

Addressing clinical challenges in targeted therapies with advanced imaging

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Disclosure slide

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Issues to deal with

- Responding tumors take time to shrink (or may not shrink at all)
- Resistant tumors take time to grow
- Not all lesions in one patient may have the same characteristics
- Treatment may change functional and molecular characteristics of tumors

Advanced Imaging

- Advanced imaging has more to say about tumors than just lesion detection and changes in size
- Pivotal questions:
 - what is the impact on patient management ?
 - what is the impact on health care costs ?

Challenges for Advanced Imaging

- Staging
- Therapy response monitoring and prediction
 - Early adaptation of ineffective treatment
 - Drugs interactions in multi-drug treatment
- Characterization of tumors
 - Heterogeneity (intra & intertumoral)
 - Treatment-induced changes (drug resistance)

Functional and Molecular Imaging

CT	perfusion, dual energy, ...
MRI	perfusion, DWI, specific contrast agents, spectroscopy, ...
PET	perfusion, metabolism, proliferation, hypoxia, target expression, drug targeting, ...
SPECT	target expression, drug targeting, ...
Optical	target expression, ...

The road ahead

- Multidisciplinary development of protocols
- Implementation studies and GL development
- Advanced imaging in drug development:
 - early introduction of proof of concept studies
 - cost-effectiveness vs. costs of advanced imaging
- Rigorous imaging protocols and stringent QA/QC
 - compliance to standards & site accreditation