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How PSMA-PET is Changing Radiation Therapy Treatment and How We Abstract Prostate Cancer

What is PSMA-PET and How does it work?

FDA approved radioactive tracer drug 68Ga-PSMA-11 attaches to PSMA proteins, which prostate cancer tumors overexpress. The PET scan detects the concentrated PSMA tracer, pinpointing these tumors for more effective treatment.

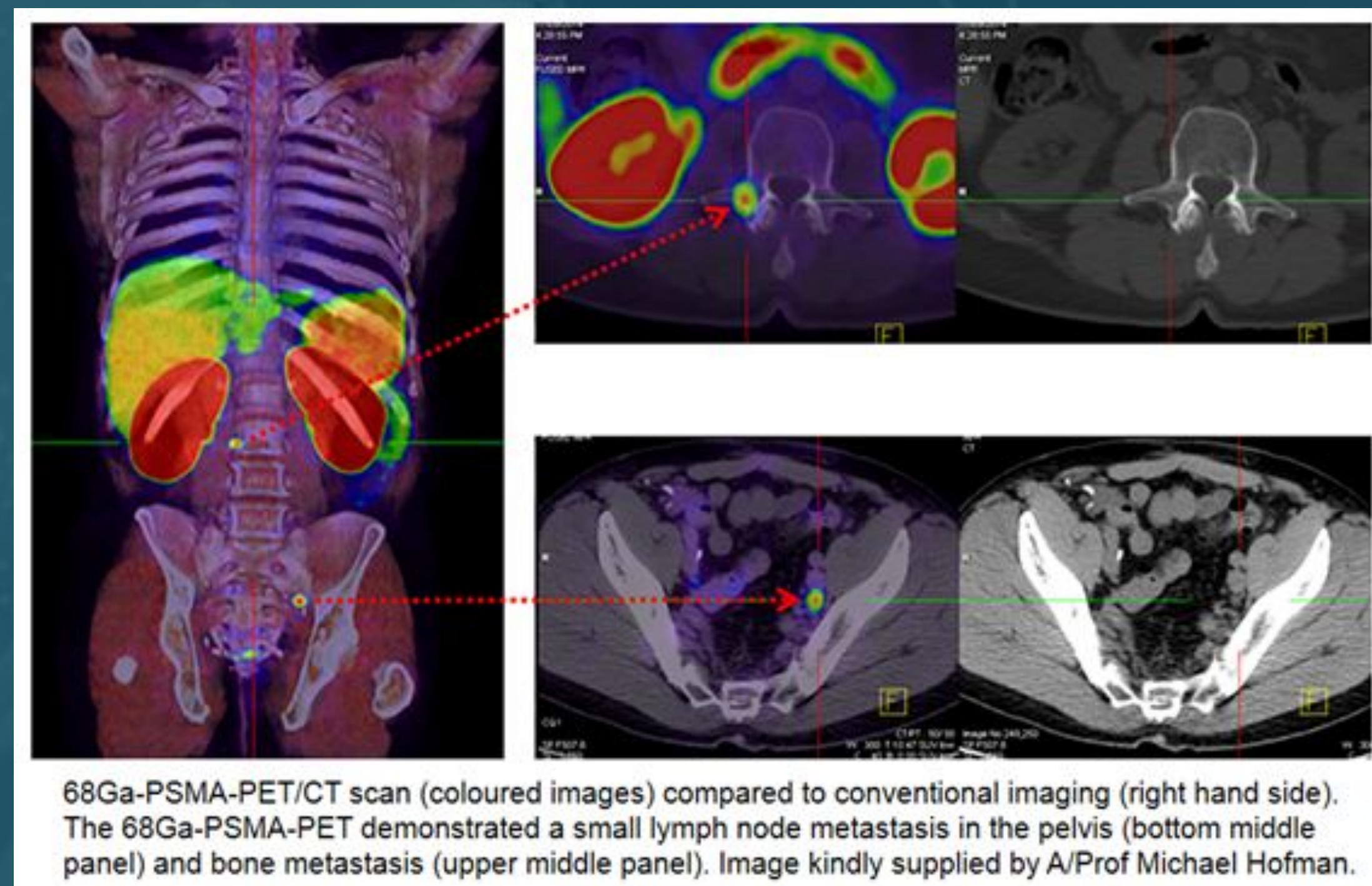
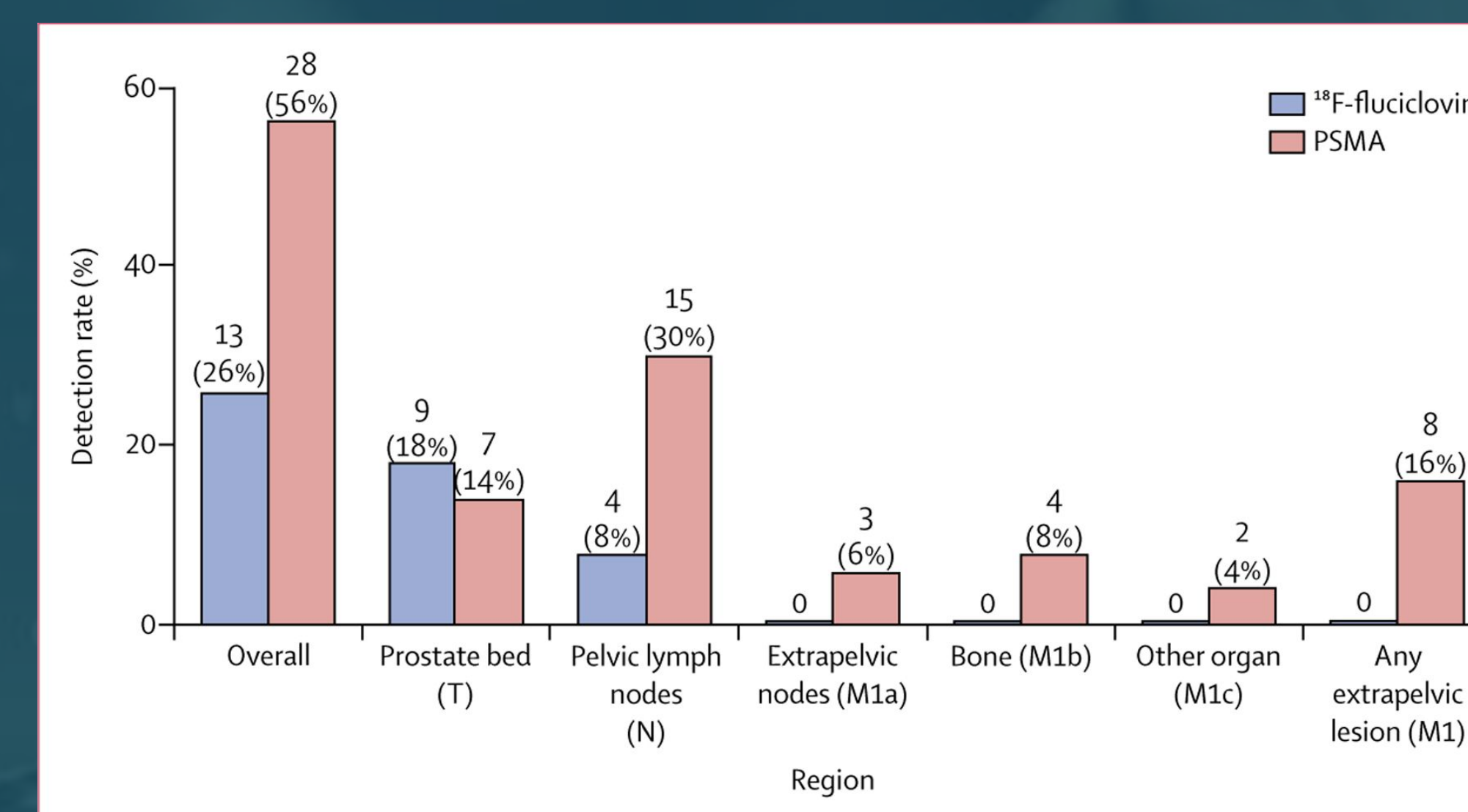
PSMA PET is more effective and precise for localizing metastatic prostate cancer

- PSMA is overexpressed in >90% of tumor cells. The higher PSMA expression is associated with higher Gleason score and lower survival rates
- Results lead to better treatment planning and targeted care.
- PSMA-PET is more effective in pinpointing and eliminating tumors not only in the prostate but also throughout the pelvis and the body in cases where the tumors have migrated.
- PSMA PET was able to detect significantly more prostate lesions than fluciclovine "traditional" PET in men who had undergone a radical prostatectomy but had experienced a recurrence of their cancer.

"Traditional" PET-CT vs PSMA- PET-CT in Patients Following Radical Prostatectomy

- Detection rates were significantly lower with "traditional" 18-fluciclovine PET-CT than with PSMA-PET, 26% vs 56%
- In the subanalysis of the pelvic nodes region, 8% vs 30%
- In the subanalysis of any extrapelvic lesions, 0% vs 16%

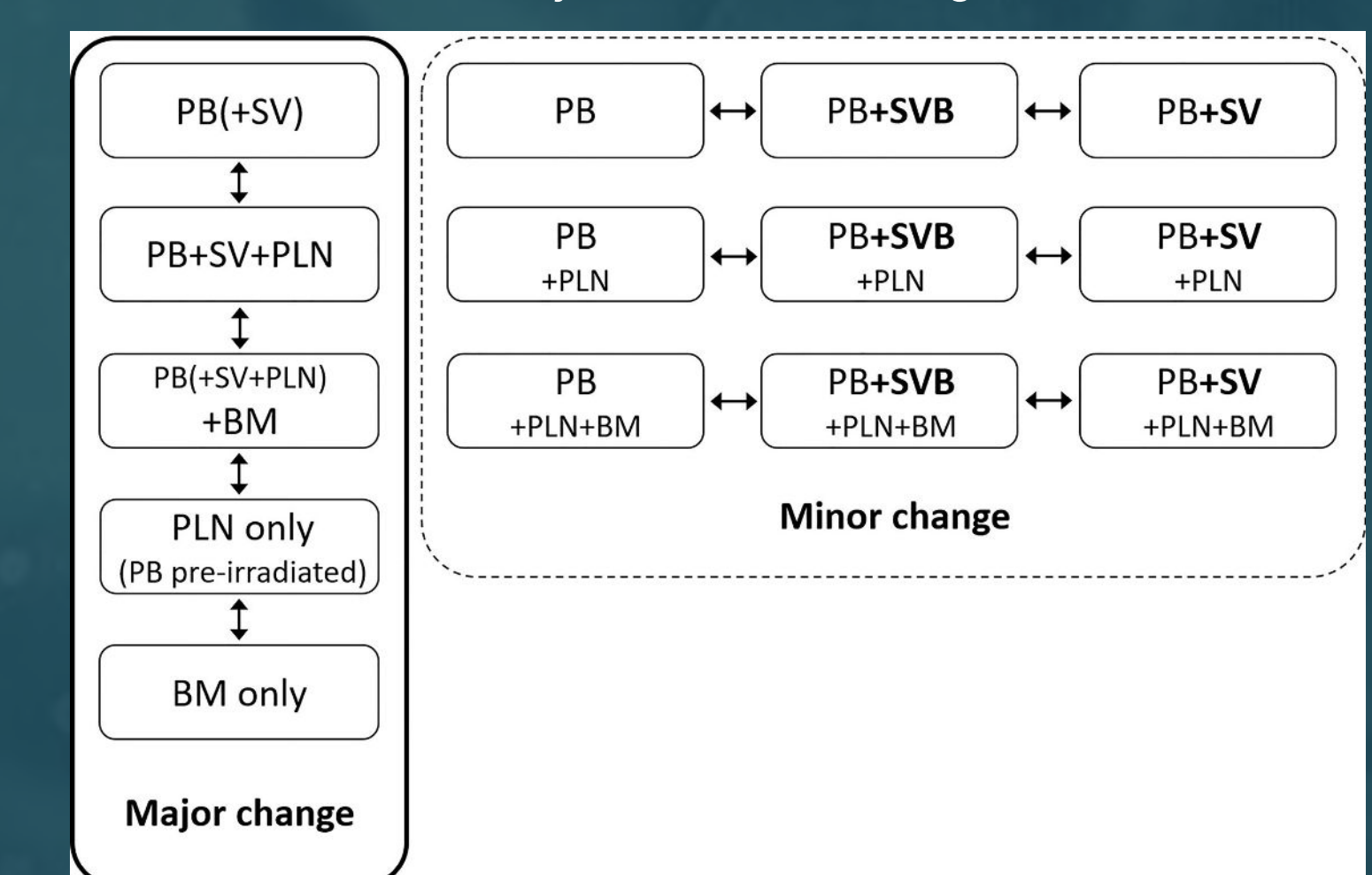
Conclusion: PSMA should be the PET tracer of choice when PET-CT imaging is considered for subsequent treatment management decisions in patients with prostate cancer and biochemical recurrence after radical prostatectomy and low PSA concentrations (<2.0 ng/mL)



Changes in Radiation Treatment Plan Leads to Changes in the Registry

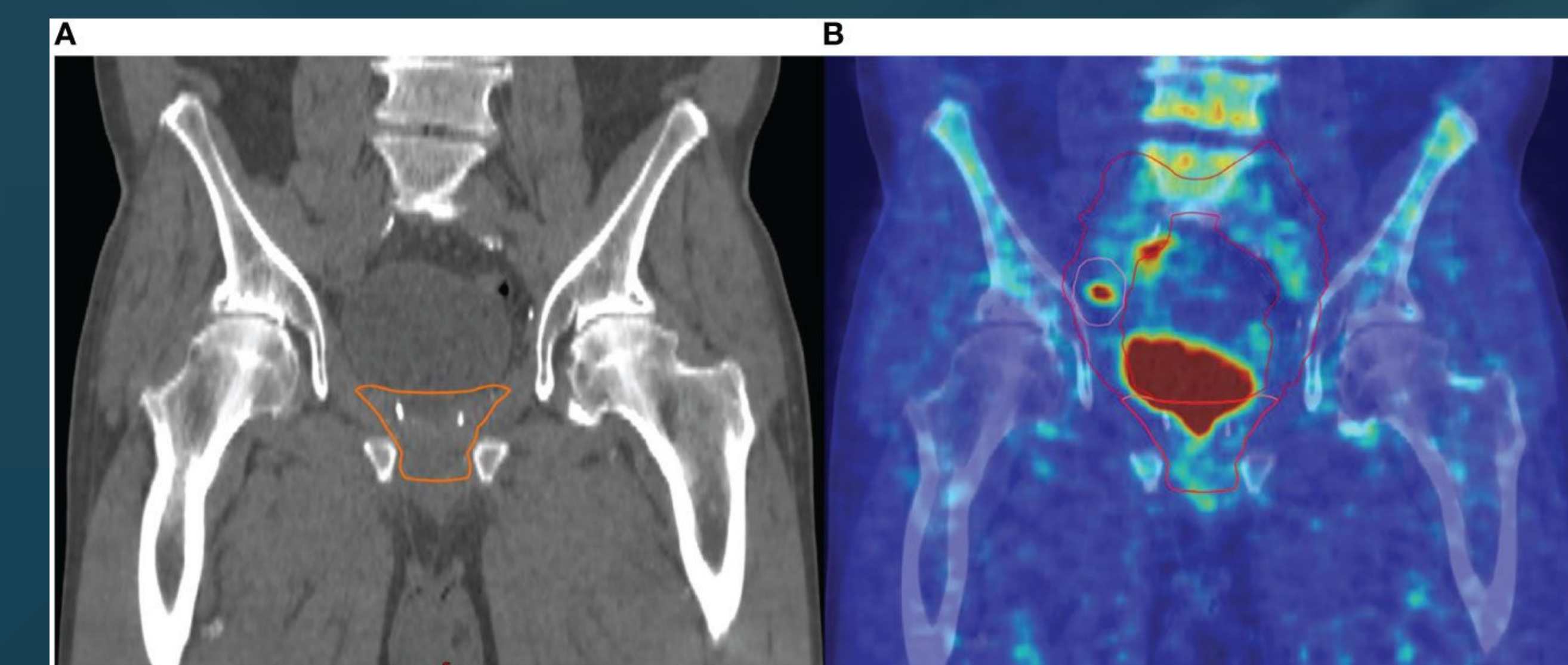
There is a rise in orders for PSMA-PET imaging in advanced prostate cancer. We are seeing more Lymph Node and bone met involvement based on results from PSMA-PET scans

Definition of major and minor changes in XRT



PB, postop prostate bed; SV, original seminal vesicle position; SVB, original seminal vesicle base position; PLN, pelvic lymph nodes; BM, bone mets; NC, no change

Example of Major Change to a Standard Radiation Treatment Field Based on PSMA-PET Imaging Location



(A) Target volume without pelvic lymph nodes based on the clinical and pathological situation without PET
(B) Target volume with consideration of the PET: additional irradiation of pelvic lymph nodes based on PET positive right iliac lymph node mets

National Comprehensive Cancer Network (NCCN) Guidelines for Prostate PSMA-PET Imaging

- As workup for progression, detection of recurrent disease after irradiation or radical prostatectomy and for initial risk stratification for localized prostate cancer
- Men with newly diagnosed unfavorable intermediate, high or very high risk prostate cancer
- Suspected mets for initial definitive irradiation

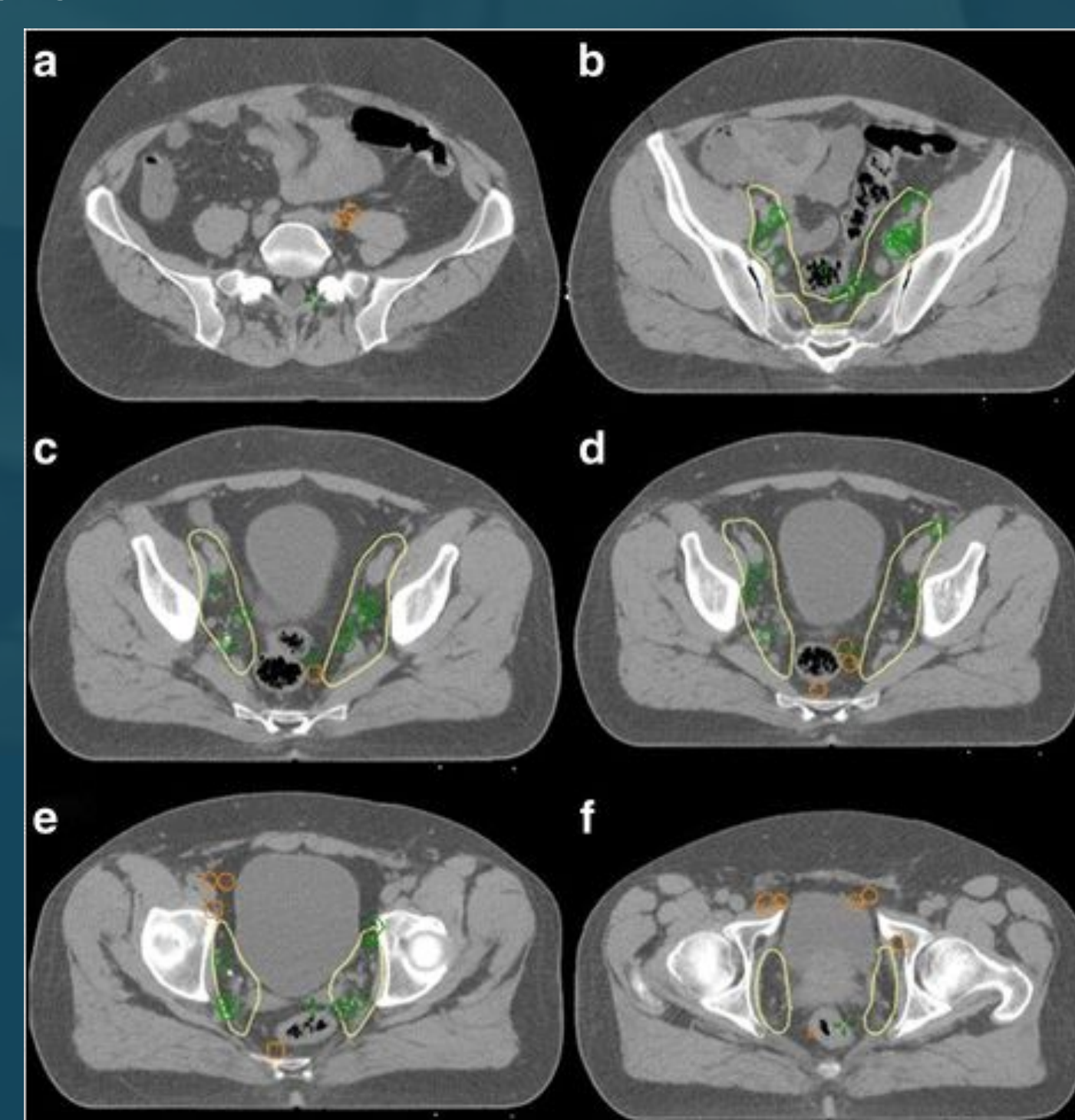
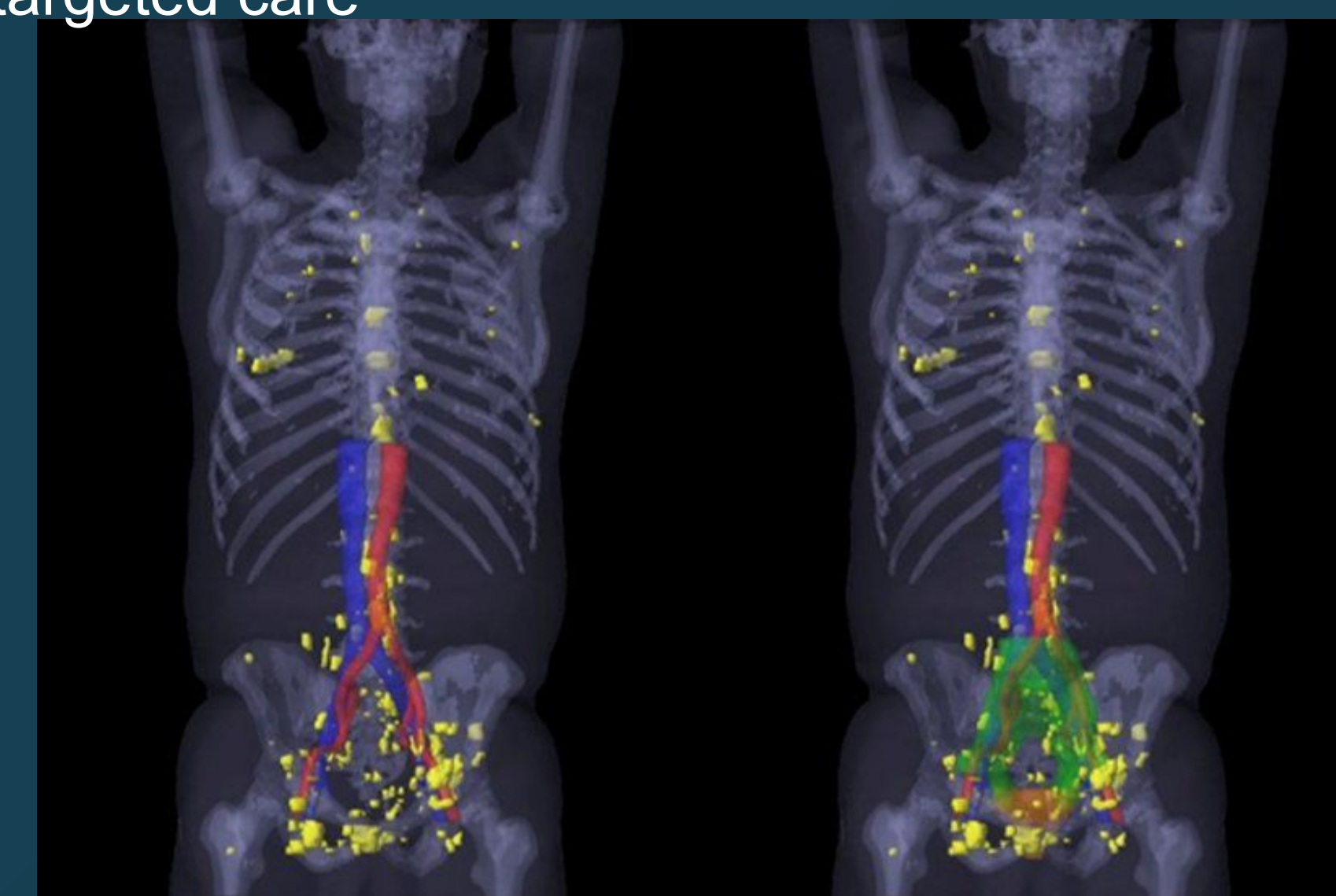
Conclusion: We will be seeing a rise in orders from Oncologists for PSMA-PET imaging for prostate cancer patients

PSMA-Pet Scan Location of Recurrence for Salvage Radiation Therapy

- Approximately 80% of prostate patients would be treated with radiation to the prostate bed and seminal vesicles alone. Only 20% would also include pelvic lymph nodes
- In Clinical Trials, PSMA-avid disease was found in 53% of patients
 - 38% found outside of the pelvis
 - 50% confined to pelvic lymph nodes and prostate bed
 - 12% recurred in prostate bed only

Conclusion: Nearly 1/3 of men had PSMA-avid disease that would have been missed by standard radiation fields. Therefore, a change in the radiation therapy plan must be made

PSMA-PET visualizes prostate cancer recurrence early, Thus impacting the radiation therapy treatment plan providing more targeted care



Lymph nodes detected by PSMA-PET imaging that would have been inside (green) or outside (orange) of a standard XRT treatment field. 35.7% of all lymph nodes would have been missed in the standard XRT field. This would result in insufficient dose coverage.

Prostate Abstract Coding Changes Resulting from PSMA-PET Scan Imaging

- Information to be added to Follow-up if after radical prostatectomy, since not 1st course tx
- If 1st course treatment, several Radiation Data Items may change:
 - Radiation to Draining Lymph Nodes, Code 00 vs 06
 - Primary Treatment Volume, Code 06 vs 64
 - External Beam Radiation Planning Technique, Code 05 vs 04 (mets)
 - Dose per Fraction, Number of Fractions and Total Dose will be dependant on what the Oncologist includes the radiation treatment plan

Phase I-II-III Radiation Primary Treatment Volume	
Code	Label
00	No radiation treatment to draining lymph nodes. Diagnosed at autopsy.
01	Neck lymph node regions
02	Thoracic lymph node regions
03	Neck and thoracic lymph node regions
04	Breast/Chest wall lymph node regions
05	Abdominal lymph nodes
06	Pelvic lymph nodes
07	Abdominal and pelvic lymph nodes
08	Lymph node regions, NCC
09	Not applicable: Phase I Radiation Primary Treatment Volume is lymph nodes
99	Unknown if any radiation treatment to draining lymph nodes; Unknown if radiation treatment administered

Phase I-II-III Radiation Primary Treatment Volume	
04	Conformal or 3-D conformal therapy
05	Intensity modulated therapy