

F18-FDG-PET/CT Information

Dear Patient,

You have been referred to us for a PET/CT scan. We will be discussing the reason for undertaking the scan, and any considerations or risks relevant to your case, personally with you. Below some initial general information.

What is a PET/CT scan?

The PET/CT scan can provide pictorial evidence for metabolic processes (e.g., glucose metabolism) and, crucially, relate this to the precise anatomical image provided by the CT scan.

To do so, the patient is intravenously injected with a minimally radioactive substance (usually fluorodeoxyglucose, ^{18}F – FDG).

For ca. 45-60 minutes the patient lies resting quietly in a darkened room, after which the scan is undertaken. The scan itself takes ca. 20-30 minutes, during which time it is necessary to lie still. Where applicable, there will be a further 1-2 hour resting period and a second scan. This may include a diagnostic CT with application of iodinated contrast medium. In some cases we need to take a blood sample to assess the serum glucose level.

We will be able to provide a first impression of the scan's results directly following the examination. The detailed written report can naturally only be finalised following meticulous analysis of the several thousand images / additional reconstructions. A German version of this report is in most cases available within two working days, an English translation will take up to 7 working days to complete. The report will be sent to your referring doctor.

Preparation for the scan

The PET/CT scan can only be undertaken on an empty stomach: For a minimum of 6 hours preceding the scan **no** calories may be ingested. Drinking water is advised; tea or coffee may be drunk but without milk or sugar. Blood glucose levels will be assessed before the scan and must be less than 130 mg/dl. Diabetics must inform us of their condition, so that they can be offered the earliest appointment on the day.

After a period of rest, before the scan is undertaken, patients need to empty their bladder. Immediately following the scan (i.e., before any potential further scan) patients can have breakfast. In exceptional cases the hospital ward or urologist will need to insert a transurethral catheter for complete bladder voiding.

Patients should avoid getting chilled for the two days preceding the scan (not to activate glucose metabolism of the brown fat tissue which can generate heat); neither must they engage in physical activity (jogging, etc.) on the day of the scan.

Risks, side effects and complications

Injection

The radioactive substance, and any other potentially necessary medications/contrast media, need to be injected into a cubital vein. In rare instances, this may give rise to a bruise, some bleeding, infection, nerve damage, tissue necrosis, venous irritation / -inflammation, or vascular damage.

Radioactive substance

Given the extremely short half-life of the radio-chemical medication used, a PET scan's radiation exposure is very limited. To date, no acute or chronic damage has been found which could be linked to the radioactive medication generally used.

Insulin or glucose

Particularly with diabetics, we may need to raise or lower the blood glucose level with insulin or glucose, which may result in temporary hyper- or hypoglycaemia.

N-Butyl-Scopolamine (Buscopan®)

To improve the picture quality, it may be necessary to reduce peristaltic bowel movement, in which case cramp-reducing medication is administered. Patients must inform us if they have a glaucoma or an enlarged prostate.

This medication can cause a dry mouth, heart palpitations, or difficulties when urinating. As pupils will be enlarged and eyes will have difficulties focusing for up to 12 hours following administration, patients must not drive.

Diazepam (Valium®)

Our PET/CT scanner is specifically designed to be more spacious than usual (so called open design). Nonetheless, some few patients may experience claustrophobia. In such cases we offer sedating medication, allowing patients to sleep through their scan. Also music through ear plugs will be provided.

This medication also precludes driving for 24 hrs following the examination; in fact, we strongly encourage patients to bring a companion with them to accompany them home afterwards.

X-ray contrast medium containing iodine

To optimise the examination it may be necessary to inject an x-ray contrast medium into the vein or intestines. In rare instances, this can lead to allergic reactions (skin rash, itchy skin, effects on breathing or blood circulation). Existing serious liver, heart, or kidney disorders may be exacerbated. With certain thyroid disorders metabolism may be affected negatively. Some blood glucose medication (those containing Metformin) must be discontinued before the scan.

Pregnancy

If pregnancy cannot be positively ruled out, we will only undertake scans in extremely urgent cases.

Following the examination

Following the examination you should drink at least 2 litres of water to flush out the radioactive substance as quickly as possible. To reduce any potential risk of contamination (i.e., transmit even the smallest degree of radioactivity) to any others around them, a separate lavatory is provided for all PET/CT patients.

Due to the short half-life of the medical radioactive substance, there is no relevant risk to anyone around these patients.

As a particular precaution we advise against breastfeeding infants on the day of the scan, or handling toddlers/infants for more than an hour on said day.

At the latest on the day following the scan all radioactivity will have decayed.

