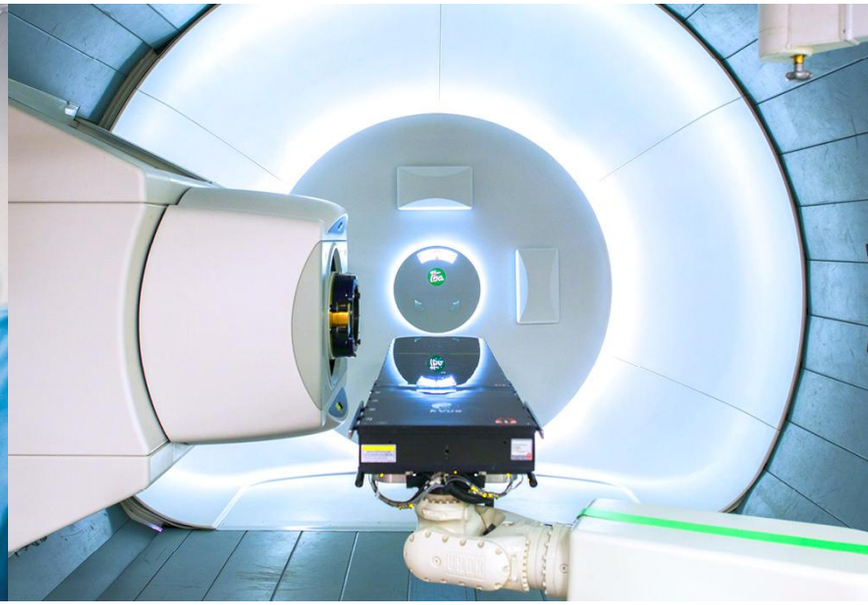
Becken: Bestrahlung der Lymphknotenbahnen vs SBRT

Fabian Lohaus 7.2.2026

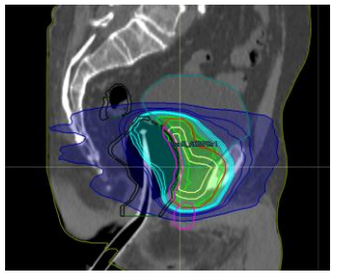


Conflict of interest

- Regeneron: Vortragshornorar

Fall

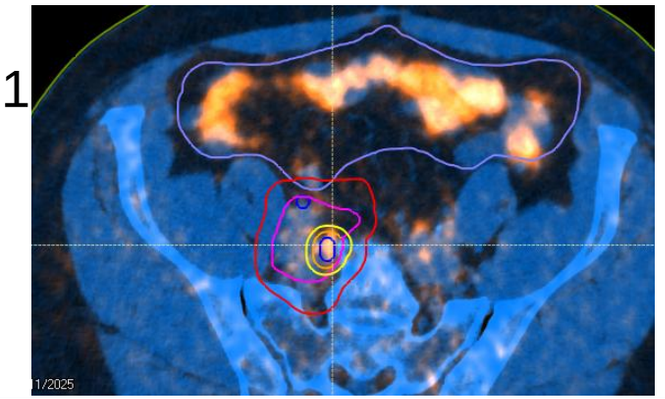
- 2016 RPLE, GS 4+4, pT3a pN0 (0/17) L1 V0 R0



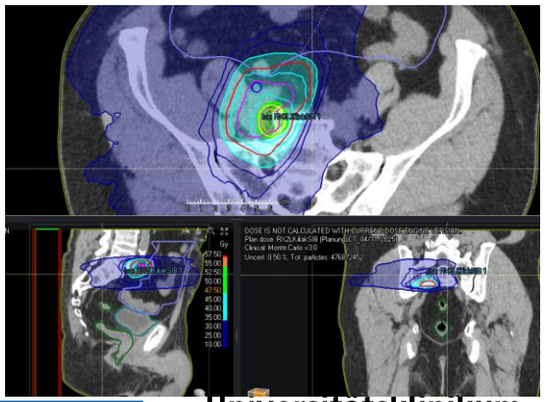
- 2020 PSA – Rezidiv, 0,2 ng/ml, PSMA-PET (-) → RT-Loge

- 2023 weiterer PSA – Anstieg, 0,6ng/ml, PSMA-PET (+)
- →ADT (6 Mon) + SBRT

- ab 10/2024 Wiederanstieg PSA > 0,1



- 09/2025 PSA 1,0, PSMA – PET (+)
- RTx 20 Fx SIB



Gliederung

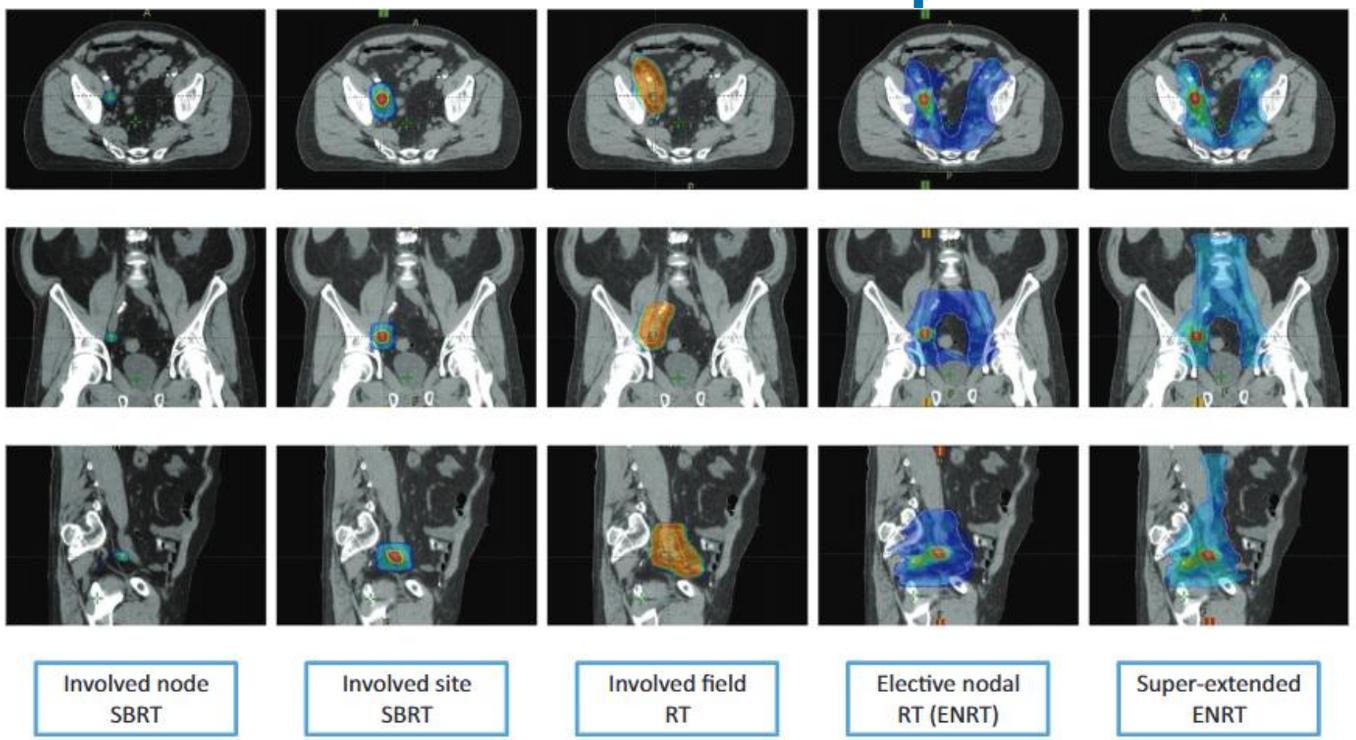
- Einführung
- Endpunkte
- Klinische Daten

Vorraussetzungen

Präzise Diagnostik und präzise Therapie

- PSA gestützte Nachsorge
- PSMA PET Hybrid-Imaging
  - Identifikation kleiner Tumorherde bei PSA- Rezidiv oder PSA-Progress
- SBRT, IMRT, IGRT
  - Genau
  - niedrige Toxizität
  - Heterogene Dosiserteilung

Zielevolumenkonzepte

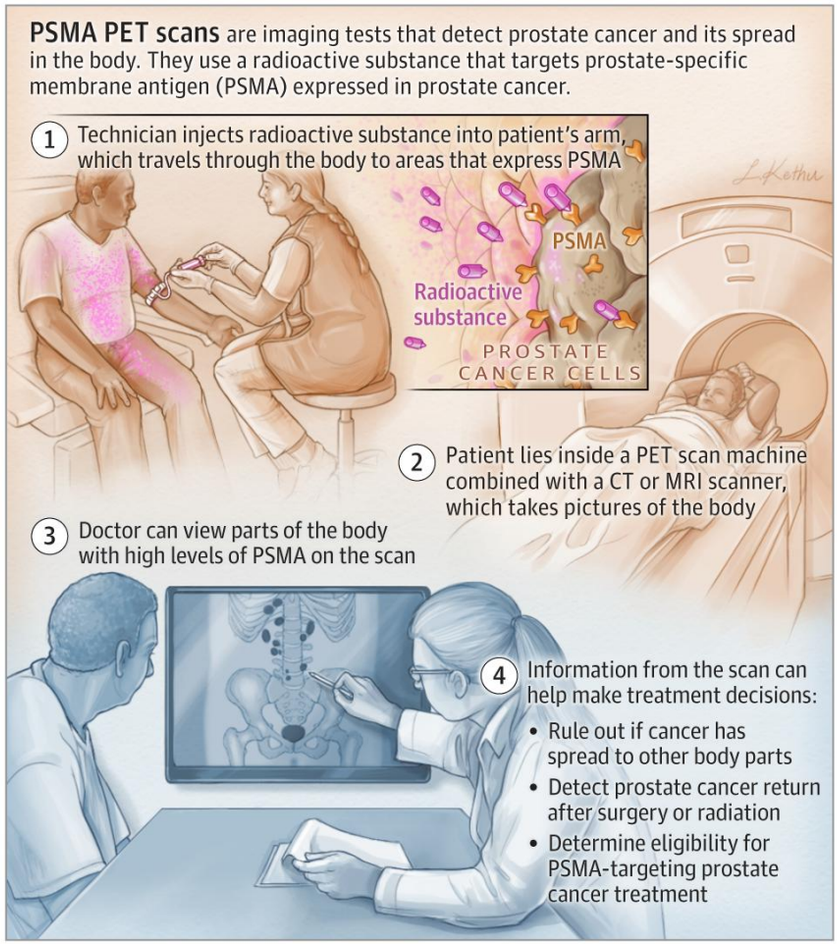


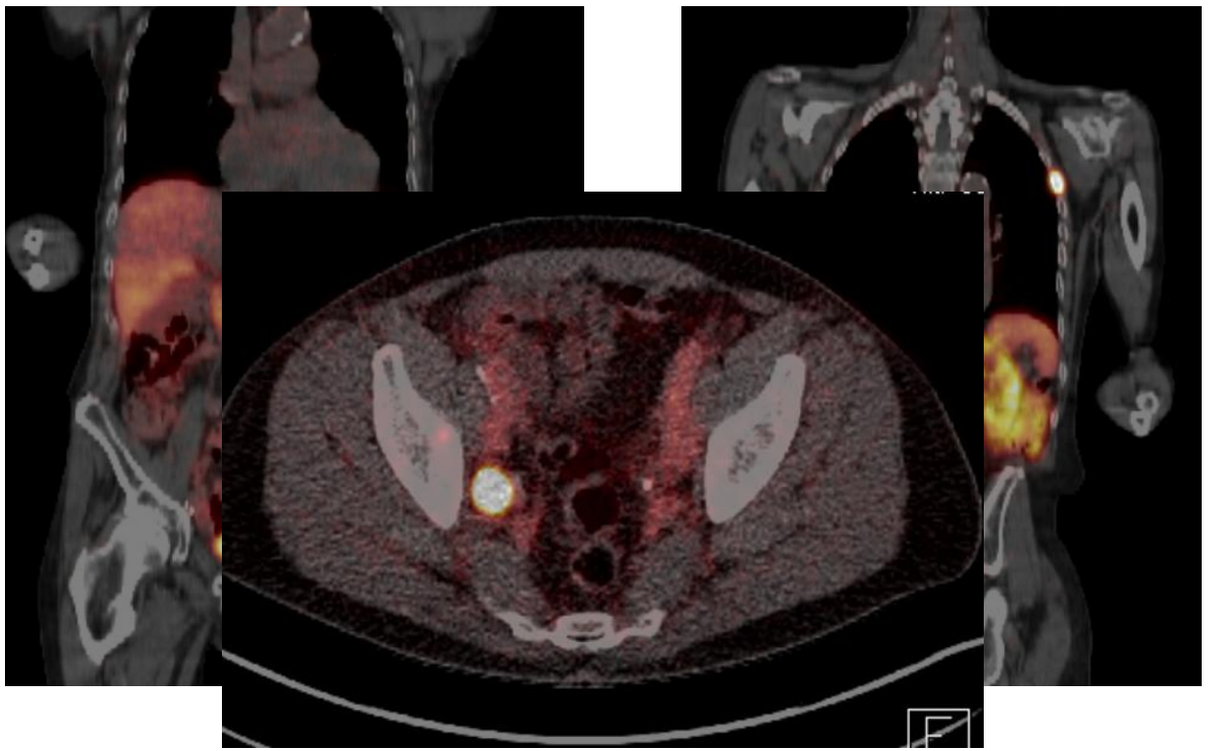
STOPMP, Oriole, OliP, EXTEND

PEACE V

Archard et al. Acta oncol 2020 DOI: 10.1080/0284186X.2020.1775291

Prostatakarzinom und PSMA





Kwon et al Jama Oncol 2022

PSMA PET Accuracy

- Sind die LK befallen ? Wenn ja wieviele?

- Sensitivität von 0,37 ????

JNM
The Journal of Nuclear Medicine

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Research Article | Clinical Investigation

Diagnostic Accuracy of Fully Hybrid PET/MRI with [^{68}Ga]Ga-PSMA-11 and [^{68}Ga]Ga-RM2 in Detecting Primary Prostate Cancer: A Phase 2 Trial with Histology as Gold Standard

Samuele Ghezzo, Paola Mapelli, Laura Lucia Cogrossi, Ana Maria Samanes Gajate, Giorgio Brembilla, Vito Cucchiara, Benedetta Mattorre, Tommaso Russo, Carolina Bezzi, Ilaria Neri, Sebastiano Vadalà, Andrea Alimonti, Massimo Freschi, Alberto Briganti, Francesco De Cobelli, Arturo Chiti, Matteo Bellone, Paola Scifo and Maria Picchio

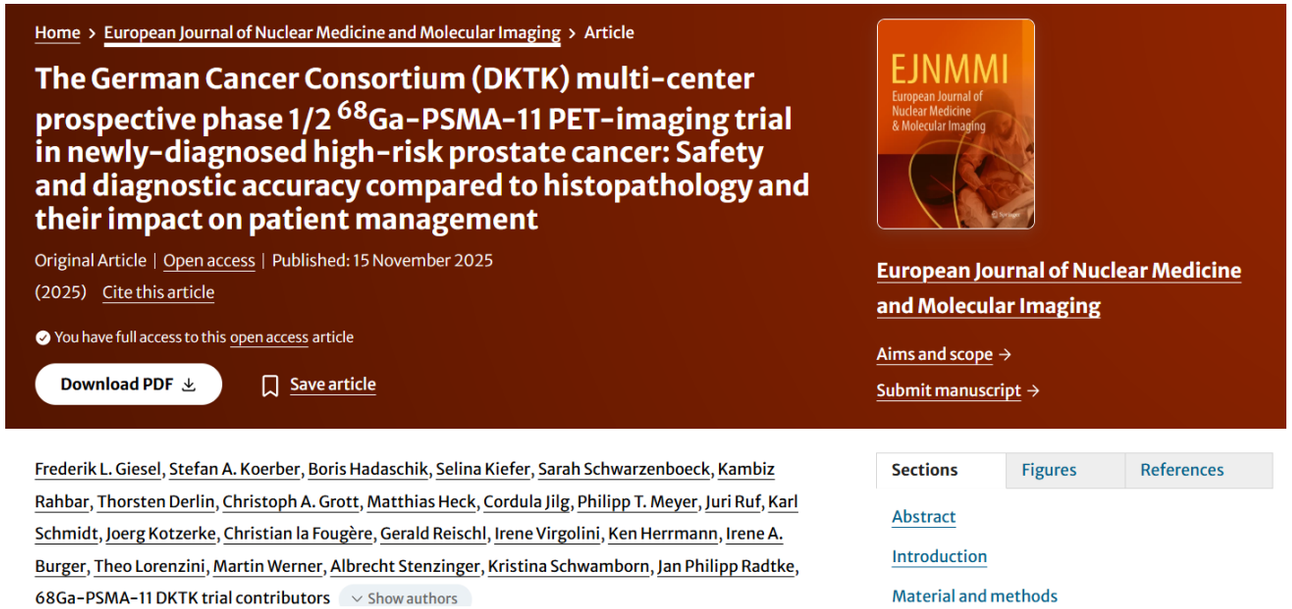
Journal of Nuclear Medicine November 2025, jnumed.125.269782; DOI: https://doi.org/10.2967/jnumed.125.269782

 Ghezzo et al. JNM 2025, DOI: 10.2967/jnumed.125.269782

PSMA PET Accuracy

- Sind die LK befallen ? Wenn ja wieviele?

- Sensitivität von 0,4 ????



Home > European Journal of Nuclear Medicine and Molecular Imaging > Article

The German Cancer Consortium (DKTK) multi-center prospective phase 1/2 ^{68}Ga-PSMA-11 PET-imaging trial in newly-diagnosed high-risk prostate cancer: Safety and diagnostic accuracy compared to histopathology and their impact on patient management

Original Article | Open access | Published: 15 November 2025

(2025) Cite this article

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European Journal of Nuclear Medicine and Molecular Imaging

Aims and scope →

Submit manuscript →

Frederik L. Giesel, Stefan A. Koerber, Boris Hadaschik, Selina Kiefer, Sarah Schwarzenboeck, Kambiz Rahbar, Thorsten Derlin, Christoph A. Grott, Matthias Heck, Cordula Jilg, Philipp T. Meyer, Juri Ruf, Karl Schmidt, Joerg Kotzerke, Christian la Fougère, Gerald Reischl, Irene Virgolini, Ken Herrmann, Irene A. Burger, Theo Lorenzini, Martin Werner, Albrecht Stenzinger, Kristina Schwamborn, Jan Philipp Radtke, 68Ga-PSMA-11 DKTK trial contributors Show authors

Sections | Figures | References

Abstract

Introduction

Material and methods

•Giesel et al. Eur J Nucl Med Mol Imaging 2025, DOI: 10.1007/s00259-025-07540-4

PSMA PET Accuracy

- Sensitivität von 0,4 !

Home | JAMA Oncology | Vol. 7, No. 11

Original Investigation FREE

Diagnostic Accuracy of ^{68}Ga-PSMA-11 PET for Pelvic Nodal Metastasis Detection Prior to Radical Prostatectomy and Pelvic Lymph Node Dissection

A Multicenter Prospective Phase 3 Imaging Trial

Thomas A. Hope, MD[1,2,3]; Matthias Eiber, MD[4,5]; Wesley R. Armstrong[4] ; et al

» Author Affiliations | Article Information

Cite Permissions Metrics Comments

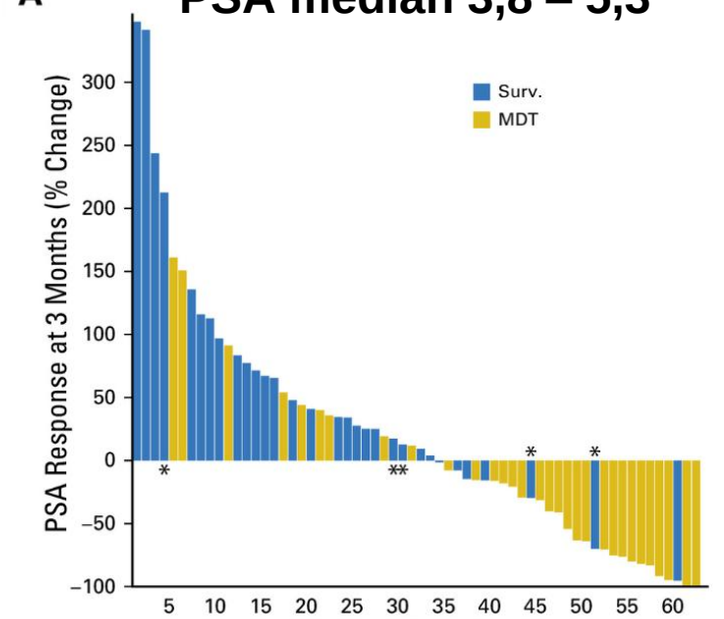
JAMA Oncol
Published Online: September 16, 2021
2021;7;(11):1635-1642.
doi:10.1001/jamaoncol.2021.3771

 Hope et al. JAMA Oncol 2021, doi:10.1001/jamaoncol.2021.3771

PSA Response nach MDT

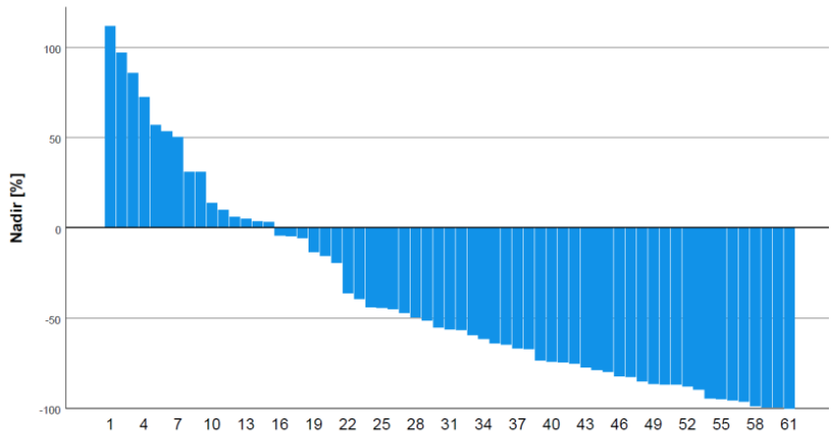
STOMP-Trial

A **PSA median 3,8 – 5,3**



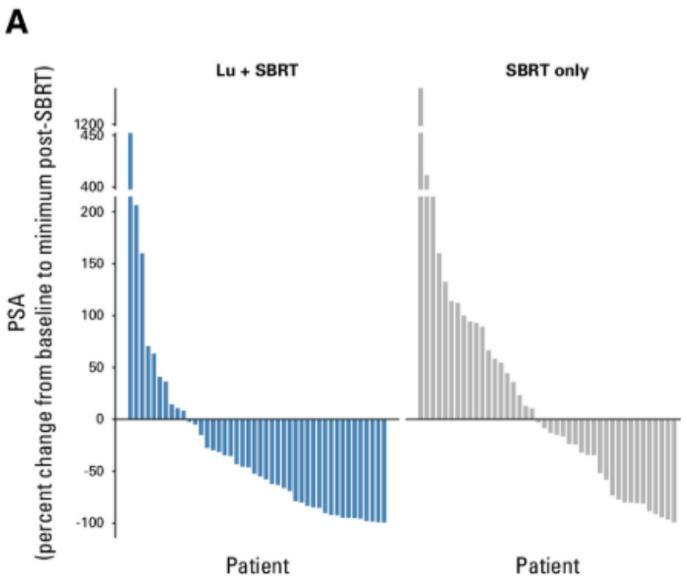
Oli-P

PSA ~2,2



LUNAR

PSA ~1,2



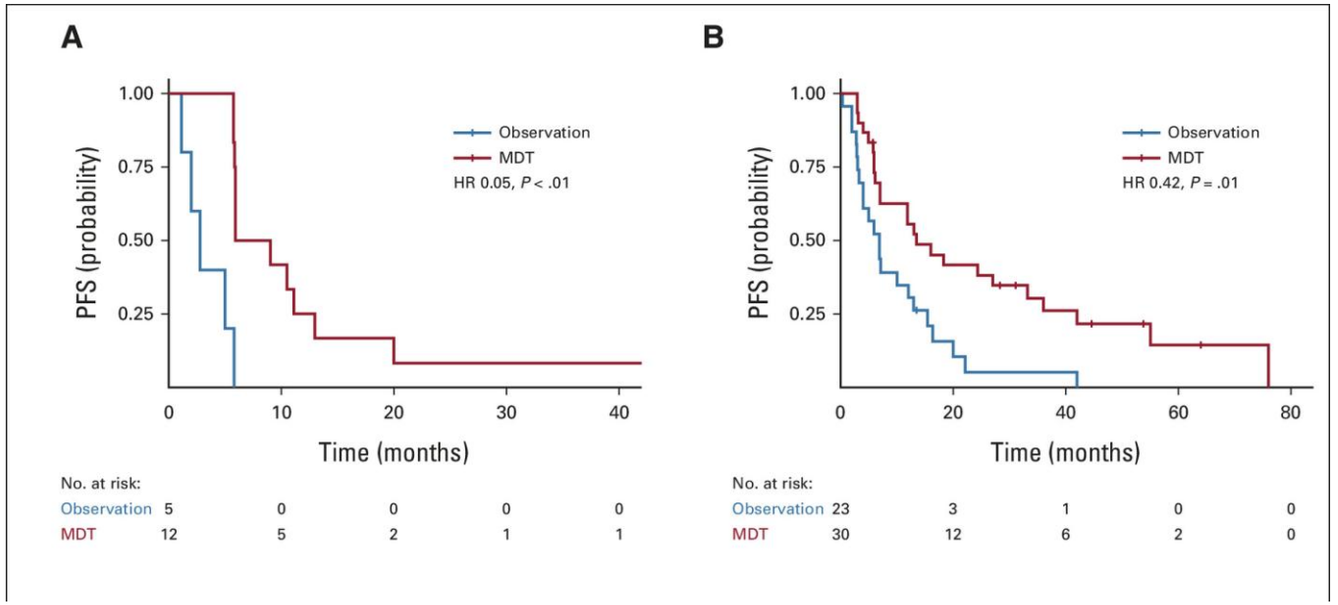
Ost et al. JCO 2018
DOI: 10.1200/JCO.2017.75.4853

Hölcher et. al Eur Urol Oncol 2022
https://doi.org/10.1016/j.euo.2021.10.002

Kishan et al. JCO 2025
DOI: 10.1200/JCO-25-01553

STOMP + Oriole

Langzeitoutcome



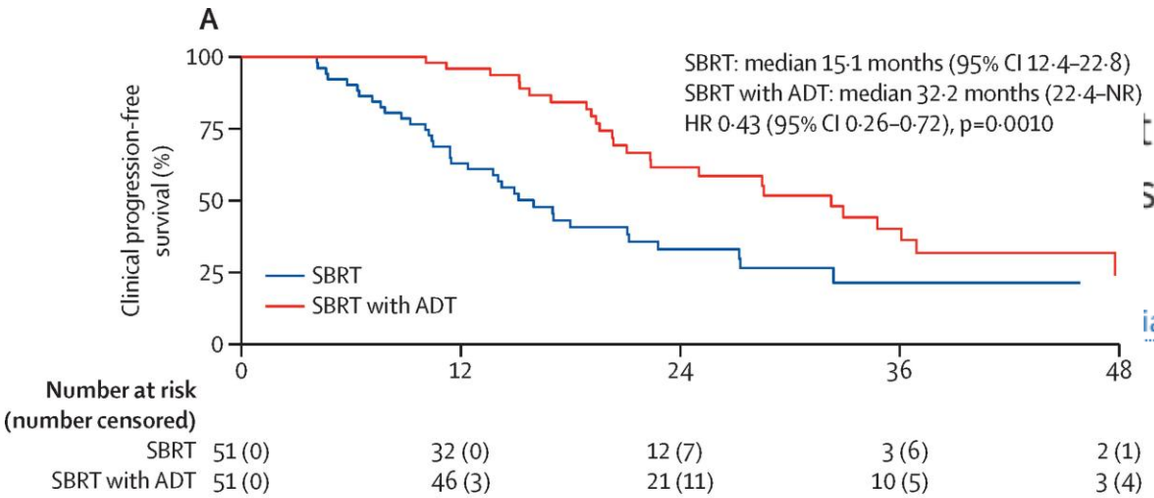
 Deek et al. JCO 2022, DOI: 10.1200/JCO.22.00644

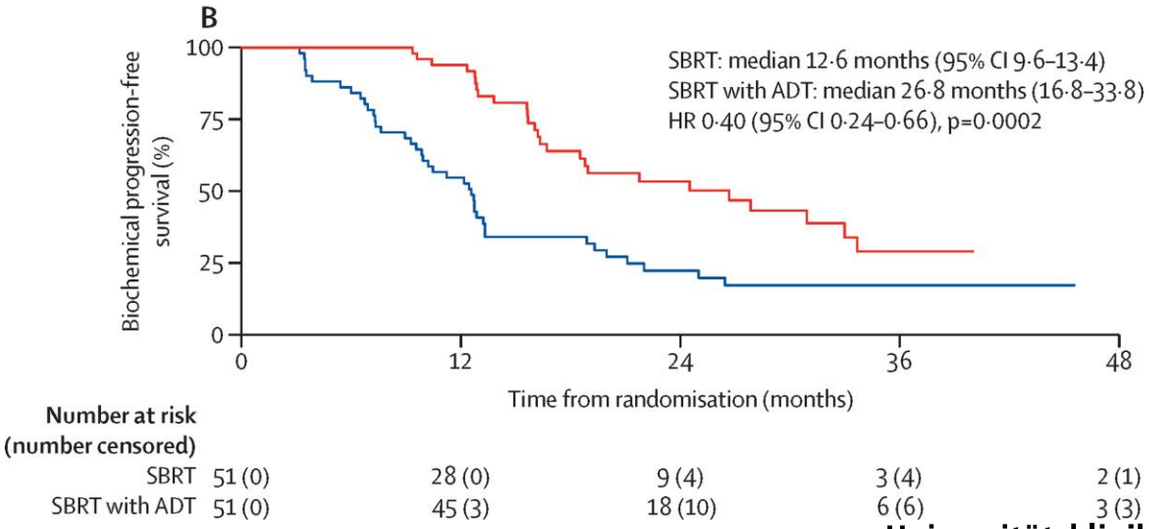
Endpunkte nach SBRT/ENRT

- OS ???
- Biochemical relapse free survival ??
- Time to ADT
- Eugonadal progression free survival?
- Time to CRPC

Einfluss SBRT+ADT

- SBRT +/- 6 Mont ADT
- Clinical progression free survival





MDT alleine

„a lot to a little?“

- STOMP
- ORIOLE
- RADIOSA
- OliP
  - PSA Rezidive nach < 12 Mon häufig
  - Häufige Rezidive angrenzend an das RT Volumen

+ „a little to a lot“?

ELSEVIER

The Lancet Oncology

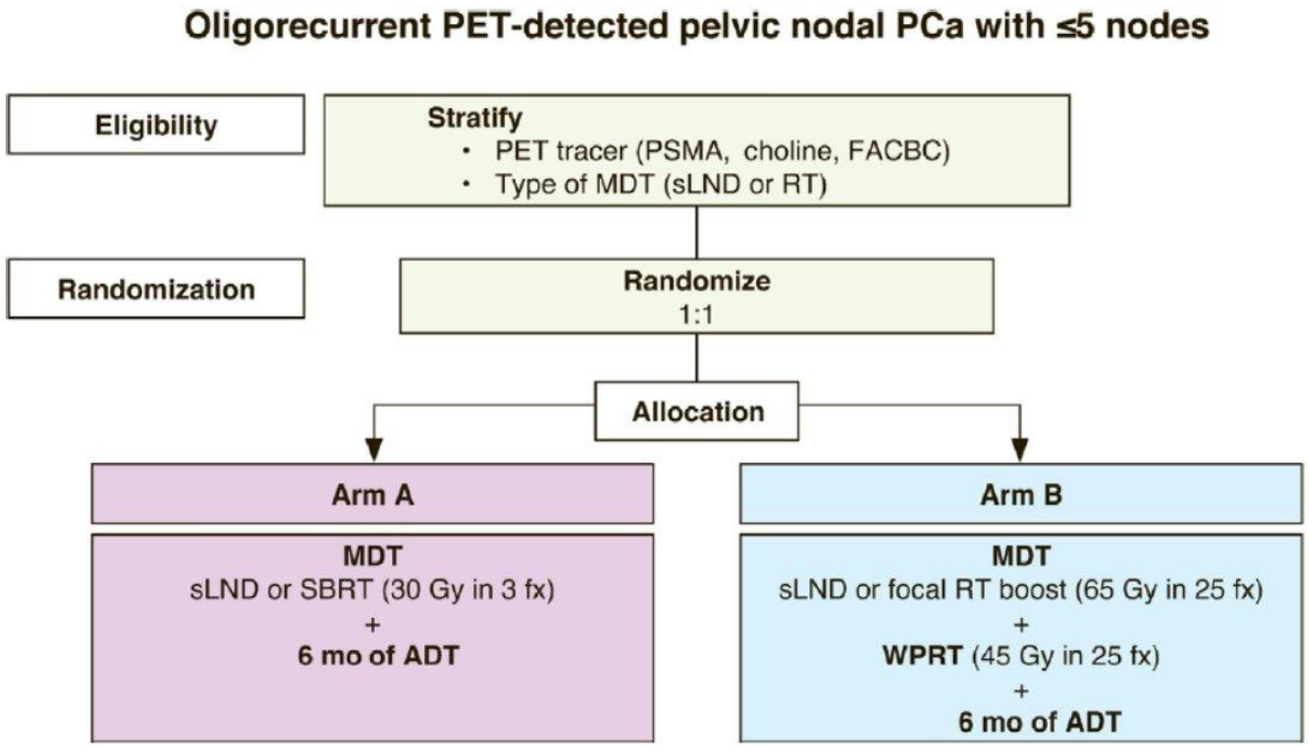
Volume 26, Issue 6, June 2025, Pages 695-706

Articles

Salvage metastasis-directed therapy versus elective nodal radiotherapy for oligorecurrent nodal prostate cancer metastases (PEACE V–STORM): a phase 2, open-label, randomised controlled trial

Piet Ost MD [a b], Prof Shankar Siva MD [c d e], Sigmund Brabrand MD [f], Piet Dirix MD [b], Nick Liefhooghe MD [g], François-Xavier Otte MD [h], Alfonso Gomez-Iturriaga MD [i], Wouter Everaerts MD [j k], Mohamed Shelan MD [l m], Prof Antonio Conde-Moreno MD PhD [n], Fernando López Campos MD [o], Alexandros Papachristofilou MD [p], Prof Matthias Guckenberger MD [q], Prof Marta Scorsetti MD [r s], Almudena Zapatero MD [t], Ana-Elena Villafranca Iturre MD [u], Clara Eito MD [v], Prof Felipe Couñago MD [w], Paolo Muto MD [x], Wim Duthoy MD PhD [y]...Thomas Zilli MD [ad ah ai]

PEACE V-STORM:
a phase 2, open-label, randomised controlled trial

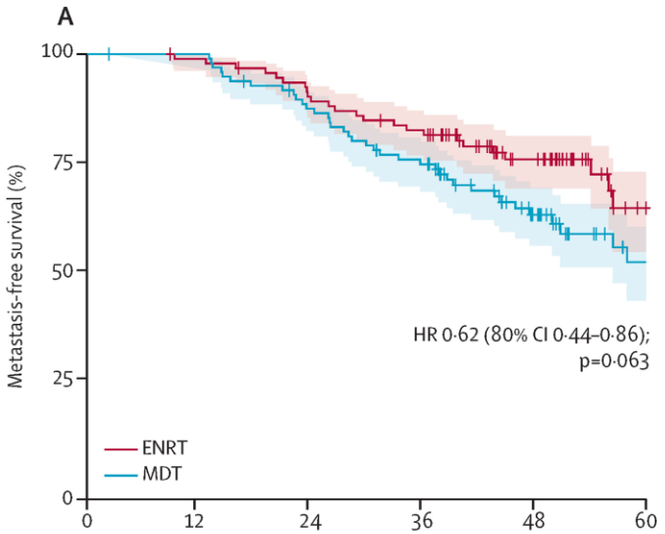


- median Metastases (M1!) free survival 24 → 36 Mon.(imaging!)
- 15 (MDT) vs 7 (ENRT) nach primäre RT
- nur ~50 % LAD bei RPLE
- PSA ~1,0

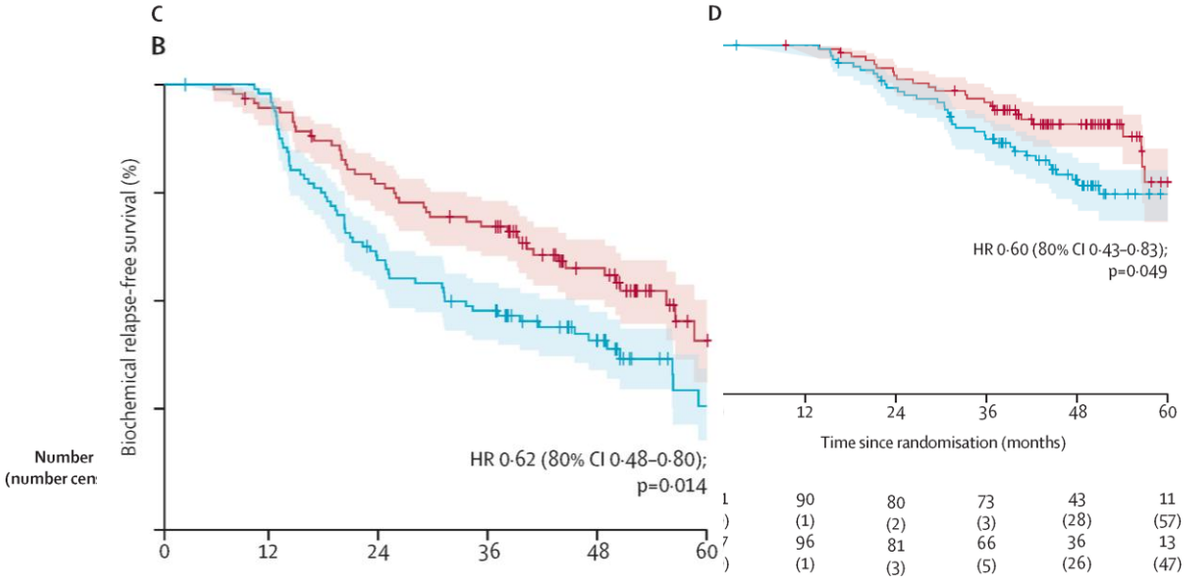
Ost et al, Lancet Oncol 2025 DOI : 10.1016/S1470-2045(25) 00197-4

PEACE V-STORM:
a phase 2, open-label, randomised controlled trial

- Prim. Endpunkt nach 50 Mon
  - Negativ



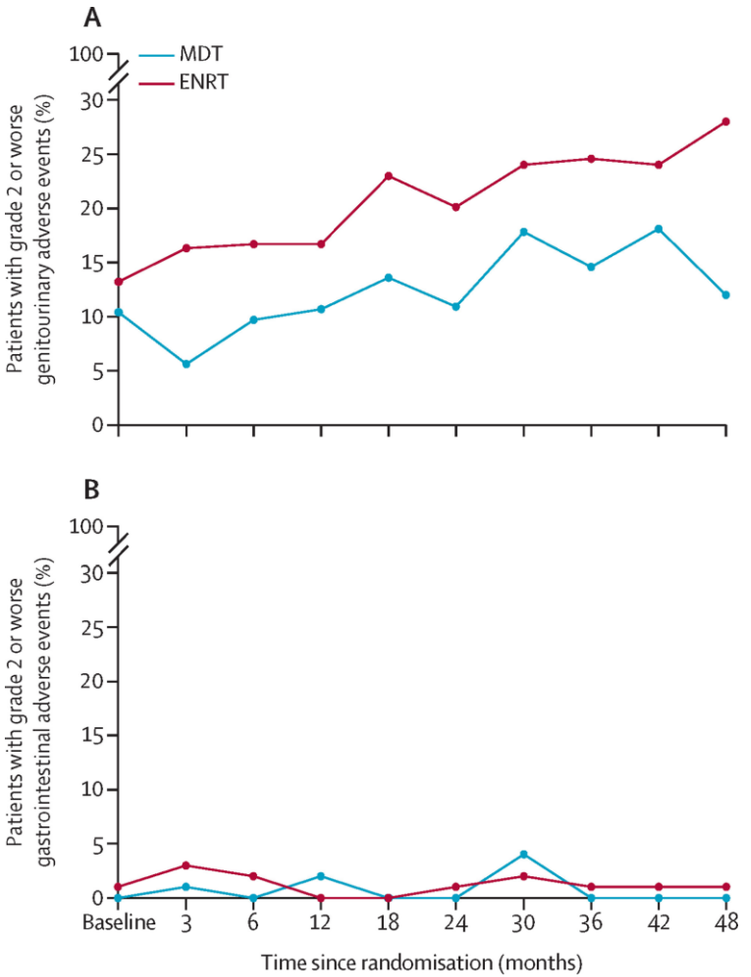
- Sek. Endpunkte



Ost et al, Lancet Oncol 2025 DOI : 10.1016/S1470-2045(25) 00197-4

PEACE V-STORM:
a phase 2, open-label, randomised controlled trial

- RT Prostate bed?
  - HR für lokales Rezidiv: 3.01
  - OR °2 GU Tox: 1.9



Ost et al, Lancet Oncol 2025 DOI : 10.1016/S1470-2045(25) 00197-4

PEACE V-STORM:
relapse and subsequent therapies

- PET erfolgte regelhaft PSA-Rezidiv und im weiteren FU

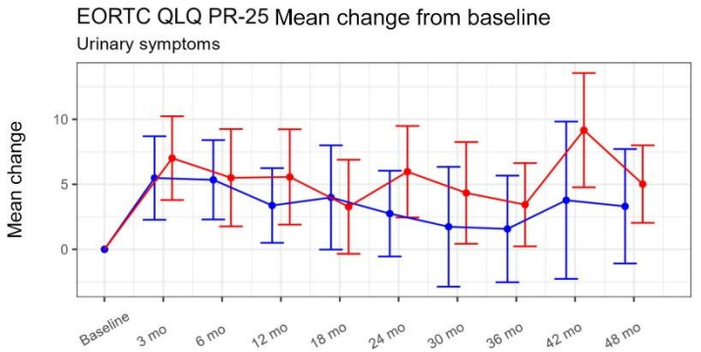
	Metastasis-directed therapy (n=97)	Elective nodal radiotherapy (n=93)
Location of relapse		
Biochemical relapse only	14 (14%)	17 (18%)
Pelvic nodes	28 (29%)	7 (8%)
Prostate bed	10 (10%)	9 (10%)
Distant metastases	36 (37%)	20 (22%)
Lymph nodes (M1a)	27 (28%)	13 (14%)
Bone (M1b)	7 (7%)	6 (6%)
Lung (M1c)	2 (2%)	1 (1%)
Subsequent therapy		
Metastasis-directed therapy (with or without androgen deprivation therapy)	28 (29%)	9 (10%)
Systemic therapy	22 (23%)	17 (18%)
No treatment started at last follow-up	6 (6%)	3 (3%)

Data are n (%).

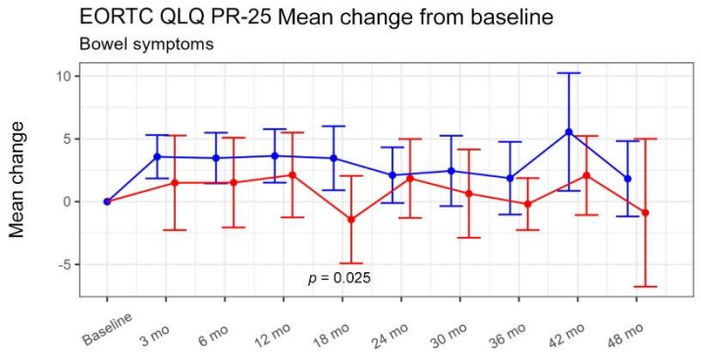
Table 2: **Location of relapses and subsequent management of the relapse**

Ost et al, Lancet Oncol 2025 DOI : 10.1016/S1470-2045(25) 00197-4

PEACE V-STORM QOL



A.



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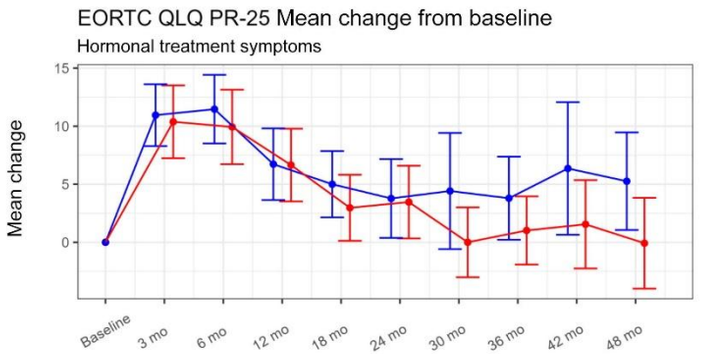

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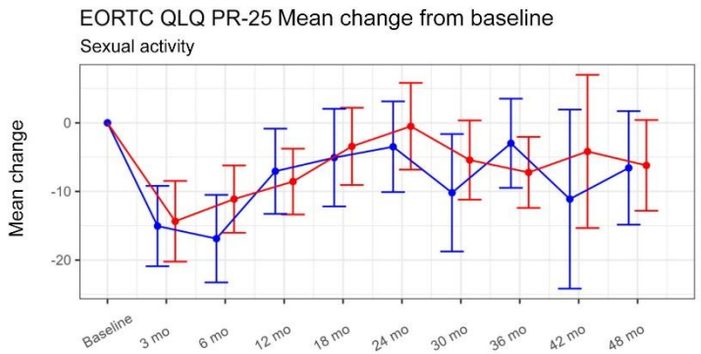

D.

Zilli et al. Eur Urol Oncol 2026 https://doi.org/10.1016/j.euo.2026.01.001

ELSEVIER

Radiotherapy and Oncology

Volume 176, November 2022, Pages 199-207

Original Article

Recommendations for radiation therapy in oligometastatic prostate cancer: An ESTRO-ACROP Delphi consensus

Thomas Zilli [a b c], Vérane Achard [b c], Alan Dal Pra [d], Nina Schmidt-Hegemann [e], Barbara Alicja Jereczek-Fossa [f g], Andrea Lancia [h], Gianluca Ingrosso [i], Filippo Alongi [j k], Shafak Aluwini [l], Stefano Arcangeli [m], Pierre Blanchard [n o], Antonio Conde Moreno [p], Felipe Couñago [q r s], Gilles Créhange [t], Piet Dirix [u], Alfonso Gomez Iturriaga [v], Matthias Guckenberger [w], David Pasquier [x y], Paul Sargos [z], Marta Scorsetti [aa]...Claus Belka [e]

7. Which imaging modalities do you recommend to select candidates for MDRT?	**PSMA PET imaging**	**Consensus Round 1: 64%; round 2: 80%; round 3: 88%**
36. For ENRT, which treatment template do you recommend?	NRG based with upper level at the aortic bifurcation (L4-5 interspace)	Agreement Round 1: 36%; round 2: 68%; round 3: 79%

- Zielvolumendefinition extrapelvin?
- Dosis?

Anzahl

3. Is the number of metastases a criterion for the indication of MDRT?	Yes, maximum 5	Agreement Round 1: 68%; round 2: 80%; round 3: 80%

ELSEVIER

Radiotherapy and Oncology
Volume 176, November 2022, Pages 199-207

Original Article

Recommendations for radiation therapy in oligometastatic prostate cancer: An ESTRO-ACROP Delphi consensus

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- Neue tracer (Cu64?
- Neue scanner ?
- Warum n=5?

https://doi.org/10.1016/j.radonc.2022.10.005

Zusammenfassung
ENRT vs MDT Prostatakarzinom

- PSMA – PET (CT) als Diagnostik
- Bisher einziger Patientenrelevanter Endpunkt: Zeit bis ADT Start

ENRT vs MDT

- Zeit seit Primärtherapie
- Alter
- ADT ?
- PSA-DT
- Pelvin vs extrapelvin (Ln L5??)
- Re-RTx ?

Nicht zu Vergessen: Lebensqualität

Präzisionsstrahlentherapie

Michael Bader, Quelle: Tourismusverband Sächsische Schweiz

Chemotherapie

Prof. Folprecht, MK1, Universitätsklinikum Dresden

Fabian.lohaus@ukdd.de

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Helmholtz-Zentrum Dresden-Rossendorf