State of the Art: Staging, Restaging and Response Evaluation in Lymphomas

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Disclosure

Bruce D. Cheson, M.D.

ALLIANCE Meeting 2015

I have a PET (Annie)

II will not discuss off label/investigational use

And no PETs have been harmed during the preparation of this presentation

Rationale for Standardized Staging and Response Criteria

- Promote reporting of uniform endpoints
- Allow for comparisons among studies
- Identify new and more effective therapies
- Facilitate evaluation and regulatory approval of new agents

Peters, 1950

CLINICAL CLASSIFICATION OF HODGKIN'S DISEASE

Stage I	Involvement of only one lymph node region or a single lesion elsewhere, with no constitutional symptoms
Stage II	Involvement of two or more proximal lymph node regions confined to either upper or lower trunk, with or without constitutional symptoms
Stage III	Involvement of multiple lymph node regions with or without constitutional symptoms or acute Hodgkin's disease with no obvious lymphatic involvement

SYMPOSIUM

Sponsored by the
American Cancer Society
and the
National Cancer Institute
and
with the Assistance of The Whiting
Foundation of Flint, Michigan

STAGING IN HODGKIN'S DISEASE

Held at the
Towsley Center for Continuing Education
University of Michigan
Ann Arbor, Michigan
April 26–28, 1971

The History of Hodgkin's Lymphoma Staging

- Ann Arbor classification – 1971
  - Only applies to initial disease presentation
  - Based on curative treatment with RT
  - Assumptions
    - HL in early stages spreads contiguously
    - Extended field RT is treatment of choice
    - Combination chemo reserved for advanced disease – unproven efficacy/unknown toxicity

The History of Hodgkin's Lymphoma Staging: Ann Arbor Classification

- Four stages (I, II, III, IV)
- Subclassification into A and B based on:
  - Fevers >38^{o} C
  - Weight loss >10% in the past 6 months
  - Night sweats
  - Eliminated pruritus
- "E" for proximal/contiguous extranodal disease
- Pathologic stage (PS) from staging laparotomy (N, H, S, L, M, P, O, D – +/-)
- Clinical stage (CS) without laparotomy

The History of Hodgkin's Lymphoma Staging

- Cotswold's – 1989
  - CT scans were included
  - Laparotomy no longer needed
  - Recognized focal lesions in liver/spleen
  - Ignored liver function abnormalities
  - "X" designation for bulky disease
  - Introduced "CRu"

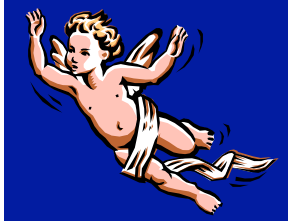
Lister et al, J Clin Oncol 7:1630, 1989

Report of an International Workshop to Standardize Response Criteria for Non-Hodgkin's Lymphomas

By Bruce D. Cheson, Sandra J. Horning, Bertrand Coiffier, Margaret A. Shipp, Richard I. Fisher, Joseph M. Connors, T. Andrew Lister, Julie Vose, Antonio Grillo-López, Anton Hagenbeek, Fernando Cabanillas, Donald Klippensten, Wolfgang Hiddemann, Ronald Castellino, Nancy L. Harris, James O. Armitage, William Carter, Richard Hoppe, and George P. Canellos

Abstract: **Standardized guidelines for response assessment are needed to ensure comparability among clinical trials in non-Hodgkin's lymphomas (NHL). To achieve this, two meetings were convened among United States and international lymphoma experts representing medical hematology/oncology, radiology, radiation oncology, and pathology to review currently used response definitions and to develop a uniform set of criteria for assessing response in clinical trials. The criteria that were developed include anatomic definitions of response, with normal lymph node size after treatment of 1.5 cm in the longest transverse diameter by computer-assisted tomography scan. A designation of complete response/unconfirmed was adopted to include patients with a greater than 75% reduction in tumor size after therapy but with a residual mass, to include patients—especially those with large-cell NHL—who may not have residual disease. Single-photon emission computed tomography gallium scans are encouraged as a valuable adjunct to assessment of patients with large-cell NHL, but such scans require appropriate expertise. Flow cytometric, cytogenetic, and molecular studies are not currently included in response definitions. Response rates may be the most important objective in phase II trials where the activity of a new agent is important and may provide support for approval by regulatory agencies. However, the goals of most phase III trials are to identify therapies that will prolong the progression-free survival, if not the overall survival, of the treated patients. We hope that these guidelines will serve to improve communication among investigators and comparability among clinical trials until clinically relevant laboratory and imaging studies are identified and become more widely available.**

J Clin Oncol 17:1244-1253.



STANDARDIZED RESPONSE criteria are essential for the conduct of clinical research. They facilitate interpretation of data, comparisons of the results among various clinical trials, and identification of new agents with promising activity, and provide a framework on which to evaluate new biologic and immunologic insights into the diseases being studied. The availability of uniform guidelines ensures a reliable analysis of comparable patient groups among studies and acquisition of similar data. Response criteria have been developed for patients with chronic lymphocytic leukemia,[1,2] acute myelogenous leukemia,[3] and Hodgkin's disease (HD),[4] and criteria are now standardized for solid tumors.[5] In 1987, Dixon et al[6] emphasized the need for uniform reporting of end points in clinical trials of patients with non-Hodgkin's lymphomas (NHL); of particular importance were the complete remission rate, survival, time to treatment failure, and time to relapse of complete responders. Their recommendations were met with controversy that remained unresolved.[7] Therefore, although the need for common reporting was obvious, the precise definitions of several major end points were neither provided nor uniformly adopted. A consequence is that there are currently no standardized response criteria for patients with NHL.

Recognizing this need, several United States lymphoma investigators from National Cancer Institute (NCI)–sponsored cooperative groups, the NCI, and the pharmaceutical industry collaborated in an effort to resolve the issues regarding response assessment in NHL. The result was a preliminary document that was subsequently reviewed and approved by European lymphoma experts.[8,9] Eventually, a workshop was held at the NCI on February 25 to 26, 1998, with a subsequent meeting on May 16, 1998, to come to consensus on a standardized set of guidelines for response assessment in adult patients with indolent and aggressive NHL.

This report presents the recommendations from the NCI-sponsored international working group. These represent, to a

From the National Cancer Institute, Bethesda, MD; Stanford University, Palo Alto, CA; Centre Hospitalier Lyon-Sud, Lyon, France; Dana-Farber Cancer Institute, Boston, MA; Loyola University, Maywood, IL; British Columbia Cancer Agency, Vancouver, British Columbia, Canada; St. Bartholomew's Hospital, London, England; University of Nebraska, Omaha, NE; IDEC Corporation, San Diego, CA; Universiteit Utrecht, Utrecht, the Netherlands; M.D. Anderson Cancer Center, Houston, TX; Roswell Park Cancer Institute, Buffalo, NY; Klinikum Großhadern, Munich, Germany; Memorial Sloan-Kettering Cancer Center, New York, NY; Massachusetts General Hospital, Boston, MA; and Sharp Memorial Hospital, San Diego, CA.

Submitted October 27, 1998; accepted January 25, 1999.

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0732-183X/99/1704/1244

International Working Group (IWG) Response Criteria for NHL: 1999

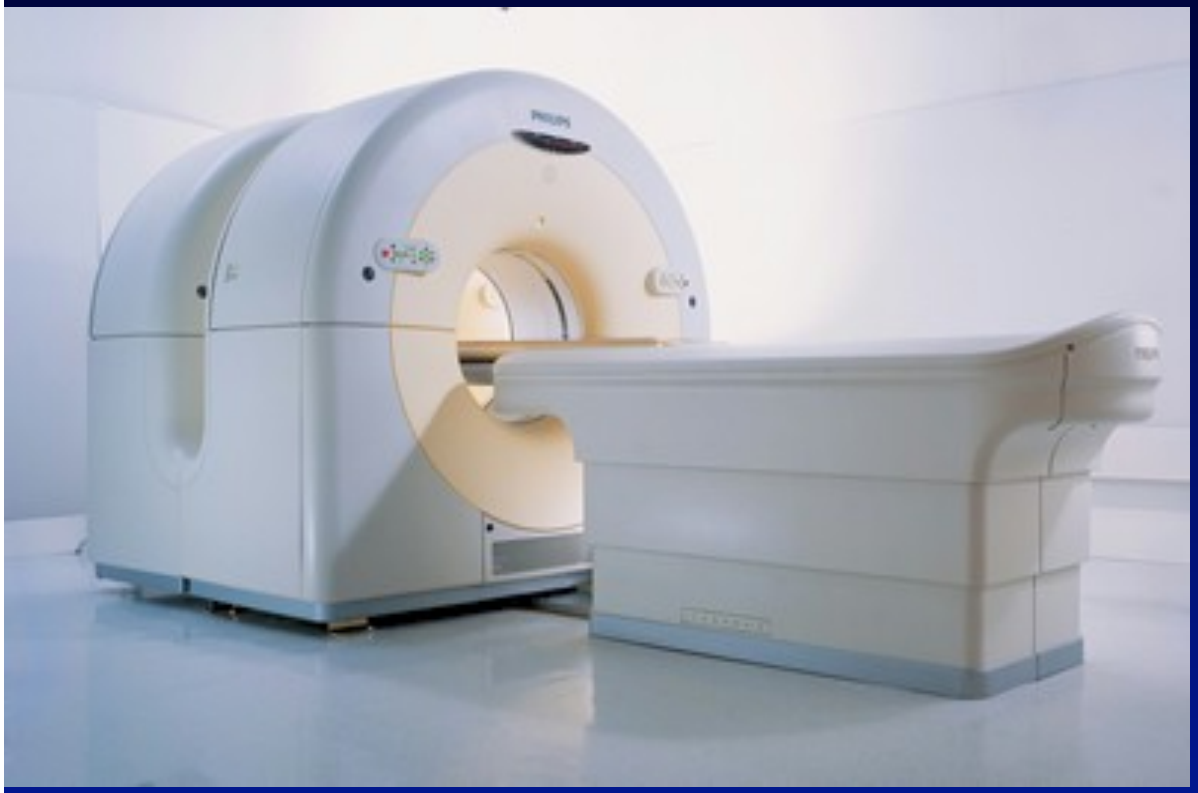
Cheson et al, J Clin Oncol 17:1244, 1999

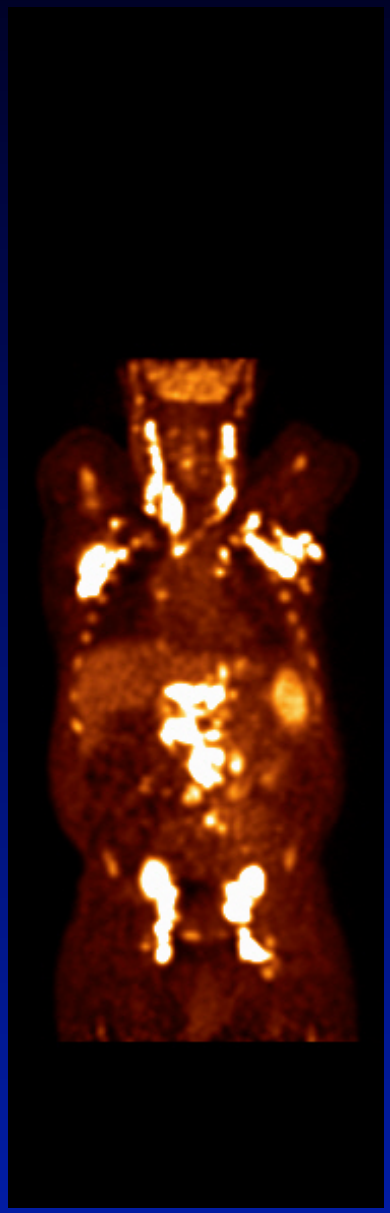
- Complete remission (CR)
- Complete remission/unconfirmed (CRu)
- Partial remission (PR)
- Stable disease (SD)
- Relapsed disease (RD)
- Progressive disease (PD)

Limitations of IWG Response Criteria

- Unclear/misinterpretations (e.g. CRu)
- Dependent on inadequate methods
  - Physical examination
  - CXR, CT scan, MRI
  - SPECT gallium
  - Visual bone marrow evaluation

PET/CT SCANNING





Medical Invention of the year, TIME magazine 2000
Dr David Townsend and Dr Ron Nutt

Concordance of Response Classifications Between IWG and IWG/PET in DLBCL

IWG	IWG+PET: CR	CRu	PR	SD	PD	Total
CR	17	0	0	0	0	17
CRu	5	0	2	0	0	7
PR	10	0	9	0	0	19
SD	2	0	1	6	0	9
PD	1	0	0	0	1	2
Total	35	0	12	6	1	54

Juweid et al, JCO 23:4652, 2005

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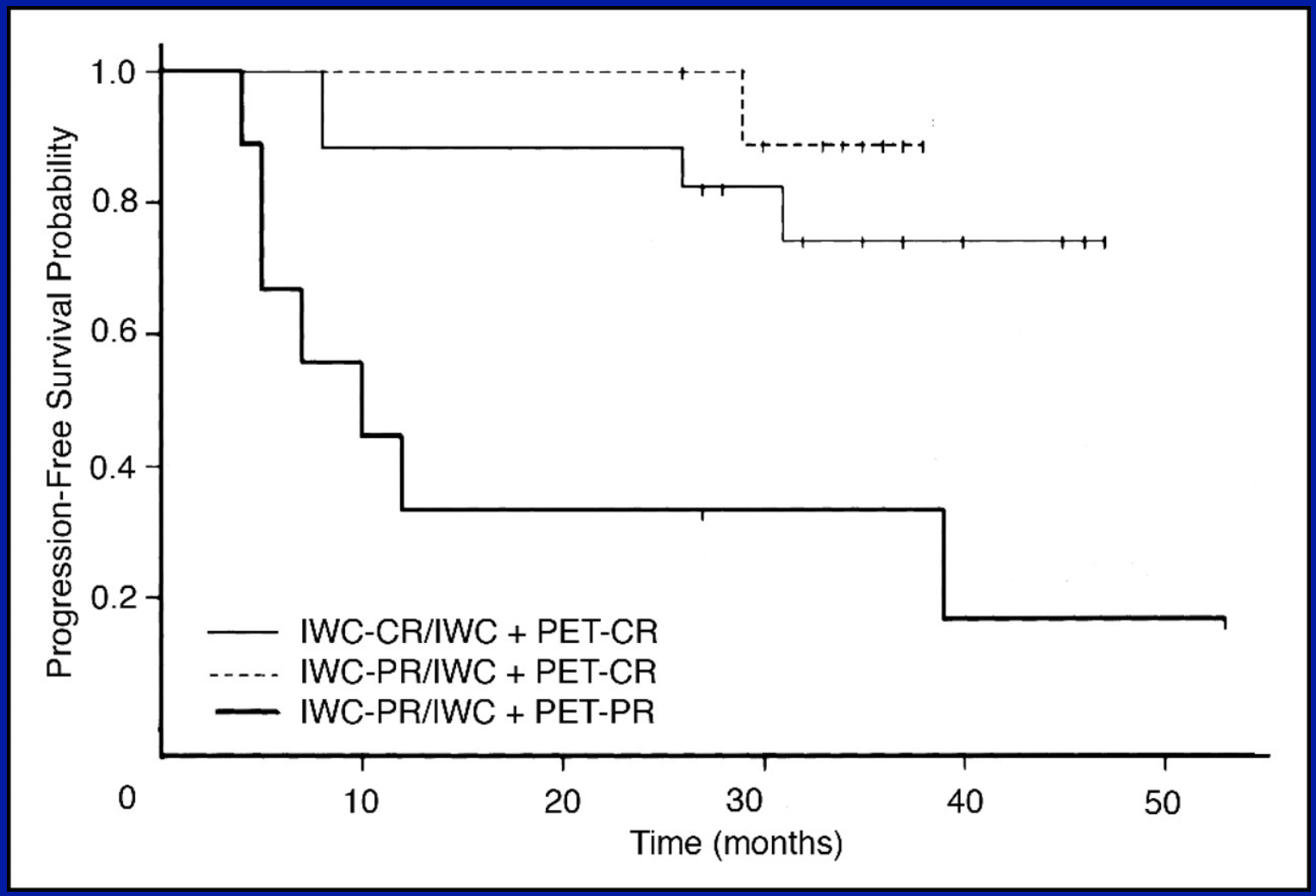
Juweid et al, JCO 23:4652, 2005

Progression-free survival by the International Workshop Criteria and IWC plus PET



Juweid M E et al. JCO 2005;23:4652-4661

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SPECIAL ARTICLE

Revised Response Criteria for Malignant Lymphoma

Bruce D. Cheson, Beate Pfistner, Malik E. Juweid, Randy D. Gascoyne, Lena Specht, Sandra J. Horning, Bertrand Coiffier, Richard I. Fisher, Anton Hagenbeek, Emanuele Zucca, Steven T. Rosen, Sigrid Stroobants, T. Andrew Lister, Richard T. Hoppe, Martin Dreyling, Kensei Tobinai, Julie M. Vose, Joseph M. Connors, Massimo Federico, and Volker Diehl

From the Division of Hematology/Oncology, Georgetown University Hospital, Washington, DC; University of Cologne, Cologne; Department of Nuclear Medicine, University of Iowa, Iowa City, IA; Department of Pathology, British Columbia Cancer Agency and the University of British Columbia, Vancouver, British Columbia, Canada; Department of Oncology and Hematology, Rigshospitalet, Copenhagen University Hospital, Denmark; Division of Oncology and Department of Radiation Oncology, Stanford University, Stanford, CA; Department of Hematology, Hospices Civils de Lyon and Université Claude Bernard, Lyon, France; James P. Wilmot Cancer Center, University of Rochester, Rochester, NY; Academic Medical Center, Department of Hematology, Amsterdam, the Netherlands; Lymphoma Unit, Department of Medical Oncology, Oncology Institute of Southern Switzerland, Bellinzona, Switzerland; Lurie Cancer Center, Northwestern University, Chicago, IL; Department of

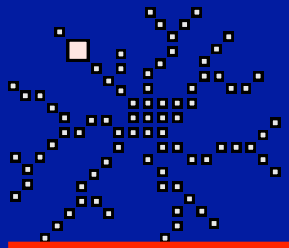
ABSTRACT

Purpose
Standardized response criteria are needed to interpret and compare clinical trials and for approval of new therapeutic agents by regulatory agencies.

Methods
The International Working Group response criteria (Cheson et al, J Clin Oncol 17:1244, 1999) were widely adopted, but required reassessment because of identified limitations and the increased use of [^{18}F]fluorodeoxyglucose-positron emission tomography (PET), immunohistochemistry (IHC), and flow cytometry. The International Harmonization Project was convened to provide updated recommendations.

Results
New guidelines are presented incorporating PET, IHC, and flow cytometry for definitions of response in non-Hodgkin's and Hodgkin's lymphoma. Standardized definitions of end points are provided.

Conclusion
We hope that these guidelines will be adopted widely by study groups, pharmaceutical and biotechnology companies, and regulatory agencies to facilitate the development of new and more effective therapies to improve the outcome of patients with lymphoma.



11th INTERNATIONAL CONFERENCE ON MALIGNANT LYMPHOMA
Lugano, Switzerland, June 15-18, 2011
11-ICML

Closed Workshop:
Lymphoma pretreatment assessment and response criteria in the New Millennium: Beyond Ann Arbor

Tuesday, June 14, 2011 – USI Auditorium, Lugano University

Steering Committee: B.D. Cheson, R.I. Fisher, T.A. Lister, E. Zucca
Session Co-Chair – Sally Barrington

Overarching Goals of the Revision – Lugano Classification 2014

- ✓ Improve lymphoma patient evaluation
- ✓ Eliminate ambiguity
- ✓ Universally applicable
- ✓ Facilitate the comparison of patients and results amongst studies
- ✓ Simplify the evaluation of new therapies by regulatory agencies.

Staging of Lymphomas: The Lugano Classification

- PET-CT is the standard for FDG-avid lymphomas; CT is indicated for non-avid histologies (CLL/SLL, MZL, LPL, MF)
- A modified Ann Arbor staging system is recommended for disease localization; however, patients are treated according to prognostic and risk factors
- Suffixes A and B are only required for HL
- “X” for bulky disease is no longer necessary, but record the largest tumor diameter

Routine Bone Marrow Biopsy in Hodgkin Lymphoma

- 454 newly diagnosed pts
- Bone marrow involvement
  - 18% focal lesions by PET
  - 8% involvement by trephine
- No pt with BM+ had CS I-II by PET
- Pts with BM+ had other evidence of stage IV
- BM Bx upstaged 5 pts from III-IV
- No treatment decisions changed by BM Bx

El-Galaly et al, J Clin Oncol 30:4508, 2012

BMBx and PET-CT in DLBCL

- 130 pts; 35 (27%) with BM involvement: 33 by PET, 14 by BMBx
- PET identified all positive BMs
- BX did not upstage any patients
- Sensitivity/specificity
  - PET-CT – 94%, 100%
  - BMBx – 40%, 100%
- Prognosis of PET+/Bx- similar to stage IV w/o BM involvement
- Pts with BM+ had other evidence of stage IV

Khan et al, Blood 122:61, 2013

VOLUME 30 · NUMBER 36 · DECEMBER 20 2012

JOURNAL OF CLINICAL ONCOLOGY

E D I T O R I A L

Hodgkin Lymphoma: Protecting the Victims of Our Success

Bruce D. Cheson, *Georgetown University Hospital, Lombardi Comprehensive Cancer Center, Washington, DC*

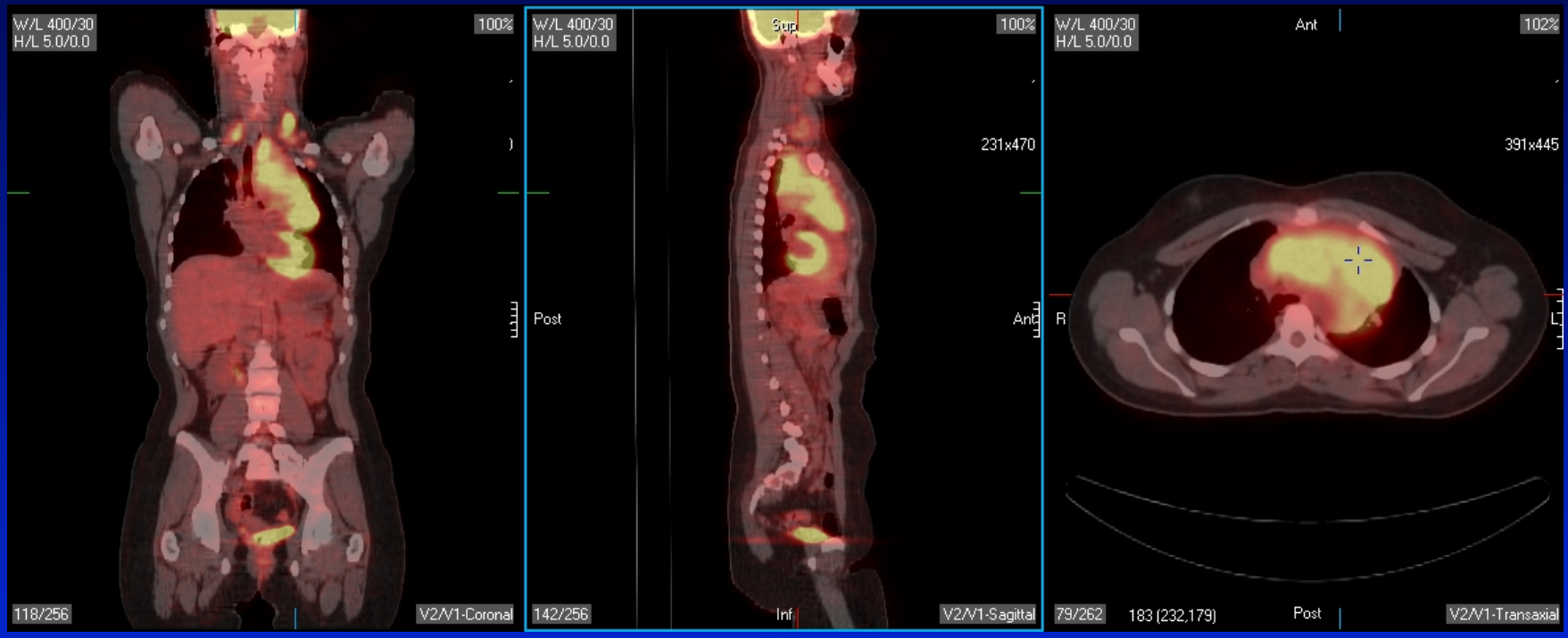
See accompanying article on page 4508

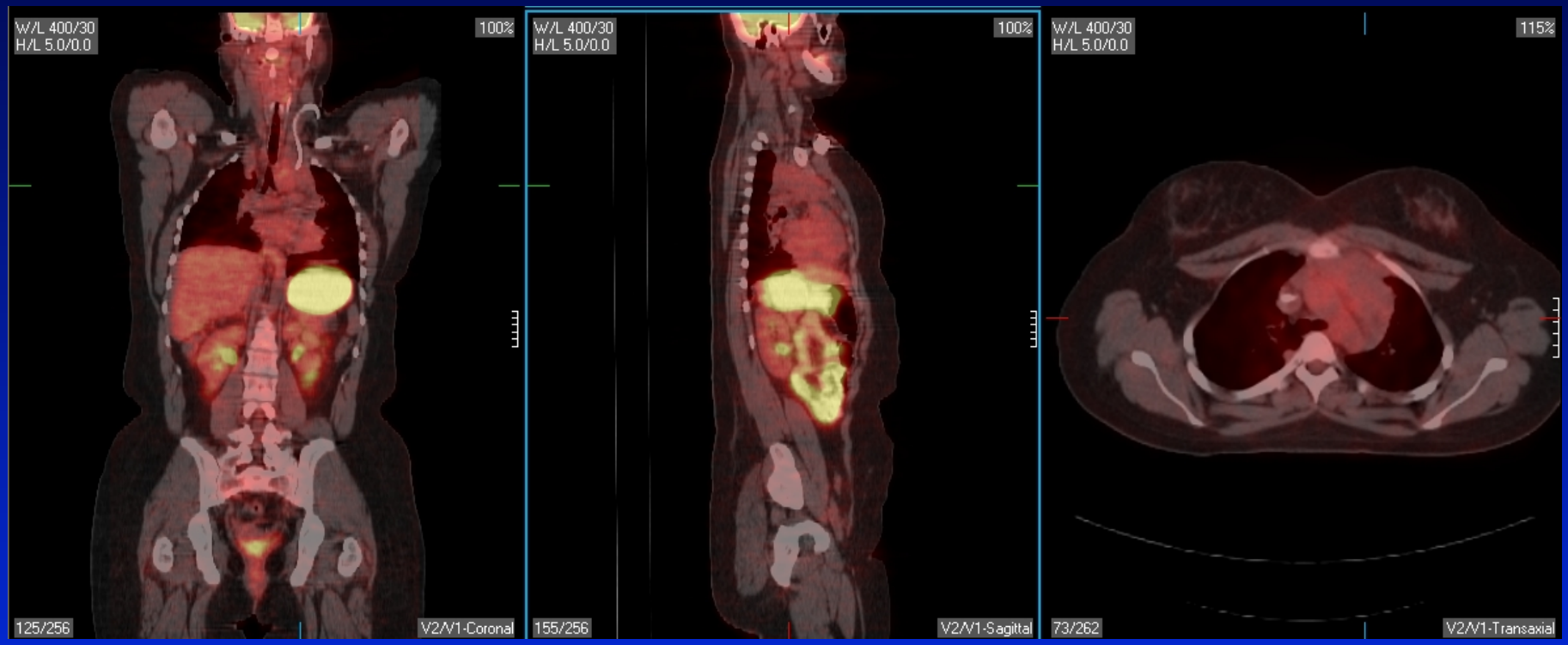
The only saving grace of the present is that it's too damned stupid to question the past very closely.
—H.P. Lovecraft[1]

In few instances in oncology has progress been so methodical. Total nodal irradiation became subtotal, then extended field, and then involved field.[3] Randomized trials demonstrated that regimens such as doxorubicin, bleomycin, vinblastine, and dacarbazine were more

BM Bx in the Staging of Lymphomas

- If PET-CT is performed, BM biopsy is no longer indicated for HL, and only for DLBCL if PET is negative and identifying discordant histology is important for patient management
- BM remains part of staging for other histologies


W/L 400/30
H/L 5.0/0.0
100%
Post
118/256
V2/V1-Coronal
W/L 400/30
H/L 5.0/0.0
Sup
100%
231x470
Ant
142/256
Inf
V2/V1-Sagittal
W/L 400/30
H/L 5.0/0.0
Ant
102%
391x445
R
79/262
183 (232,179)
Post
V2/V1-Transaxial


W/L 400/30
H/L 5.0/0.0
100%
125/256
V2/V1-Coronal
W/L 400/30
H/L 5.0/0.0
100%
155/256
V2/V1-Sagittal
W/L 400/30
H/L 5.0/0.0
115%
73/262
V2/V1-Transaxial

PET in Restaging of HL

Author	PTS	PPV (%)	NPV (%)
Spaepen (‘01)	60	100	91
Weihrauch (‘01)	28	60	84
Hutchings	65	100	96
Schaefer (‘07)	66	85	100
Kobe (‘08)	311	85	94

PET(CT) in Restaging of NHL

Author	Patients	PPV (%)	NPV (%)
Bangerter (‘99)	43	85.7	96.1
Bangerter (‘99)	22	71.4	86.2
Jerusalem (‘99)	35	42.9	100
Zinzani (‘99)	31	92.9	100
Mikhaeel (‘00)	45	60	100
Naumann (‘01)	15	85.7	88.2
Spaepen (‘01)	93	70.3	100
Gigli (‘08)	42	75	94
Cashen (‘11)	50	71	80

Follicular Lymphoma: Response assessment

- Indolent histology yet ~15% of patients will die within 5 years.
- High risk FLIPI / FLIPI-2 scores alone fail to identify these patients. Solal-Celigny P, Blood 2004, Federico M, JCO 2009
- Limitations of CT response assessment (PR/CRu/CR) in predicting OS.Bachy E, JCO 2010
- Despite recommendation against routine use of PET-CT for FL in the 2007 IHP criteria it is commonly used in response assessment. Cheson B, JCO 2007
- The predictive value of PET assessment after first-line rituximab-chemotherapy for high tumor burden FL was recently reported in three trials …

Postinduction response assessment with PET-CT: limitations to these studies…

PRIMA 122 patients 2004-2010 Trotman J, JCO 2011

- Hypothesis generating.
- Retrospective analysis of local PET interpretation within a prospective study with independent CT assessment.
- Results confirmed by independent scan review of 61 patients.

Tychyj-Pinel C, EJNMMI 2014

FOLL05 202 patients 2005-2010 Luminari S, Ann Oncol 2013

- Retrospective analysis of local PET reports within a prospective study with local CT assessment.

PET Folliculaire 106 patients 2007-2009 Dupuis J, JCO 2012

- Prospective standardised PET acquisition / assessment in accordance to the 5 Point Scale (5PS), with local CT assessment.
- Shorter follow-up.

PFS according to CT response

SD/PD vs.

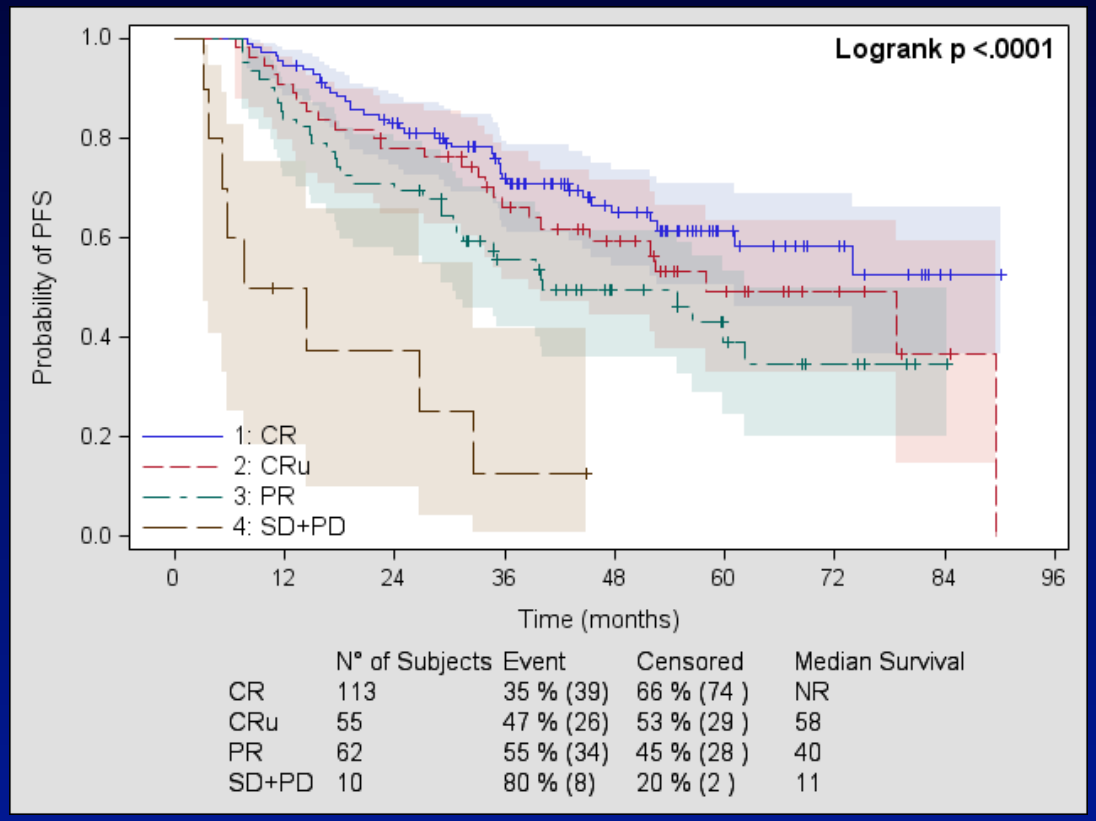
- PR, HR 4.2
- CRu, HR 5.6
- CR, HR 7.8 , p<.0001

PR vs.

- CR/CRu, HR 1.7 (1.1-2.5) p=0.02

CRu/PR vs.

- CR, HR 1.6 (1.1-2.4), p=0.02

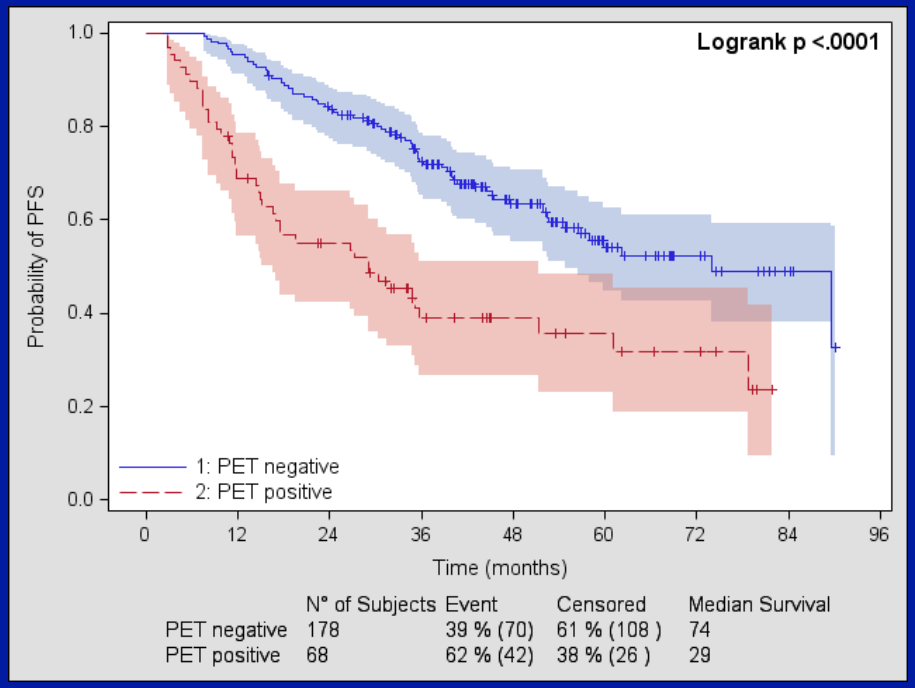


	N° of Subjects	Event	Censored	Median Survival
CR	113	35 % (39)	66 % (74)	NR
CRu	55	47 % (26)	53 % (29)	58
PR	62	55 % (34)	45 % (28)	40
SD+PD	10	80 % (8)	20 % (2)	11

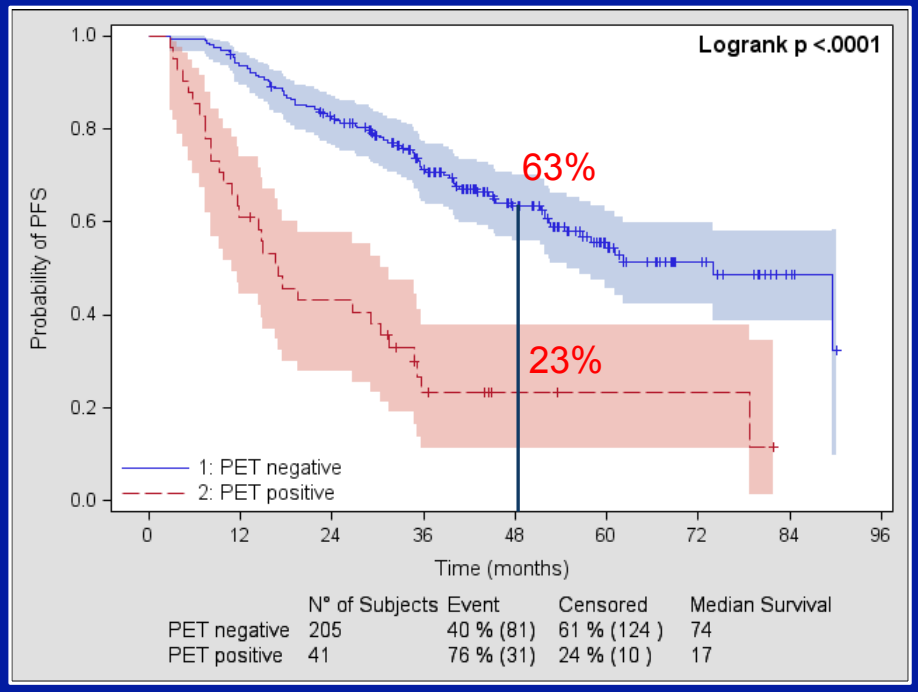
Trotman et al, Lancet Haematol, 2014

Both PET cut-offs predictive of PFS

Score ≥3



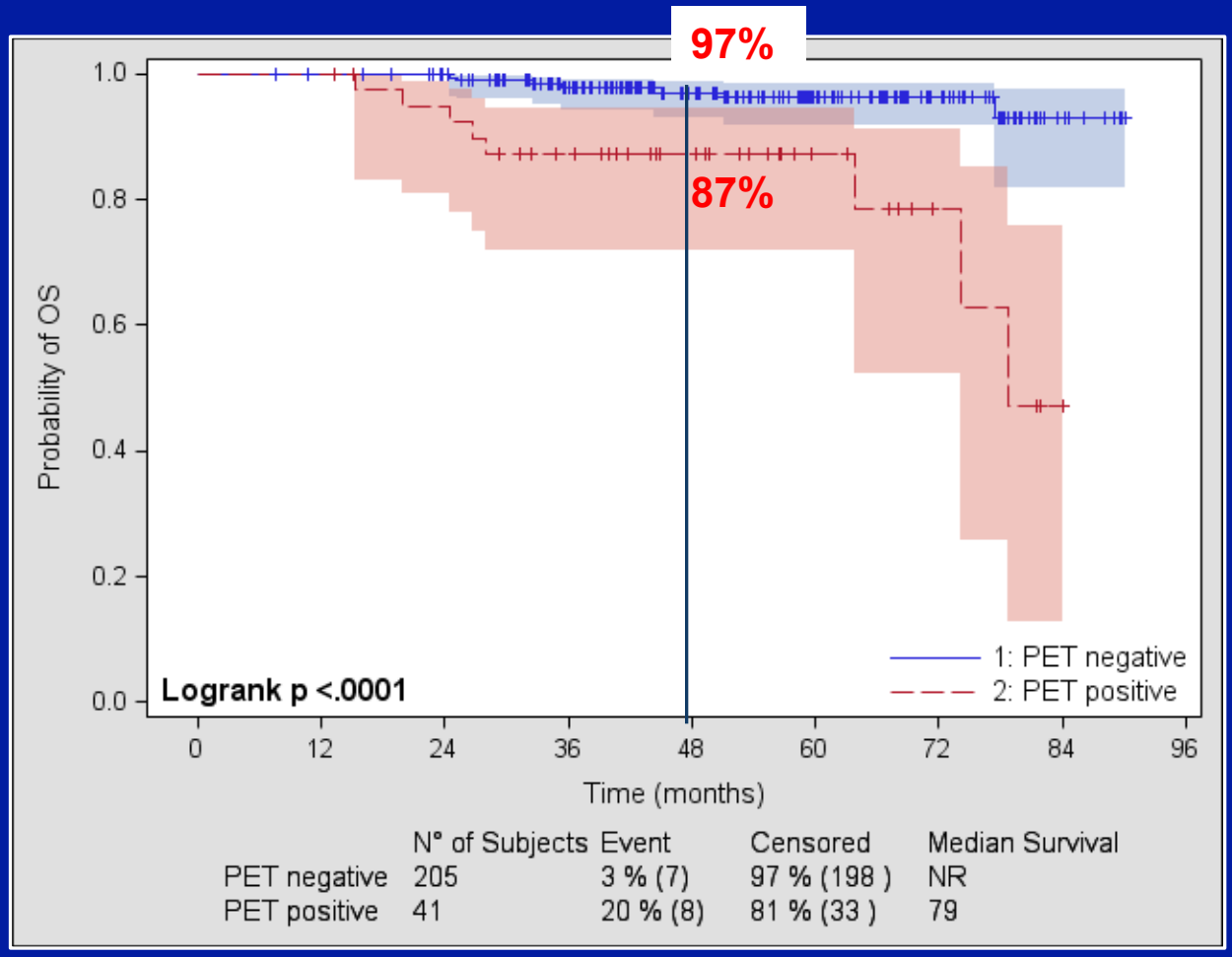
Score ≥4



HR 3.9 (95% CI 2.5-5.9, p<.0001)
Median PFS:
16.9 (10.8-31.4) vs. 74.0 mo (54.7-NR)

Trotman et al, Lancet Haematol, 2014

Postinduction PET status (cut-off ≥4) and Overall Survival



HR 6.7, 95% CI 2.4-18.5, p=0.0002
Median OS: 79 months vs. NR

Trotman et al, Lancet Haematol, 2014

FDG-PET Evaluation

2007 Guidelines	Lugano Classification Recommendation
• DLBCL, HL • PET scans based on visual interpretation and intended for end of treatment evaluation • Used mediastinal blood pool as the comparator	• All FGD-avid histologies • Use the 5-point scale • Clinical trials including interim analysis and for end of treatment assessment for all FDG-avid histologies • Used hepatic blood pool as comparator

Timing of PET-CT scans

Should be:

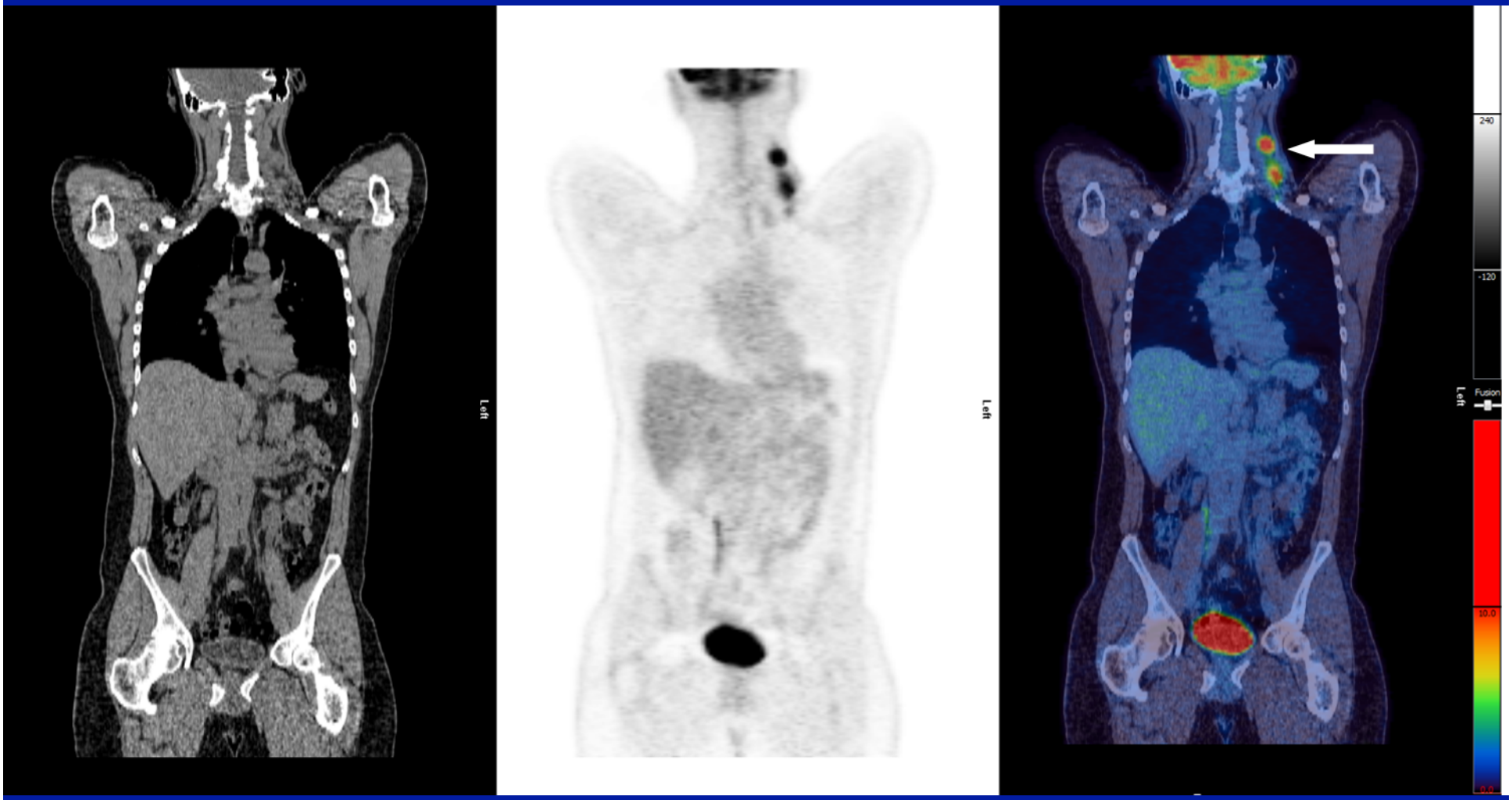
- as long as possible after the last chemotherapy administration for interim scans
- 6-8 weeks post chemotherapy at end of treatment ideally (but a minimum of 3 weeks)
- ≥ 3 months after radiotherapy

5 POINT SCALE (DEAUVILLE CRITERIA)

1. no uptake
2. uptake ≤ mediastinum
3. uptake > mediastinum but ≤ liver
4. moderately increased uptake compared to liver
5. markedly increased uptake compared to liver and/or new lesions

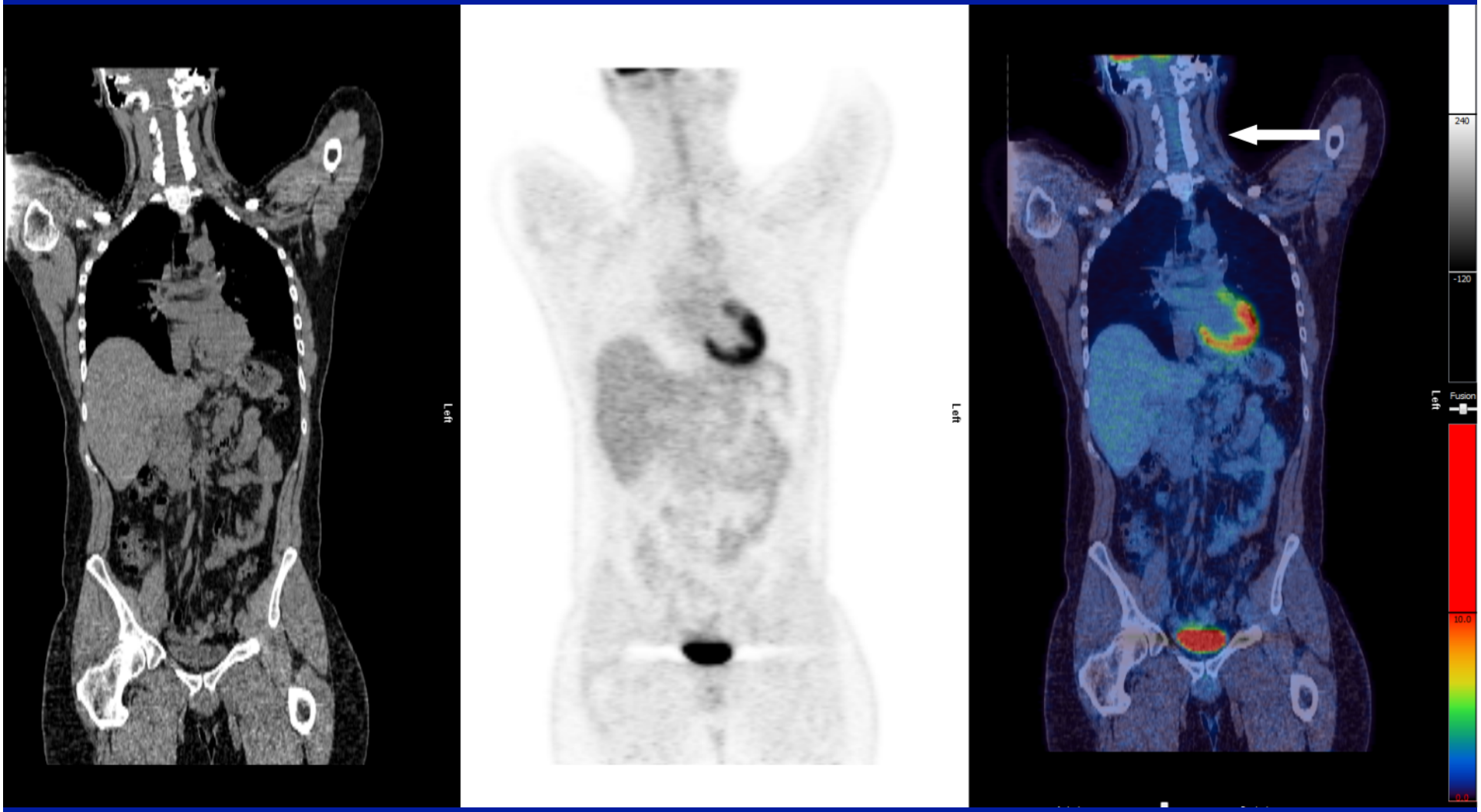
** markedly increased uptake is taken to be uptake > 2-3 times the SUV max in normal liver

Deauville 1 – Pre-treatment



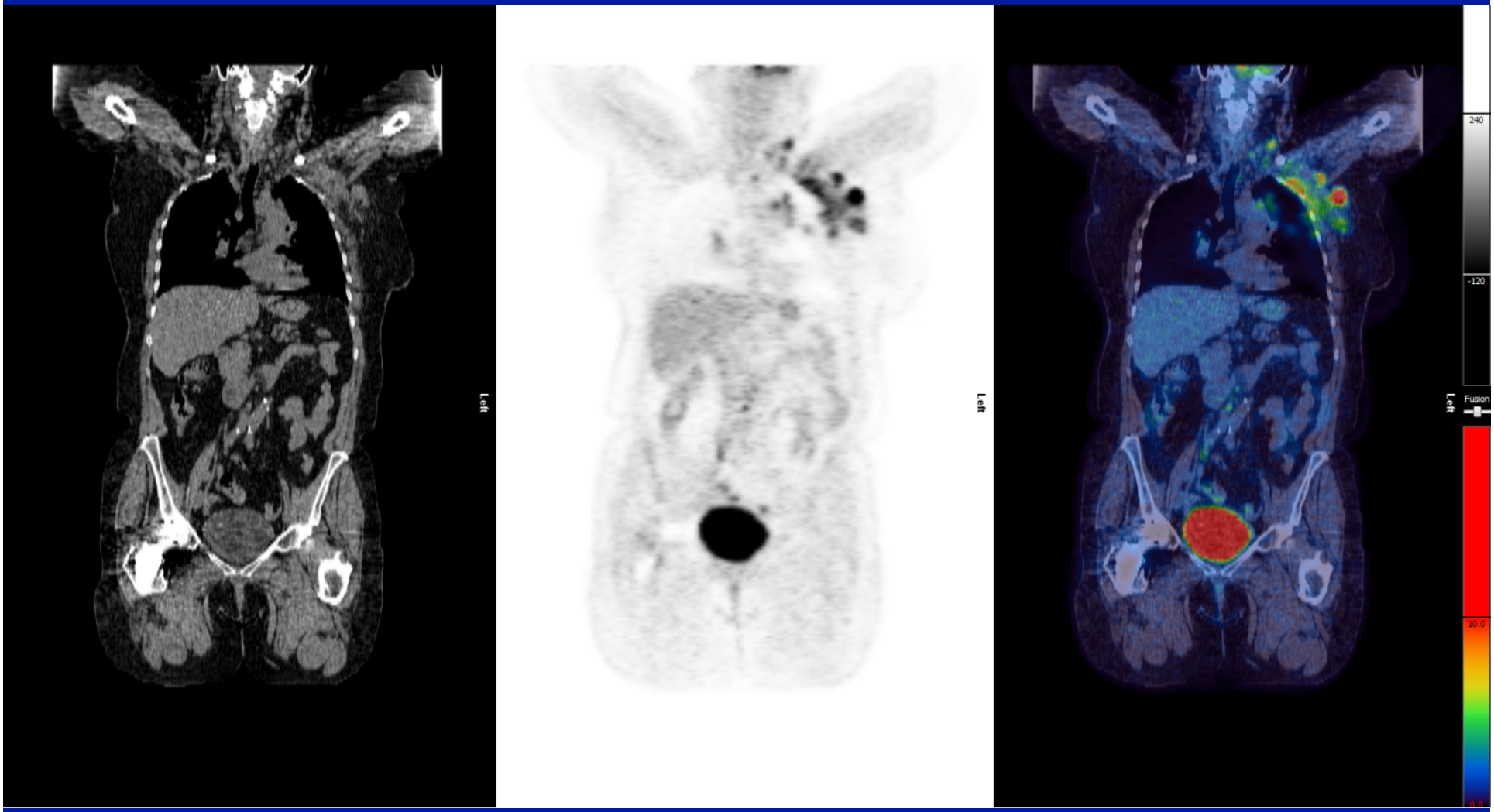
Courtesy S. Barrington

Deauville 1 – Post-treatment



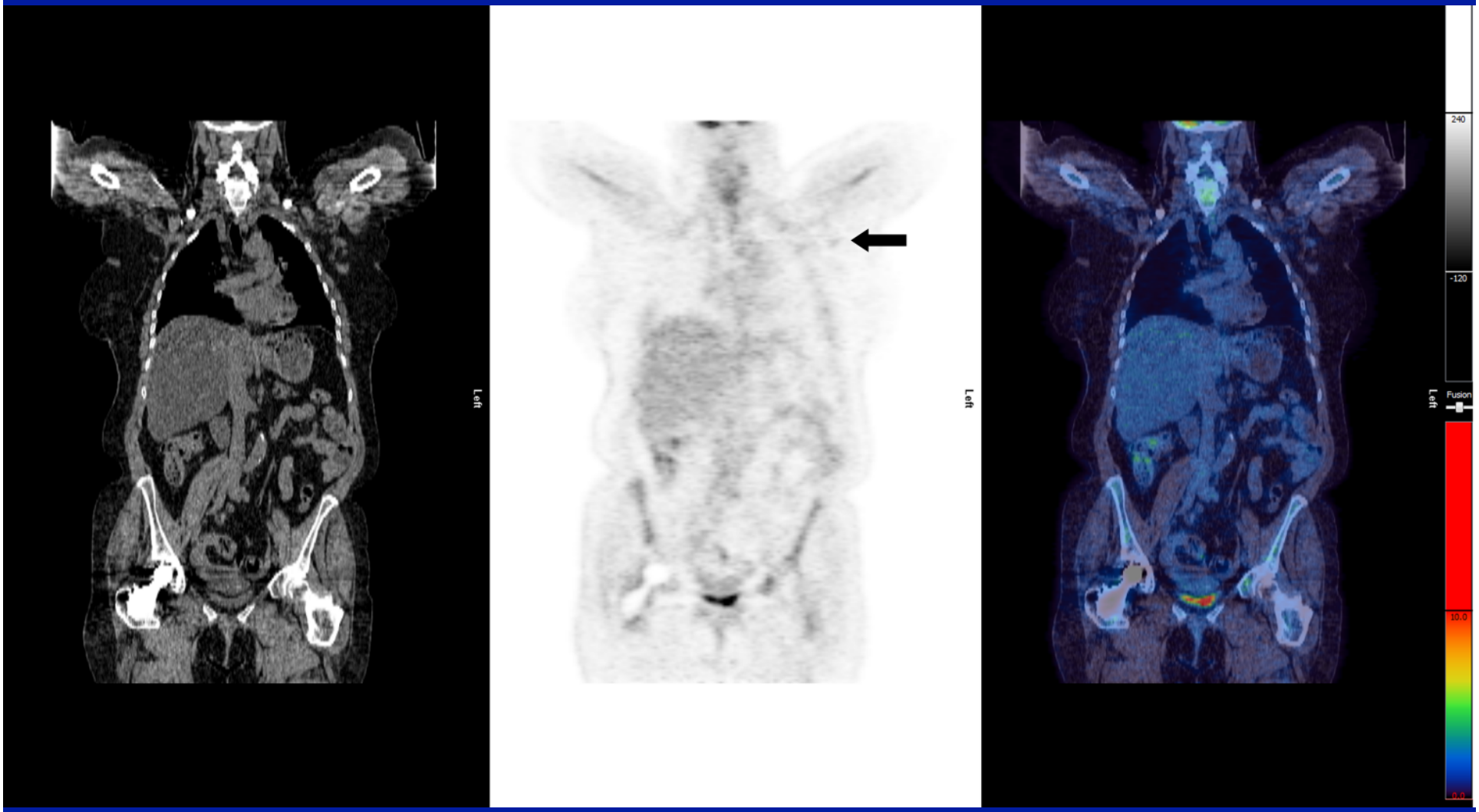
Courtesy S. Barrington

Deauville 2 – Pre-treatment



Courtesy S. Barrington

Deauville 2 – Post-treatment



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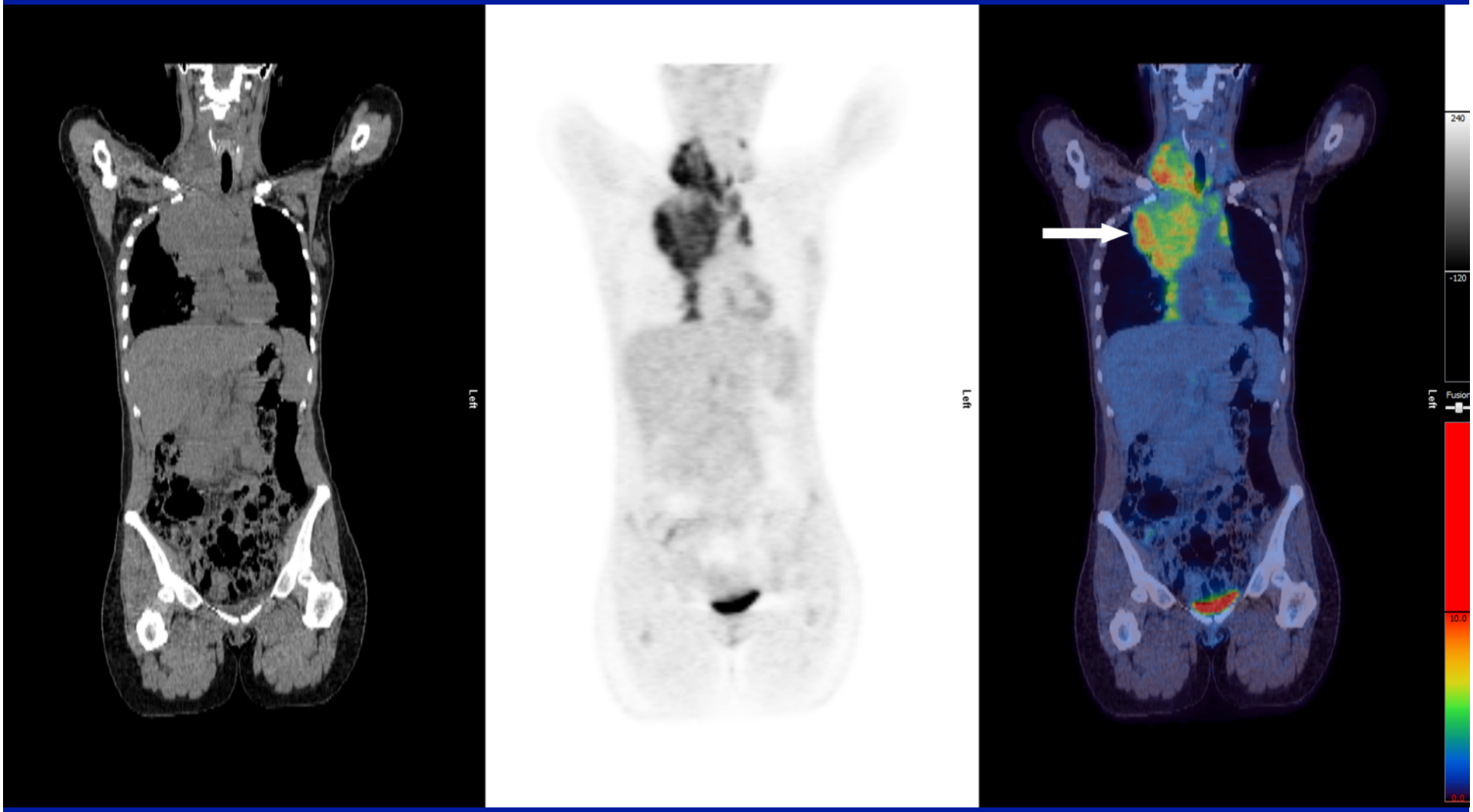
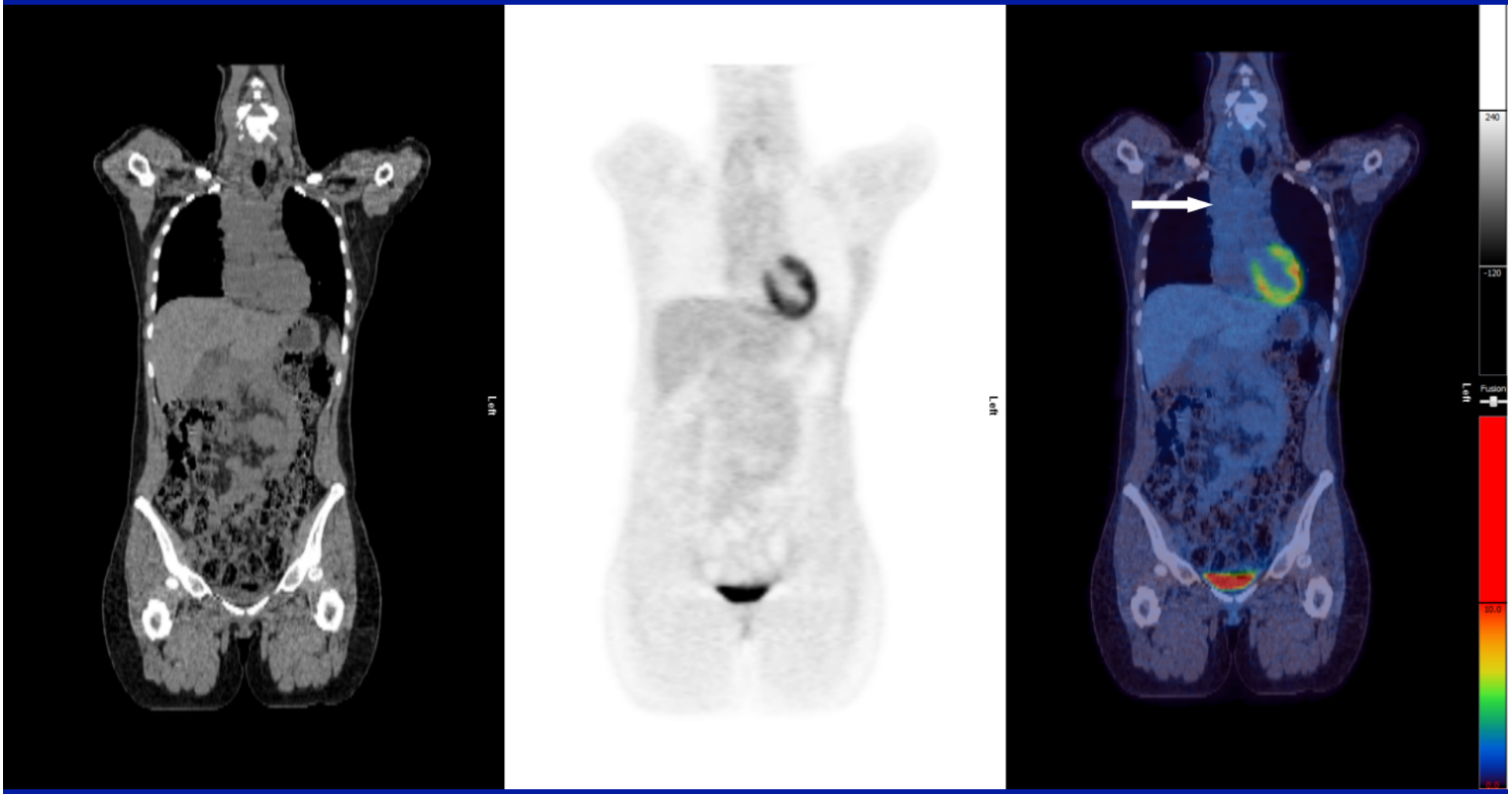
Deauville 3 – Pre-treatment



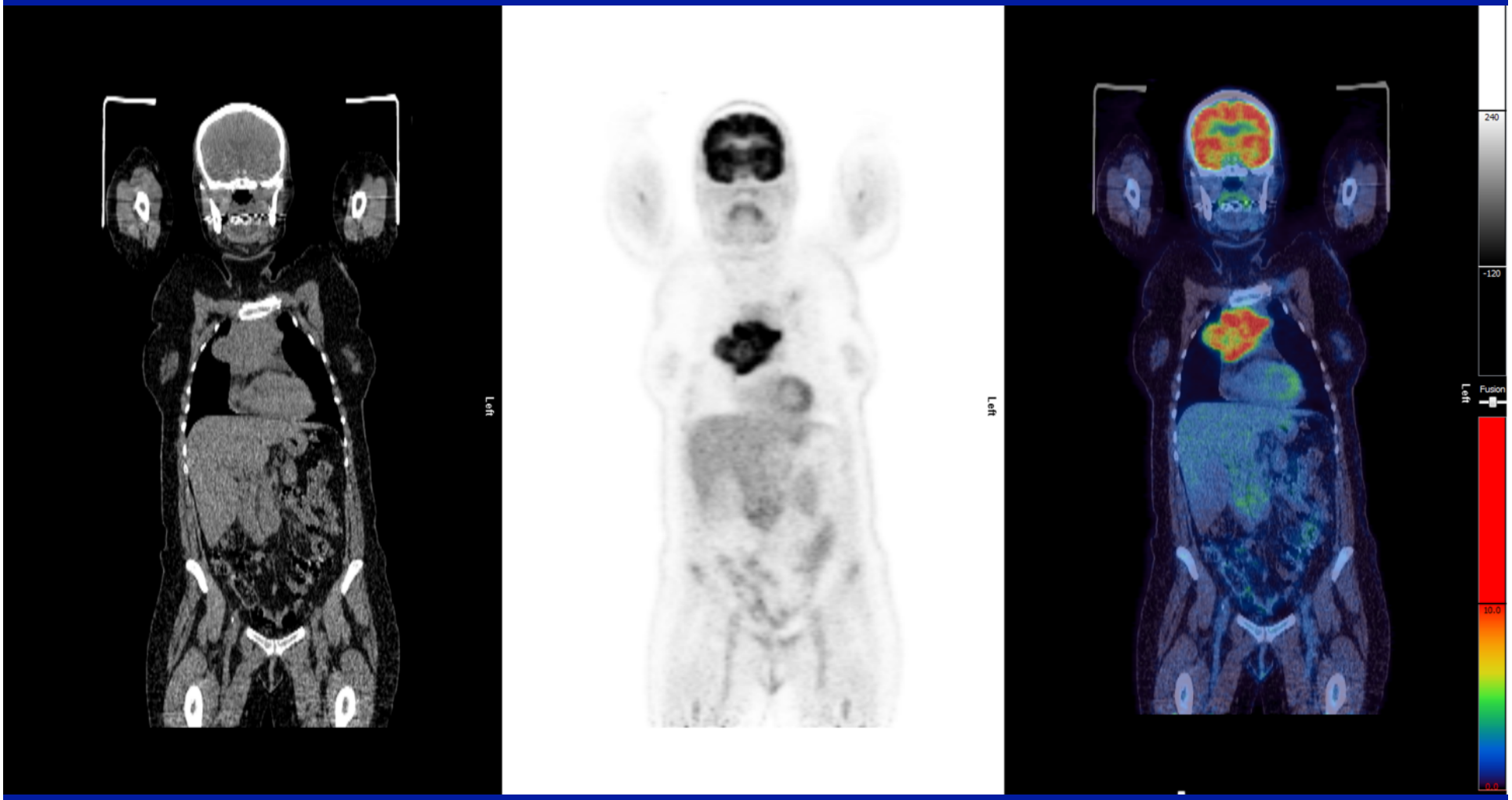
Courtesy S. Barrington

Deauville 3 – Post-treatment



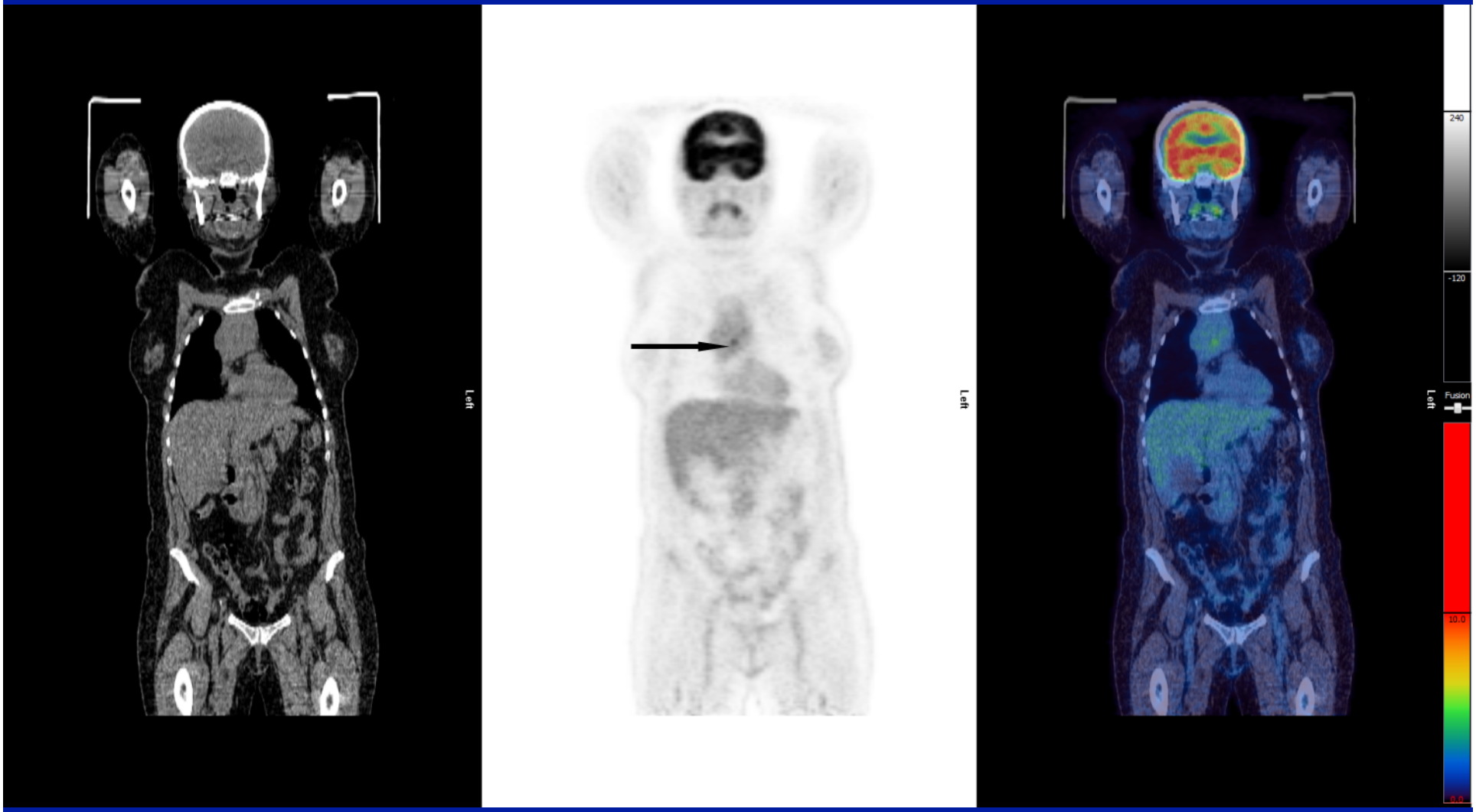
Courtesy S. Barrington

Deauville 4 – Pre-treatment



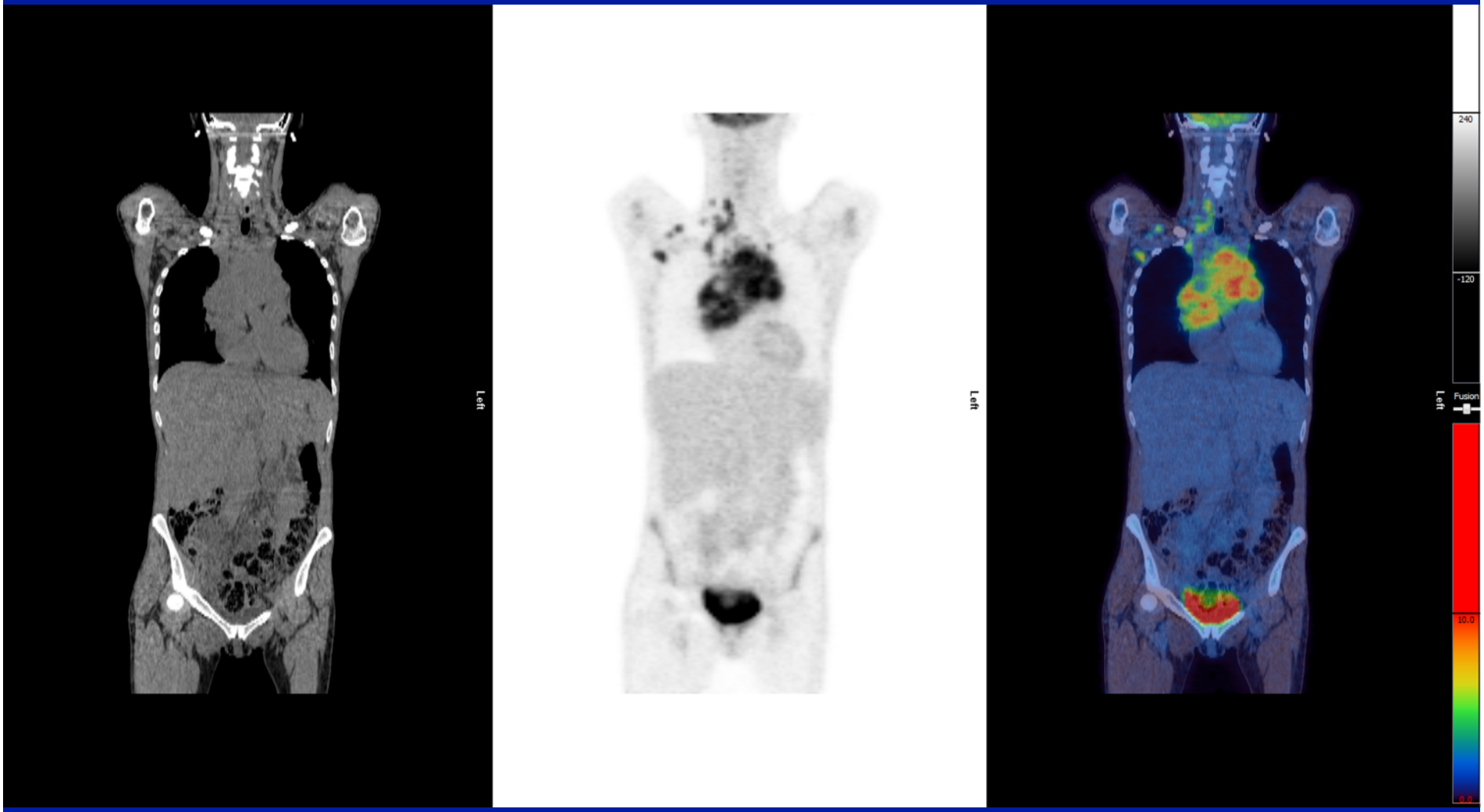
Courtesy S. Barrington

Deauville 4 – Post-treatment



Courtesy S. Barrington

Deauville 5 – Pre-treatment



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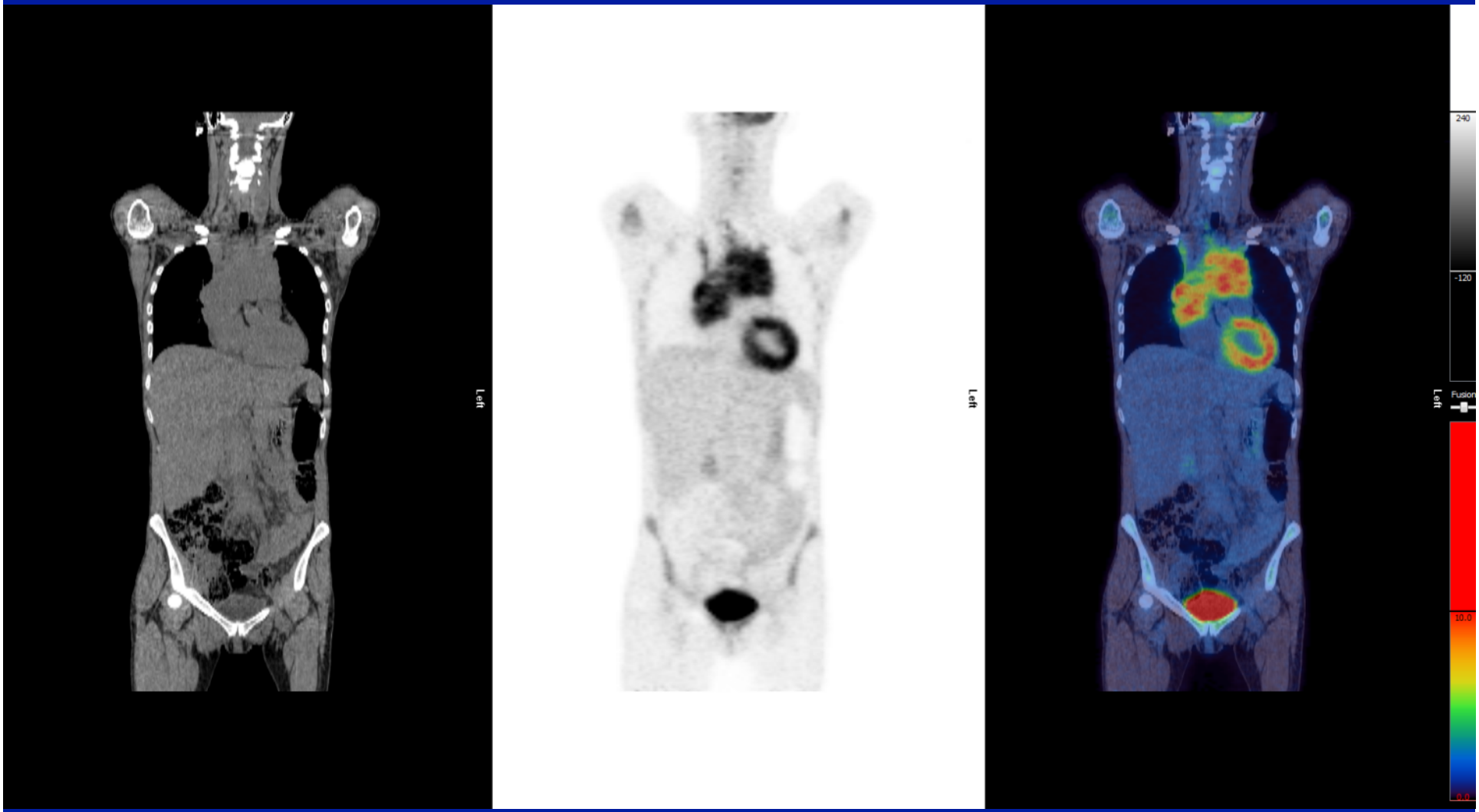
Deauville 5- Post-Treatment



Courtesy S. Barrington

CMR/CR	PET-CT-based response	CT-based response
	Complete Metabolic Response (CMR)	**Complete Radiologic Response (ALL of the following)**
Target Nodal/ Extranodal	Score 1, 2, or 3* by 5-PS with or without a residual mass	**Nodal Disease**: ≤ 1.5 cm in LDi **Extranodal Disease**: Absent
Non-Target		
Spleen		Regress to normal
New lesions		None
Bone marrow	No evidence of FDG-avid disease in marrow	Normal by morphology; if indeterminate, IHC negative

***Score of 3**

- Good prognosis with standard treatment (interim scan) for some
- De-escalation is investigated→ may consider a score of 3 as inadequate response (to avoid undertreatment).

Cheson et al, JCO 32:3059, 2014

PMR/PR	PET-CT-based response	CT-based response
	Partial Metabolic Response (PMR)	**Partial Remission (PR) (ALL of the following)**
Target Nodal/ Extranodal	Score 4,5 with reduced uptake compared with baseline and residual mass(es) of any size. • **Interim**: suggest responding disease • **EoT**: indicates residual disease	≥ 50% decrease from baseline in SPD of all Target lesions
Non-Target		No Increase
Spleen		**Spleen**: ≥ 50% decrease from baseline in enlarged portion (value over 13cm) **Liver**: no progression
New lesions		None
Bone marrow	Residual uptake higher than uptake in normal marrow but reduced compared with baseline Persistent focal changes in the marrow with nodal response, • Further evaluation with MRI or biopsy, or an interval scan	Not applicable

NMR/SD	PET-CT-based response	CT-based response
	No Metabolic Response (NMR)	**Stable disease**
Target Nodal/ Extranodal	Score 4 or 5 with no significant change in FDG uptake from baseline, at interim or EoT.	• < 50% decrease from baseline in SPD of all Target lesions • No criteria for PD are met
Non-Target		No progression
Spleen		No progression
New lesions		None
Bone marrow	No change from baseline	Not applicable

PMD/PD	PET-CT-based response	CT-based response
	Progressive Metabolic Disease (PMD)	**Progressive disease** **ONE of the following**
Target Nodal/ Extranodal	• Score 4, 5 with increase in intensity of uptake from baseline **and/or** • New FDG-avid foci consistent with lymphoma at interim or EoT • Consider biopsy or interval scan if etiology of new lesions uncertain	**PPD Progression:** An individual node/lesion must be abnormal with: • LDi > 1.5 cm AND • Increase by ≥ 50% from PPD nadir AND **An increase in LDi or SDi from nadir** • ≥ 0.5 cm for lesions ≤ 2 cm • ≥ 1.0 cm for lesions > 2 cm
Non-Target		Unequivocal Progression
Spleen/Liver		Unequivocal Progression: • Progression of existing Splenomegaly • New or Recurrent Splenomegaly • New or Recurrent liver involvement
New lesions		• Regrowth of previously resolved lesions • New node > 1.5 cm in any axis • New extranodal site > 1.0 cm in any axis • New extranodal site <1.0 cm in any axis • Unequivocal/attributable to lymphoma. • Any size assessable disease unequivocal/ attributable to lymphoma
Bone marrow	New/recurrent FDG avid foci	New/recurrent involvement

TUMOR FLARE

Preliminary study data should support potential "Flare" effect of treatment

Additional Response Assessment Guidelines

The presence of residual symptoms in the absence of detectable disease by imaging does not preclude the designation CR. In the context of an agent associated with a flare reaction, caution must be exercised not to confuse the possible tumor flare with progressive disease. It is recommended that either a biopsy be performed or the lesion be reassessed in at least 2 weeks, and if there is continued evidence of tumor progression, the date of progressive disease is the previous evaluation.

PET For Post-Treatment Surveillance

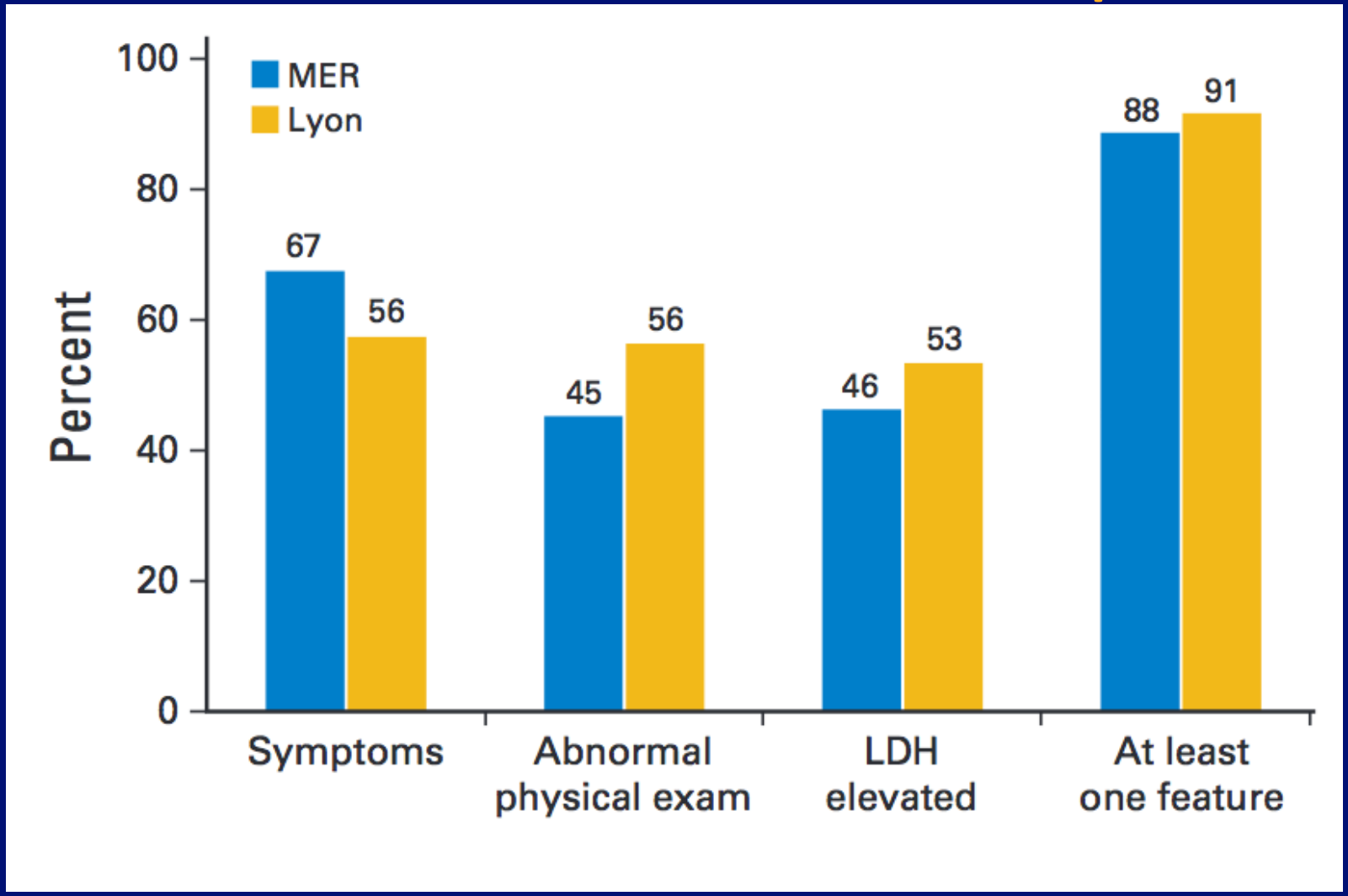
- For:
  - May identify recurrence sooner
  - Rapid institution of salvage therapy
- Against:
  - Not supported by available data
  - 80% of recurrences detected by Pt/MD
  - False positives
  - Not cost-effective

Utility of post-therapy surveillance scans in diffuse large B-cell lymphoma

- 680 pts treated with anthracycline based chemo-immunotherapy
- 552 (81%) achieved remission
- 112 (20%) relapsed
- 64% of relapses identified before a scheduled visit
- Surveillance imaging identified asymptomatic relapse in 4 (1.8%)

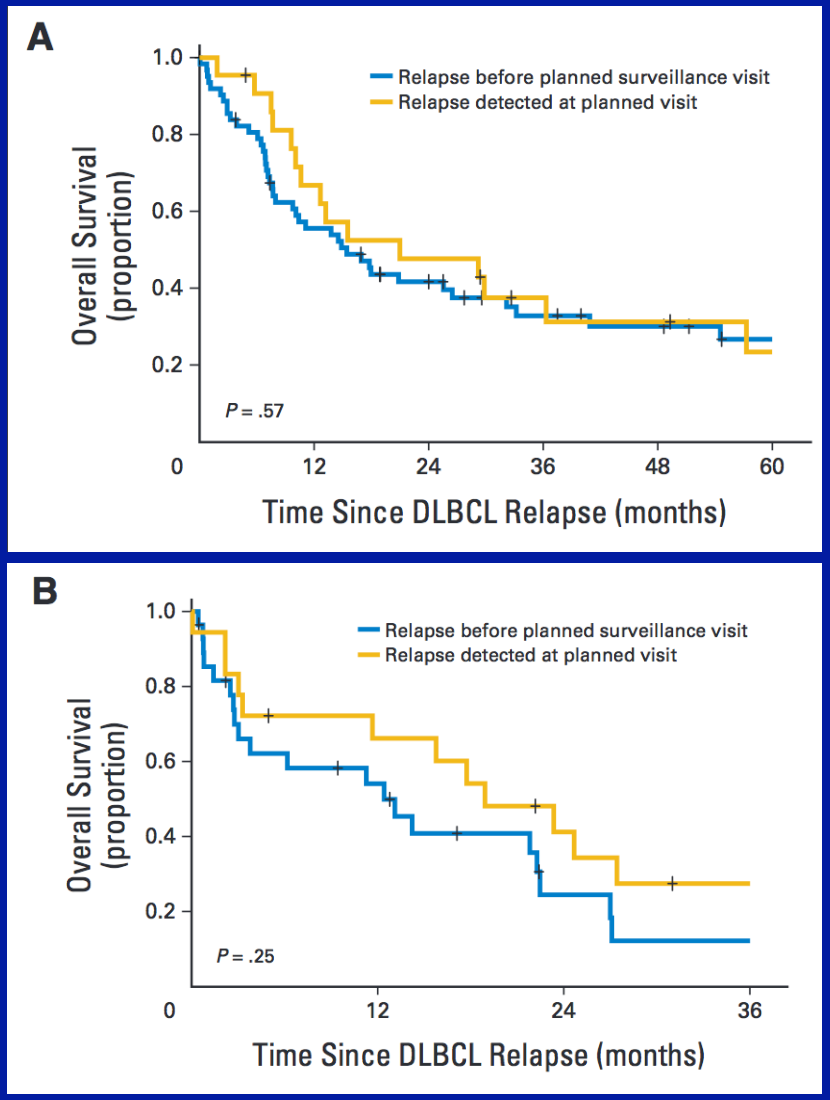
Thompson CA et al. *J Clin Oncol (e-pub ahead of print, 2014)*

Clinical Features At Relapse



Thompson et al, JCO, e-pub, 2014

Surveillance PET-CT in DLBCL



Thompson et al, JCO, e-pub, 2014

Posttreatment Follow-up

- Surveillance scans following remission are discouraged, especially for DLBCL and HL although a repeat study may be considered following an equivocal finding posttreatment
- Judicious use of follow-up scans may be considered in indolent NHL with residual intraabdominal or retroperitoneal disease

Follow-up Recommendations

Organisation	DLBCL	Hodgkin	F/LG
IWG/Lugano	PET-CT 6-8 wk post-tx, no surveillance scans HX/PX/Labs q2-3 m x 2 yr Q 6 mo x 1 yr Then annually	Same	Q 3-6 mo or as indicated by clinical status, tx regimen, and clinical judgment
ESMO	PET surveillance not recommended for routine follow-up	CT to confirm response then prn Hx/PE/labs with ESR q 3 mo x 2 yr Q 6 mo to 5 yr Then annually No PET surveillance	Hx/PE q 3 mo x 2 yr Q 4-6 mo x 3 yr Then annual CBC, chem q 6 mo x 2 yr No routine scans
NCCN	Q 3mo x 2 yr Q 6 mo x 3 yr No PET surveillance	Q 2-4 mo x 1-2 yr Q 3-6 mo to 5 yr Then annually No PET surveillance	If in CR – q 3 mo x 1 yr Then q 3-6 mo

Summary: What is New in the Lugano *Staging* Criteria?

- PET-CT standard for FDG-avid lymphomas
- Modified AA for extent
- Splenomegaly: >13 cm
- Patients classified as Limited or Advanced
- Treatment based on risk/prognostic factors
- No routine CXR
- No BMBx in HL or most DLBCL
- A/B only relevant for HL
- Eliminate “X”, record largest mass

Summary: What is New in Lugano *Response* Criteria

- PET-CT for FDG-avid histologies
- Deauville 5-point scale standard
- CR includes persistent nodes that are PET-negative in FDG-avid histologies
- CT-PR retains SPD 6 nodes/extranodal lesions
- Single lesion adequate for PD