

“PETIFI survey”: 18-FDG-positron emission tomography/computed tomography (PET-CT) in invasive fungal infection (IFI) management

Dear colleagues,

We ask for your cooperation in participating in our study on the access, knowledge and experience with 18-fluorodeoxyglucose positron emission tomography/computed tomography (18-FDG-PET-CT) in invasive fungal infection in Europe.

We believe that the management of patients with invasive fungal infection is among the most important current challenges for infectious disease specialists. We are interested in the use of 18-FDG-PET-CT for IFI management, given the preliminary data of its added value in the diagnosis, staging and follow-up of patients with IFI. In particular, the optimal antifungal duration is a controversial issue, especially in mold infection in immunocompromised hosts and in fungal endocarditis. Recommendations on antifungal treatment length remain unclear, and antifungal duration is highly variable. The best approach to the assessment of the response to antifungal therapy is not determined to date. Several studies suggest that 18-FDG-PET-CT could have a role in monitoring the response to therapy.

The aim of the present survey is to have a picture of the state of the art of current knowledge and use of 18-FDG-PET-CT in the management of invasive fungal infections in Europe, in order to identify the unmet needs for 18-FDG-PET-CT scanning as a part of IFI management and critical issues and ways to improve clinical practice. We aim to involve as many European centers as possible.

We are confident that you will dedicate a few minutes of your time to completing this survey. The participation of each of you is essential to have the most complete picture possible. All authors contributing to the survey will be included in the publication as part of the study group. **You can read the survey below, and answer it online through the link we are sending in the email.** Do not hesitate to contact us for any question. Thank you all for your kind participation.

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PETIFI SURVEY

Institution details:

-Speciality of the responder: _____

-Category of the responder: (choose only one)

- Fellow
- Attending
- Consultant (trasnsplant ID)

-Hospital characteristics: (choose only one)

- Number of beds:
 - <200
 - 200-500
 - >500
- Public _____ or private _____ (choose only one)
- It has: **(multiple choice)**
 - Hematology Unit:
 - Leukemia
 - SCT:
 - Autologous
 - Allogenic
 - CAR-T
 - Oncology Unit
 - SOT:
 - Lung
 - Heart
 - Liver
 - Kidney
 - Pancreas
 - Intestinal
 - ICU:
 - Medical
 - Surgical
 - Specialized (specify: hemato-oncologic, cardiothoracic surgery, other)

-Country _____

-Contact person (name and surname) _____

-Email _____

Access: (choose only one)

- Onsite access to PET-CT (same hospital)?
- Offsite Access to PET-CT (other hospital)?
- No Access to PET-CT

Is PET-CT use for infection management authorized at your center? (choose only one)

- Yes

- No

PET-CT Use (multiple choice):

- Common use of PET-CT for IFI management
- Occasional use of PET-CT for IFI management
- Common use of PET-CT for infection management
- Occasional use of PET-CT for infection management
- Use of PET-CT exclusively in Oncology indication

Usefulness of PET-CT

- Do you think that PET-CT could be better than conventional imaging in IFI management? **(multiple choice)**
 - In diagnosis
 - In staging
 - In monitoring response to therapy
 - Other: specify _____
- In patients at high risk for IFI, or already diagnosed with IFI, in which indications would you **consider** ordering a PET-CT **(multiple choice)**
 - In the setting of a fever of unknown origin work-up
 - To rule out or confirm involvement at other clinically silent sites in after the IFI diagnosis (staging)
 - To differentiate colonization from infection in cases with non-sterile site positive cultures
 - To monitor response to therapy and rationalize antifungal duration
 - To distinguish residual lesions from active lesions
- In which of the following indications in the setting of IFI would a PET-CT have **more added value** for you **(choose only one)**
 - Diagnostic work-up for fever of unknown origin in a patients with a high risk of IFI
 - To rule out or confirm involvement at other clinically silent sites in after the IFI diagnosis (staging)
 - To differentiate colonization from infection in cases with non-sterile site positive cultures
 - To monitor response to therapy and rationalize antifungal duration
 - To distinguish residual lesions from active lesions
- Do you usually consider performing a PET-CT in patients diagnosed with IFI **at diagnosis**, to evaluate other site's involvement? (choose only one)
 - Yes
 - No
- When would you consider to perform a PET-CT **to monitor the response to therapy** in a patient with IFI **(multiple choice)**

- 2 weeks after starting antifungal therapy
 - 6 weeks after starting antifungal therapy
 - 12 weeks after starting antifungal therapy
 - After 12 weeks after starting antifungal therapy
- Do you think PET-CT could be useful even if the patient is **neutropenic**? (choose only one)
- Yes
 - No
- Do you think PET-CT could be useful in patients with candidemia to diagnose or rule out **Candida endocarditis** in the event of inconclusive echocardiography? **(multiple choice)**
- Never, I would prefer other imaging techniques
 - In case of prosthetic endocarditis
 - In case of cardiac device-associated endocarditis
 - In case of septic methastases
 - Always
- **How long** do you think **uptake** by fungal lesions **persists** when therapy is effective: (choose only one)
- 2 weeks
 - 6 weeks
 - 12 weeks
 - More than 12 weeks
 - It depends on the immunologic situation
- Based on the results of follow-up PET-CT, would you modify the duration of antifungal therapy? **(multiple choice)**
- If there were no FDG uptake, I would shorten antifungal therapy
 - If there were a clear decrease in FDG uptake, even if had not totally dissapeared, I would shorten antifungal therapy
 - If FDG uptake persisted, I would prolong antifungal therapy
 - If there were an increase in uptake or new lesions , I would consider performing new diagnostic tests
 - If there were an increase in uptake or new lesions , I would consider a change in the therapeutic strategy
 - I would not modify it
- What would you do in the case of a kidney transplant recipient diagnosed with pulmonary aspergilosis who after 12 weeks of therapy still presents FDG-uptake with a high SUV but volume of the lesion has decreased >25%?(choose only one)
- I would prolong antifungal therapy
 - I would perform a new diagnostic test

- I would discontinue antifungal therapy, provided patient has improved from a clinical standpoint
- Compared to HRCT, radiation exposure in PET-CT is: (choose only one)
 - significantly less than HRCT
 - PET/CT has slightly more radiation exposure than a standard HRCT chest
 - significantly more
 - unsure of the degree of radiation exposure.
- Do you think it is possible to differentiate malignancy from fungal infection according to FDG uptake in PET-CT? (choose only one)
 - Yes
 - No
- Do you think it is possible to differentiate bacterial from fungal infection by means of PET-CT? (choose only one)
 - Yes
 - No
- Do you think that infections caused by different fungal species have similar FDG uptake in PET-CT? (choose only one)
 - Yes
 - No
- If you have used PET-CT for IFI management,
 - Which was the indication? **(multiple choice)**
 - Fever of unknown origin work-up diagnosing IFI as a result
 - Staging of already diagnosed IFI
 - Rule out/confirm Candida endocarditis
 - Monitoring response to antifungal therapy
 - Adjustment of antifungal duration length
 - Rule out/confirm activity of potentially residual lesions detected with other imaging techniques
 - Diferenciate colonization from infection
 - In the setting of a research project
 - How long did it take to get the PET-CT done since requested? (choose only one)
 - <24 hours
 - <3 days
 - <7 days
 - <2 weeks
 - >2 weeks
 - Was it useful for: **(multiple choice)**
 - IFI diagnosis

- Uncovering occult lesions
 - Diagnosis or exclusion of endocarditis
 - Indication of new diagnostic tests
 - Shorten antifungal therapy
 - Prolong antifungal therapy
- How often do you use PET-CT for IFI management? (choose only one)
 - Every week
 - Every month
 - At least once every 3 months
 - At least once every 6 months
 - At least once a year
 - Less than once a year
- Did you find any barrier to perform PET-CT for IFI management?
(multiple choice)
 - Disagreement regarding indication
 - Delay between requesting and performance of PET-CT so that it was not clinically useful
 - Lack of reimbursement
 - Other: _____
- Indicate the reasons that would prevent you from using PET-CT for IFI management: (multiple choice)
 - Not available at my institution
 - Only authorized in Oncology indications
 - I consider it does not add relevant information to conventional imaging
 - I do not know if it adds relevant information to conventional imaging
 - I think it is not cost-effective
 - I do not know if it is cost-effective
 - I do not want to expose my patients to additional radiation
 - Other: _____

