



Challenges in precision oncology

5 recommendations for a molecular tumor board

“Modern oncology without a molecular tumor board (MTB) has no place in 2020,” said renowned experts from the National Center for Tumor Diseases (NCT) in Heidelberg.¹ What lies behind this statement? Important points to be borne in mind while setting up an MTB – An overview with 5 recommendations by NCT experts.



MTB: From complex tumor data to individual therapy

The goal of an MTB is to translate the results of advanced molecular tumor diagnostics into individual therapy recommendations. An MTB also brings together experts from different clinical and scientific disciplines.²

Why is a molecular tumor board required?

Besides existing tumor boards, MTBs have increasingly gained in importance at oncology centers and university hospitals in Germany in recent years,¹ for which there are two reasons:

Increasingly complex genetic data

The interpretation of genetic data is becoming increasingly complex due to the progressively increasing clinical use of new, next generation sequencing (NGS) supported technologies, such as the sequencing of large gene panels, whole exomes or whole genomes³



Many more treatment options

It is becoming increasingly challenging to identify the appropriate treatment strategy, given possible therapies and available clinical studies for each patient due to the increasing number of available treatment options.³ Between September 2017 and August 2019 alone, 205 new immuno-oncological drug targets were added worldwide in preclinical and clinical testing.⁴

How molecular tumor boards work

Interdisciplinary MTBs discuss patient cases with rare or advanced tumors and evaluate available clinical, pathological and especially molecular information. It is crucial that further molecular pathological analyses, such as panel diagnostics using NGS, are undertaken and interpreted with the aid of literature and database research. The MTB thus finally arrives at individual biomarker-based therapy recommendations.¹ For patients who have run out of therapy options, the MTB can recommend¹

- experimental therapies,
- off-label applications,
- as well as inclusion in clinical studies.

5 recommendations for the structure and operation of a molecular tumor board

So far there are no uniform standards for the structuring of and cooperation within an MTB.³ The NCT experts in Heidelberg have published recommendations¹ which may be summarized by 5 points.

1. Who should ideally be on an MTB?

The Heidelberg experts recommend clinicians as well as scientific staff from research facilities as ideal MTB members, such as¹

- a translational oncologist (research physician in a clinic or a research facility),
- a pathologist,
- a human geneticist,
- a radiologist,
- the treating oncologist,
- a molecular biologist, geneticist or systems biologist, and
- a bioinformatician.



2. How are tasks distributed within the MTB?

For optimal cooperation within an MTB¹

- engaging a manager is recommended,
- who, if possible, is a translational oncologist with extensive clinical and methodological knowledge regarding the given indication.

Who does what?
MTB manager	<ul style="list-style-type: none">▪ takes over the entire organization, cooperation and communication within and outside the MTB.▪ calls the MTB together and distributes tasks.
Members of MTB	<ul style="list-style-type: none">▪ perform tasks in keeping with their areas of expertise and roles based on good clinical and scientific practice.▪ proactively contribute to decisions and recommendations of the MTB and should critically question these at any time.▪ are responsible for the quality and reliability of therapy recommendations.
Treating physician	<ul style="list-style-type: none">▪ should not be an active member of the MTB, but should discuss, and represent the patient's perspective.▪ presents the patient case in the MTB.▪ makes use of MTB recommendations for his/her further treatment strategy.

3. Which patients should be discussed by the tumor board?

It is not possible to present molecular diagnostics for all patients to an MTB since resources are limited. Patients should be selected based on clinical indications as well as on individual and clinical characteristics instead of scientific criteria.¹

Patients outside of metropolitan centers may, for example, be presented to a virtual MTB via video conference.¹

4. How should patients be educated?

There is not sufficient evidence of efficacy in individual cases for all of the therapy recommendations of the MTB. Possible genetic findings also carry special importance for the patient and their family members. It is therefore important to educate patients at an early stage and allow them to have realistic expectations. Preliminary information¹

- about generic aspects, the work of the MTB as well as implications, e.g. regarding genetic analyses, can be provided at the beginning by the attending physician.
- on possible therapy recommendations with their options, risks and partly experimental character can be provided by physicians on the MTB.



5. What additional obligations should an MTB fulfill?

Experts further recommend the following in order to ensure patient safety and further develop the precision oncology approach¹

- systematically identifying, analyzing and learning from the patient cases discussed, along with their therapy recommendations and consequences.
- sharing knowledge with other MTBs through collaboration and networking.

Uniform standards simplify sharing of data, such as for patient information and consent or for data use agreements.¹

Sources

1. Schickhardt C et al. Das Molekulare Tumorboard. *Onkologie* 2020;26:431–437.
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3. Van der Velden DL et al. Molecular Tumor Boards: current practice and future needs, *Ann Oncol* 2017; 28(12): 3070–3075.
4. Xin Yu J, Hubbard-Lucey VM, Tang J. Immuno-oncology drug development goes global. *Nature reviews. Drug Discovery.* 2019 Nov;18(12):899-900.

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