What is the best cut off to divide score 4 & 5

Can we better define patients with clinically significant uptake within these groups?

Deauville 5 point Scoring System

- Score 1 : no uptake

- Score 2 : uptake ≤ mediastinum
- Score 3 : uptake > mediastinum but ≤ liver

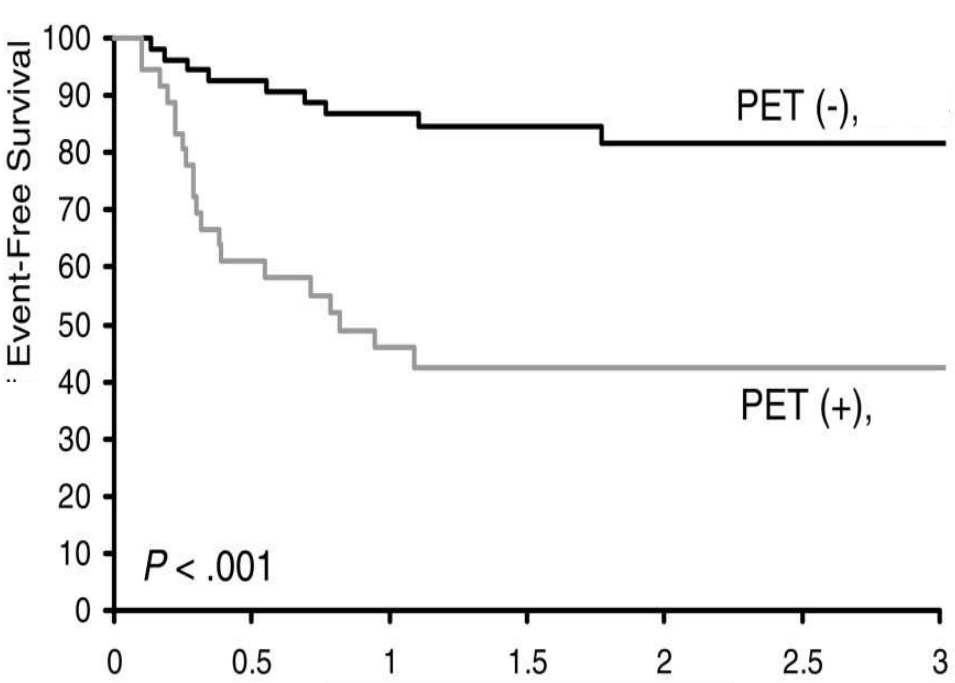
- Score 4 : moderately increased uptake > liver
- Score 5 : markedly increased uptake

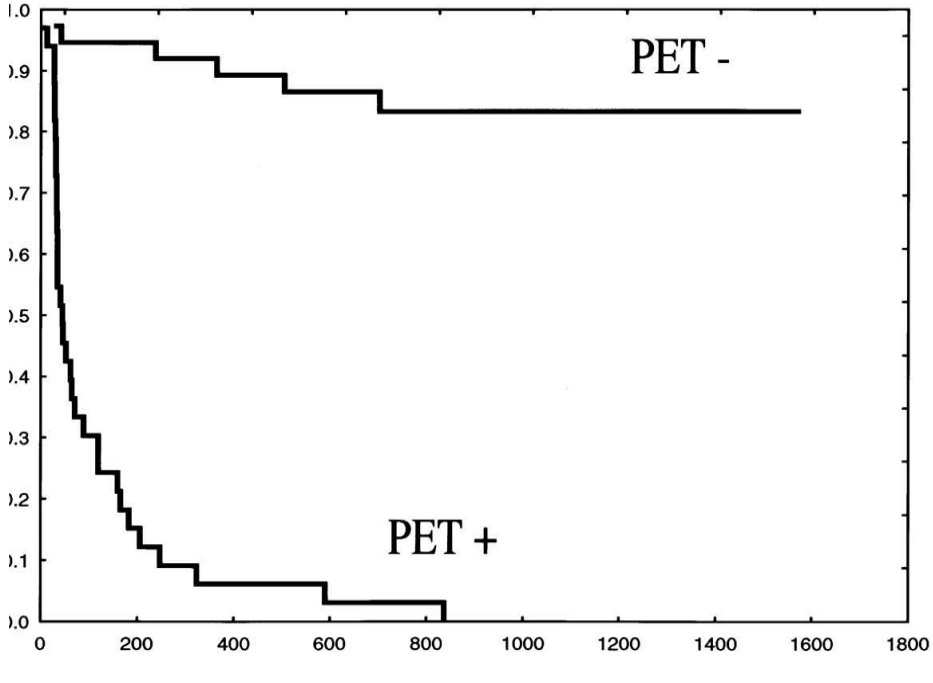
  AND / OR

  new lesion(s) likely to be lymphoma

- Why do we separate moderate from marked? What is the cut-off?
- Should 4 be residual and 5 be new?
- Should we reduce 4 further:
  - Does 4 include some of the good prognosis patients?
  - If yes, should we try to reduce 4 and increase 5?
- Is the cut-off dependent on timing?
- How to decide on significance of new? Role of MDM? Role of interpretation i.e. likelihood of inflamm?

Why do we separate moderate from marked? What is the cut-off?


Event-Free Survival
100
90
80
70
60
50
40
30
20
10
0
PET (-),
PET (+),
P < .001
0
0.5
1
1.5
2
2.5
3


PET -
PET +
0
200
400
600
800
1000
1200
1400
1600
1800

Score 5

Deauville Consensus on Response Criteria

Statement 3 (interpretation).

- A visual analysis using a 5-point scale should first be applied.
- The preferable reference scale should be the mediastinum and the liver.

Statement 4 (scoring).

The 5-point scale.

1. No uptake.
2. Uptake ≤mediastinum.
3. Uptake > mediastinum but ≤liver.
4. Uptake moderately more than liver uptake, at any site.
5. Markedly increased uptake at any site and new sites of disease.

Statement 5 (cutoff).

- For categories 2–4, correction methods by means of the SUV_{max} should be investigated.
- For therapeutic decisions, this should be determined according to the clinical strategy planned (consider lymphoma subtypes, and the decision for (de)-escalation of therapy).

Should 4 be residual and 5 be new?

How often is progression?

NCRI Study Score		Deauville Score	
Score	No of Patients	Score	No of Patients
1	28	1	28
2a	26	2	25
2b	68	3	28
2c	3	4	36 (29%)
2d*	0	5	8 (6%)
TOTAL	125	TOTAL	125

(*) 2d = Increase in abnormal uptake &/or appearance of new sites

Should we remove “new”?

- Probably useful for other types of lymphoma

should we try to reduce 4 and increase 5?

Does 4 include some good prognosis patients?

Deauville Score		SUV reduction	
Score	No of Patients	>66%	≤ 66%
1	28	28	0
2	25	25	0
3	28	25	3 **
4	36	32	4
5	8	1	7
	125	111	14

- Optimal cut-off between +/- (at least for DLCL) may be within score 4.
- How do we optimise score 4?

How to decide on 4/5 cut-off

- Differentiate between moderate & marked only visually?
- More objective cut-off? e.g. 2 times or 3 times liver uptake

4/5 cut-off

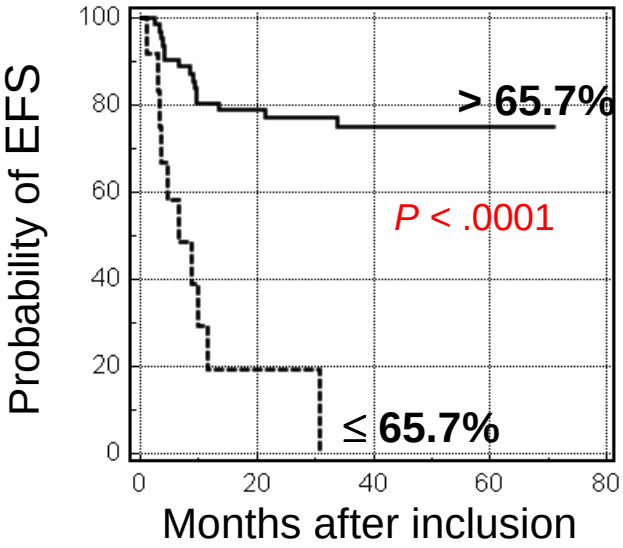
Deauville Score (DS)		
Score	No of Patients (Score 5= 3x liver)	Score 5= 2x liver
1	28	
2	25	
3	28	
4	36	29
5	8	15
TOTAL	125	

- Majority prefer a reproducible “objective” cut-off.
- No agreement on cut-off. More data is needed on outcome before we decide.

Is the cut-off dependent on timing?

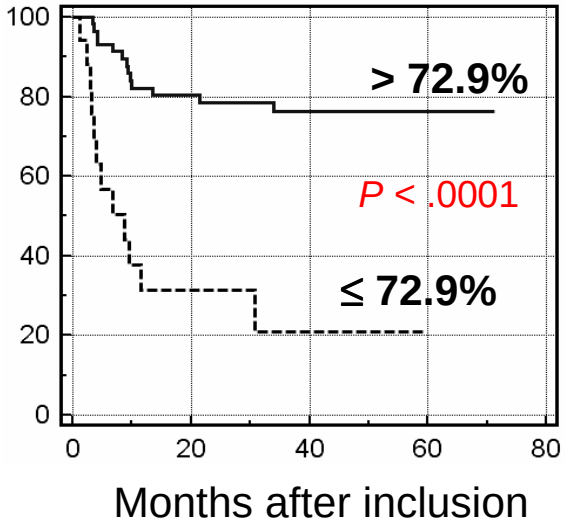
DLBCL: ΔSUV >2 v >4

SUV Analysis
(ΔSUVmax PET0/PET2)



Lin, **Itti** et al. ***J Nucl Med*** 2007;48:1626-32

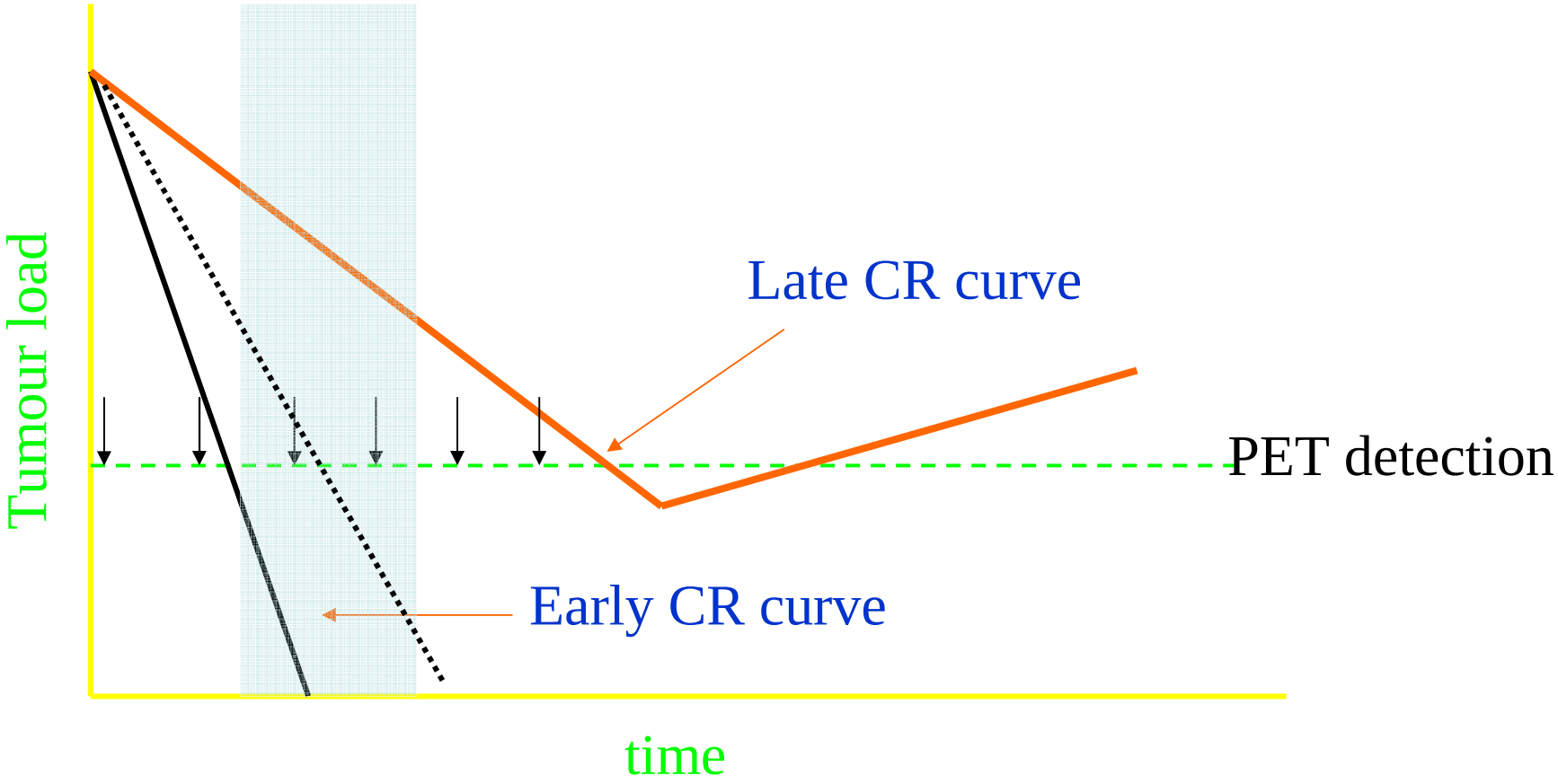
SUV analysis
(ΔSUVmax PET0/PET4)



Itti et al. ***J Nucl Med*** 2009;50:527-33

- Why do we separate moderate from marked? What is the cut-off?
- Should 4 be residual and 5 be new? (will increase 4)
- Should we reduce 4 further:
  - Does 4 include some of the good prognosis patients?
  - If yes, should we try to reduce 4 and increase 5?
- Is the cut-off dependent on timing?
- How to decide on significance of new? Role of MDM? Role of interpretation i.e. likelihood of inflammation?

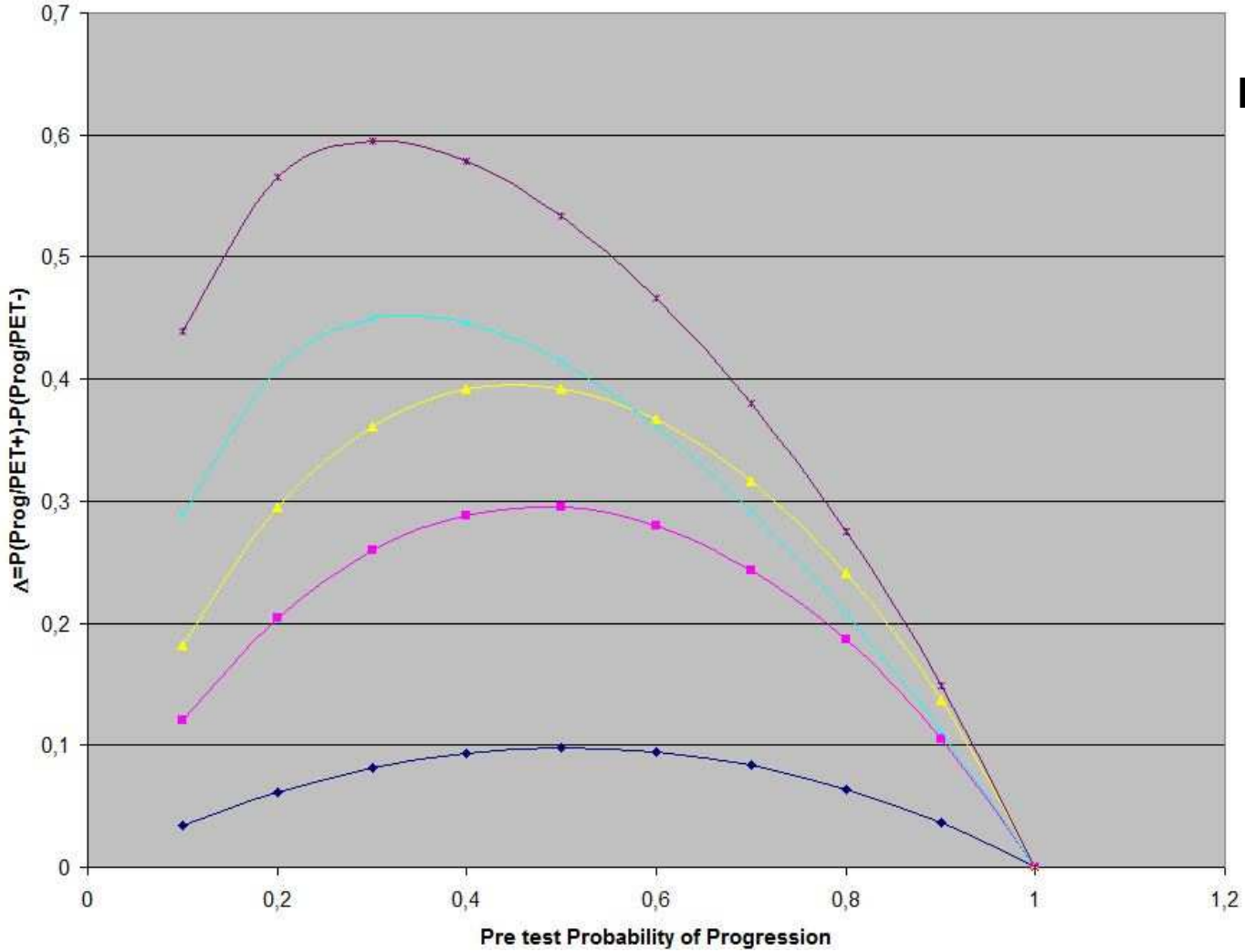
Why early response is better?



NCRI study PET scoring

Score			Description
Negative	1		complete disappearance of all abnormal uptake
Positive	2a	MRU	Disappearance of most abnormal uptake, but residual low-grade uptake in sites of previous disease, just above the background activity
	2b	Partial response	Reduction in the abnormal uptake, but significant residual activity
	2c	Stable	No significant change
	2d	Progression	Increase in abnormal uptake &/or appearance of new sites

Discriminant index post test/pre test probability of progression in DLBCL for various criteria (interim PET 2 cycles)



MFU=40months

Cinotti, Meignan J Nucl Med, 1983
Diamond et al, J Clin Invest, 1980