

Benefit of PET or PET/CT in bone and soft tissue tumors is not proven

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For patients with bone and soft tissue tumours, the study data currently available allow no robust conclusions as to the advantages and disadvantages of using positron emission tomography (PET), alone or in combination with computed tomography (CT). This is because no studies have directly compared the benefit of these imaging techniques with conventional diagnostics. And the few available studies on diagnostic accuracy do not show any relevant differences. This is the conclusion of the final report of the German Institute for Quality and Efficiency in Health Care (IQWiG) published on 15th February 2013.

More reliable diagnosis ought to improve treatment

Bone and soft tissue tumours are [rare diseases](#) of the [musculoskeletal system](#) and soft tissue. Malignant types are particularly rare; they only represent a relatively small proportion of all cancers. Soft tissue tumours arise from different types of connective tissue, e.g. fibrous or fat tissue. They are responsible for about one per cent of cancer deaths in Germany each year. The proportion of bone tumours is lower.

Many experts hope that an examination using PET or PET/CT alone or in combination with other methods is better able to distinguish between benign and malignant tumours (primary diagnostics). PET is used to help classify the stage of the tumours correctly (primary staging) and better assess whether they respond to therapy (restaging). Experts also hope that PET or PET/CT helps them find out earlier, and with greater

certainty, whether a recurrence has occurred or a secondary tumour ([metastasis](#)) has developed. This information should help them give better [treatment recommendations](#) to patients.

Benefit for patients crucial

IQWiG therefore searched the international literature for studies that had examined the consequences of a diagnostic intervention using PET or PET/CT on health aspects of direct relevance to patients. For example, the test results - and appropriately tailored treatment - could contribute to better chances of survival for patients, spare them unnecessary treatment or further diagnostic interventions, or improve their quality of life. However, the search for such studies was unsuccessful, so the question as to the patient-relevant benefit of PET or PET/CT in bone and soft tissue tumours had to remain unanswered.

Available studies are very small and susceptible to bias

In addition, IQWiG searched for studies that had assessed the diagnostic and prognostic accuracy, i.e. the accuracy of diagnosis and the power to predict the course of disease, of PET or PET/CT or that had compared PET or PET/CT and other testing methods regarding these criteria. The basic question is how often an investigation gives a correct result. On the one hand, it should overlook true tumours as rarely as possible, but on the other, it should raise false suspicions as rarely as possible.

IQWiG evaluated the results of a total of 32 individual studies on this topic. However, most of these studies only included few participants and were also susceptible to bias, so their results are subject to great uncertainty.

Eight of these studies compared PET or PET/CT with conventional imaging techniques (MRI, X-ray, CT). However, none of these 8 studies found the [diagnostic accuracy](#) of PET or PET/CT to be statistically significantly higher than conventional techniques. No prognostic accuracy studies comparing PET or PET/CT with conventional techniques were found.

So the possible benefit of PET or PET/CT in comparison with conventional techniques remains unclear.

Process of report production

IQWiG published the preliminary results in the form of the preliminary report in June 2012 and interested parties were invited to submit comments. At the end of the commenting procedure, which included an oral scientific debate including parties who had submitted comments, the preliminary report was revised and sent as a [final report](#) to the contracting agency, the Federal Joint Committee (G-BA), in December 2012. The written comments were published in a separate document at the same time as the final report. The report was produced in collaboration with external experts.

Provided by Institute for Quality and Efficiency in Health Care

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