 175mg/dL:** Go to your appointment as scheduled.
 - **Below 70mg/dL or you have symptoms of hypoglycemia:** Treat your low blood glucose in your usual way. **Do not** let low blood glucose go untreated. Call to reschedule your scan (see phone numbers in the "Questions?" box on the left).
 - **Above 175 mg/dL:** Call us. We may need to reschedule your scan.
- On the day of your scan, you **must** keep fasting until your scan is over, unless you have a blood glucose level lower than 70 mg/dL or symptoms of hypoglycemia.
- Your scan will last about 2 hours.

Questions?

Your questions are important. Call your doctor or diabetes care provider if you have questions or concerns.

- UWMC - Montlake Imaging Services: 206.598.6200
- Fred Hutch Cancer Center PET: 206.606.7191
- Fred Hutch Cancer Center Nuclear Medicine: 206.606.7045