# Current State in the use of quantification

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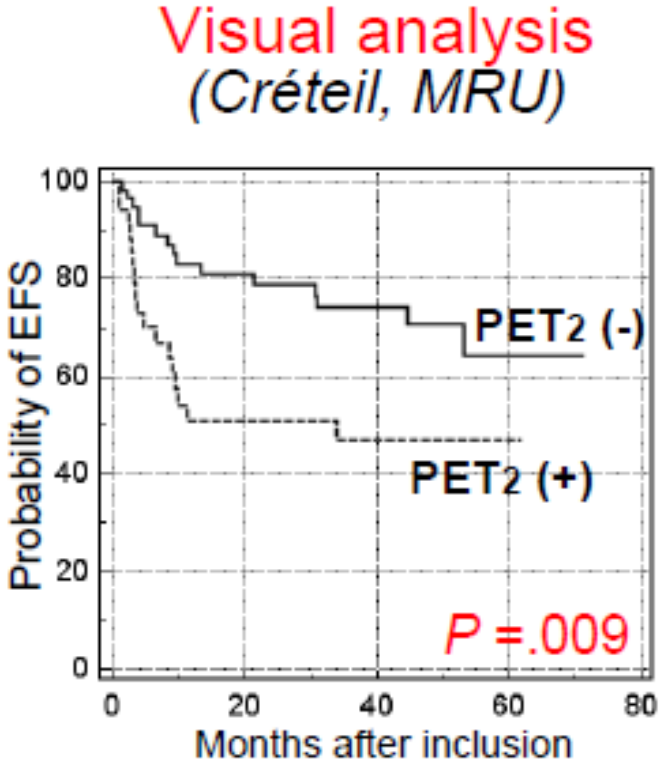
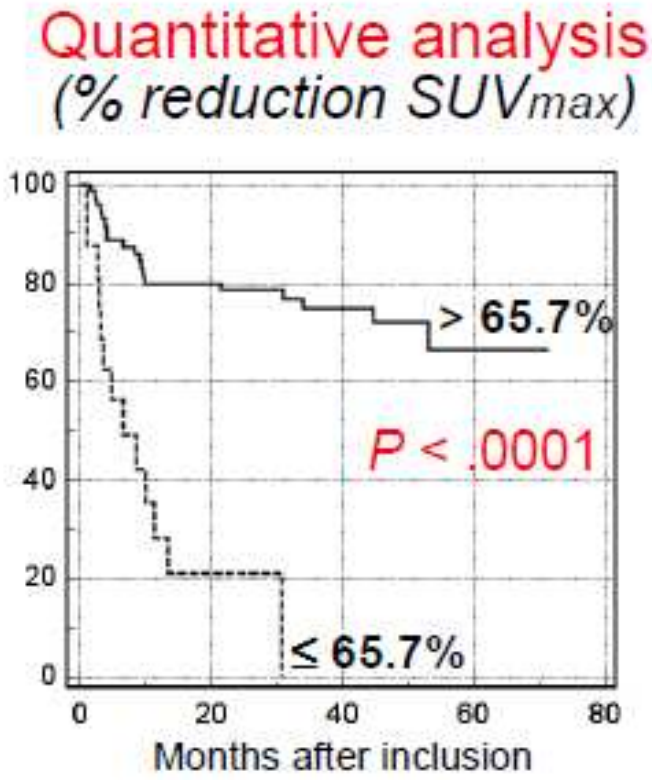
# Visual vs Quantitative analysis



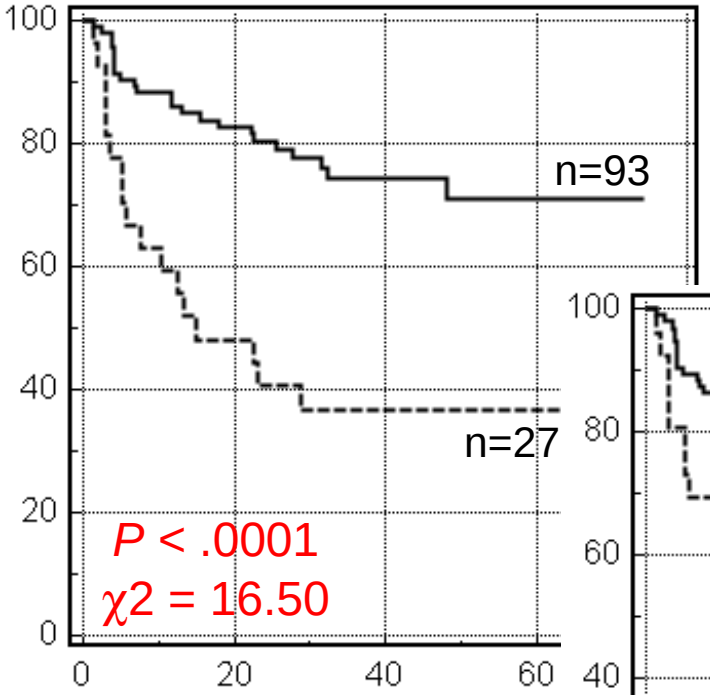

Cutoff determined by ROC analysis

| | PPV | NPV | Accuracy |
|---|---|---|---|
| **Visual analysis** | **50%** | **74%** | **65%** |
| **ΔSUVmax** | **81%** | **75%** | **76%** |

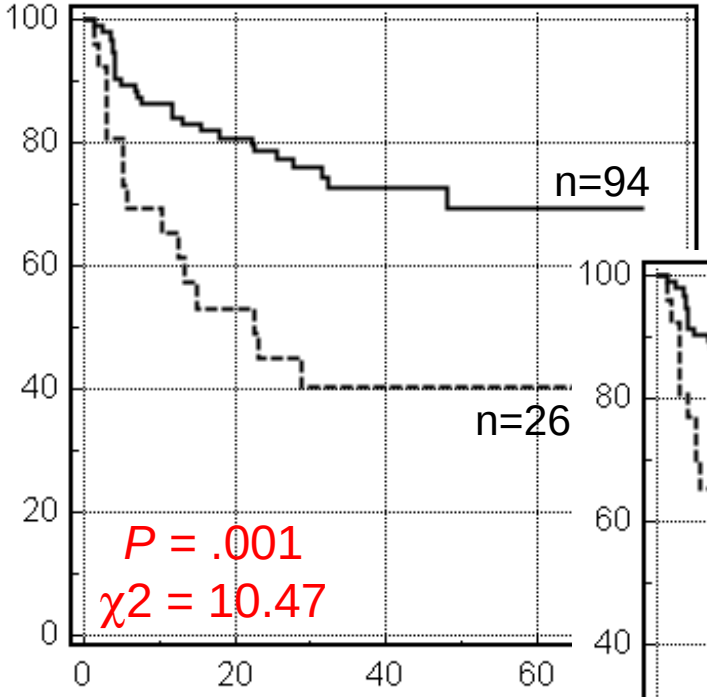
***C. Lin et al, J Nucl Med 2007; 48: 1626.***

# IVS

# Quantification
# ΔSUV (cut-off >66%)
# Event-free survival

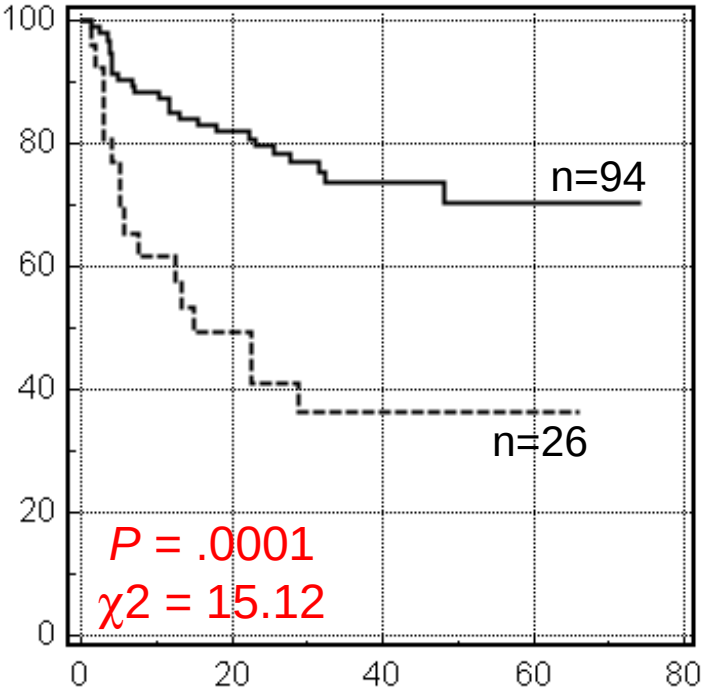



**Créteil :**
2-y EFS : 80.4% vs. 40.7%
HR : 0.296 (CI 0.083-0.419




**Dijon :**
2-y EFS : 78.5% vs. 45.0%
HR : 0.364 (CI 0.117-0.590

# of events = 40
Median f-u = 39.8 mo
(12.0-74.2 mo)
No change based on PET

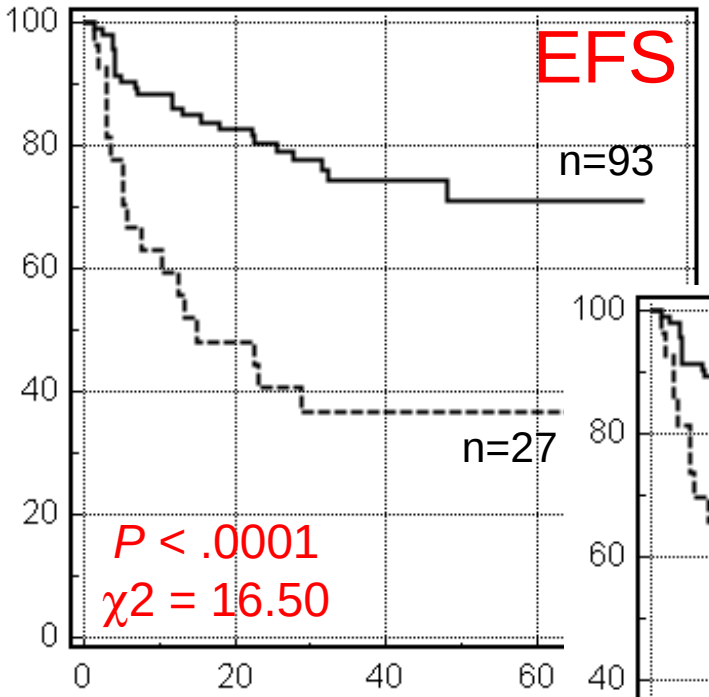



**Cuneo :**
2-y EFS : 79.6% vs. 41.0%
HR : 0.307 (CI 0.084-0.443)

→ 120 patients from 5 centers
→ Independent PET review by 3 experts

# IVS

# Quantification
# ΔSUV (cut-off >66%)
# EFS, PFS, OS




**Créteil :**
2-y EFS : 80.4% vs. 40.7%
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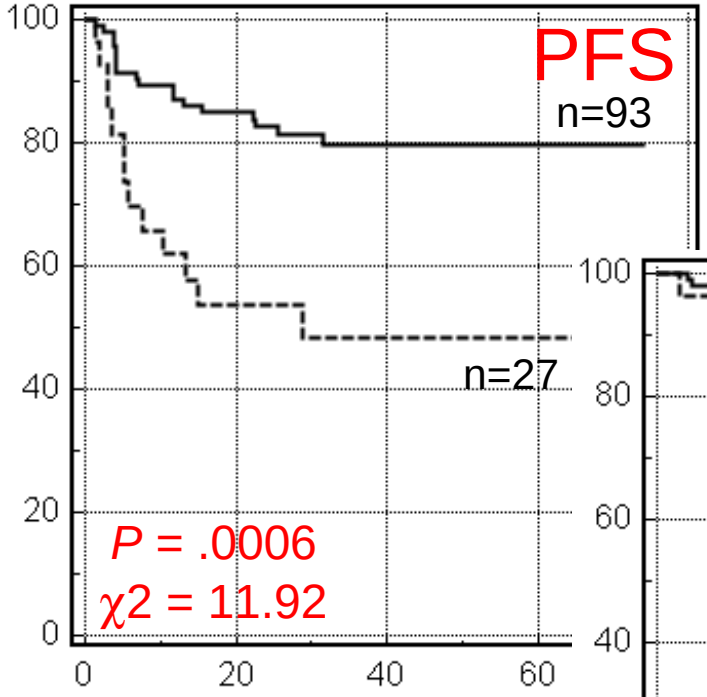
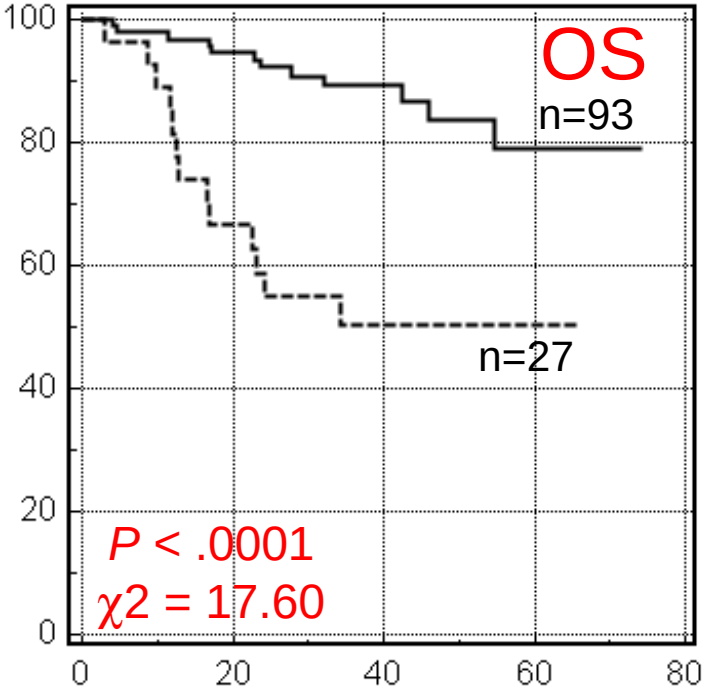



**Créteil :**
2-y PFS : 82.5% vs. 53.7%
HR : 0.307 (CI 0.080-0.497

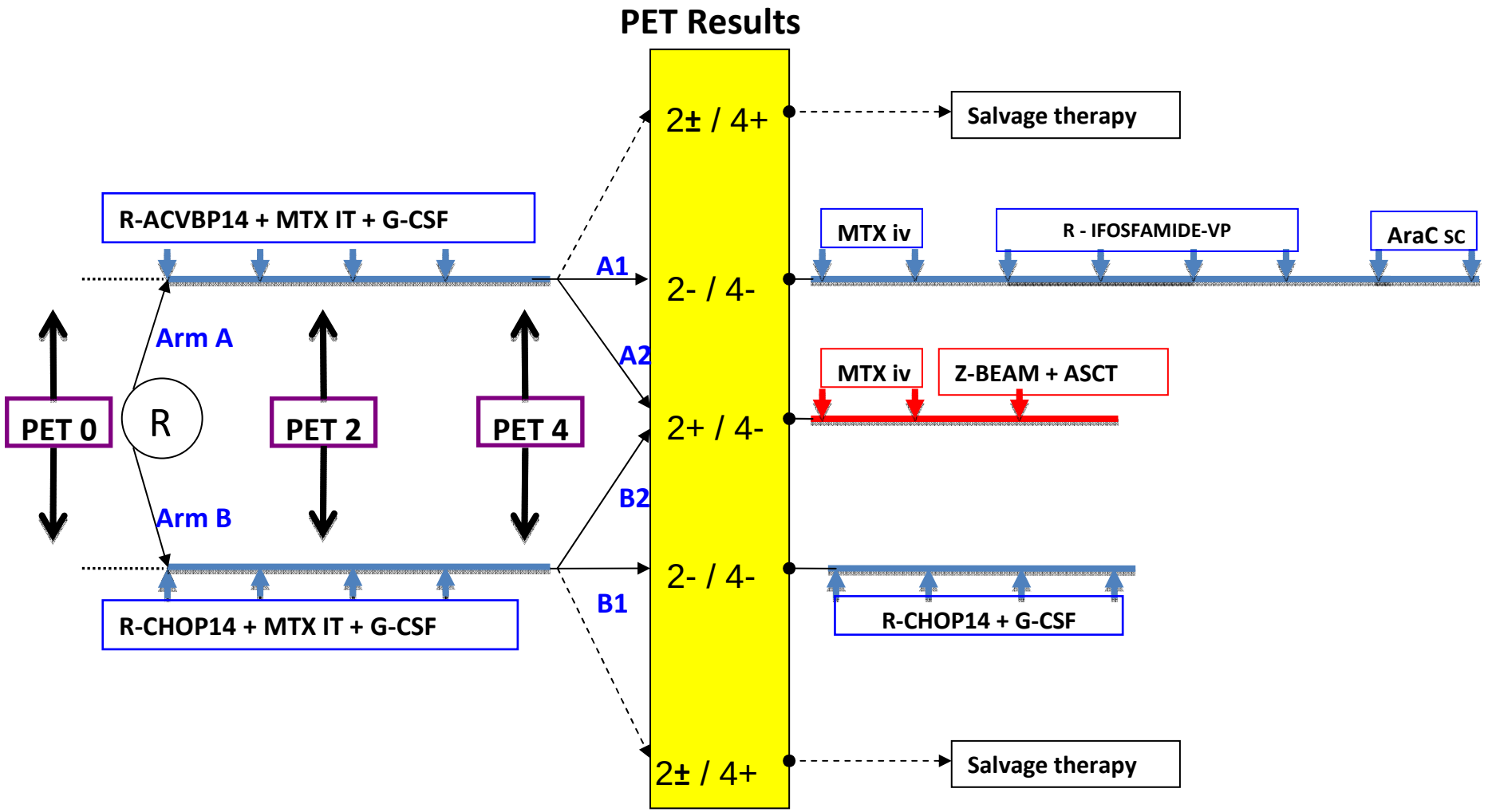
# of events = 40
Median f-u = 39.8 mo
(12.0-74.2 mo)




**Créteil :**
2-y OS : 92.2% vs. 54.9%
HR : 0.218 (CI 0.043-0.320)

LNH 2007-3B

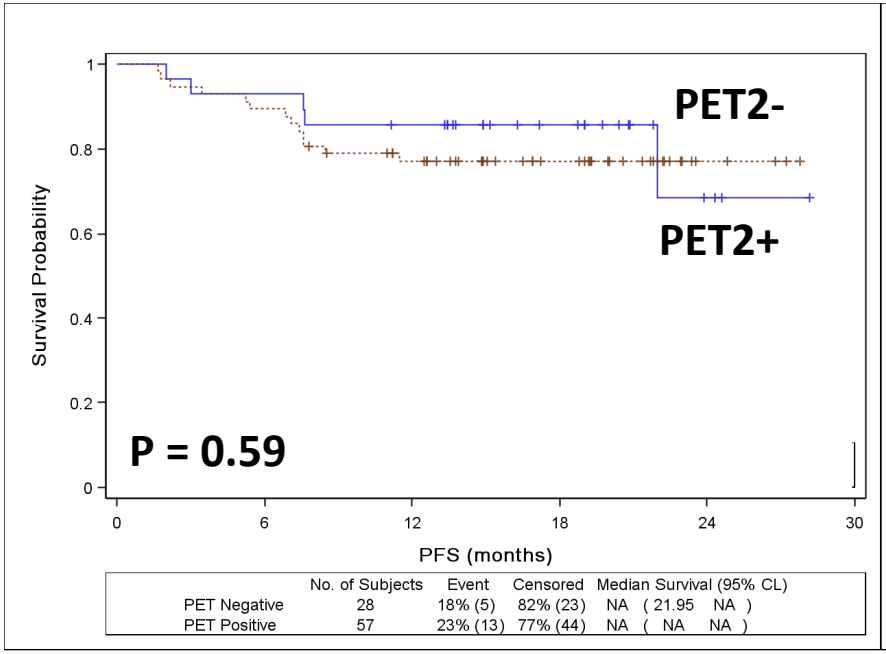
# PET Driven strategy
# DLBCL: 18-60 y, aaIPI=2-3



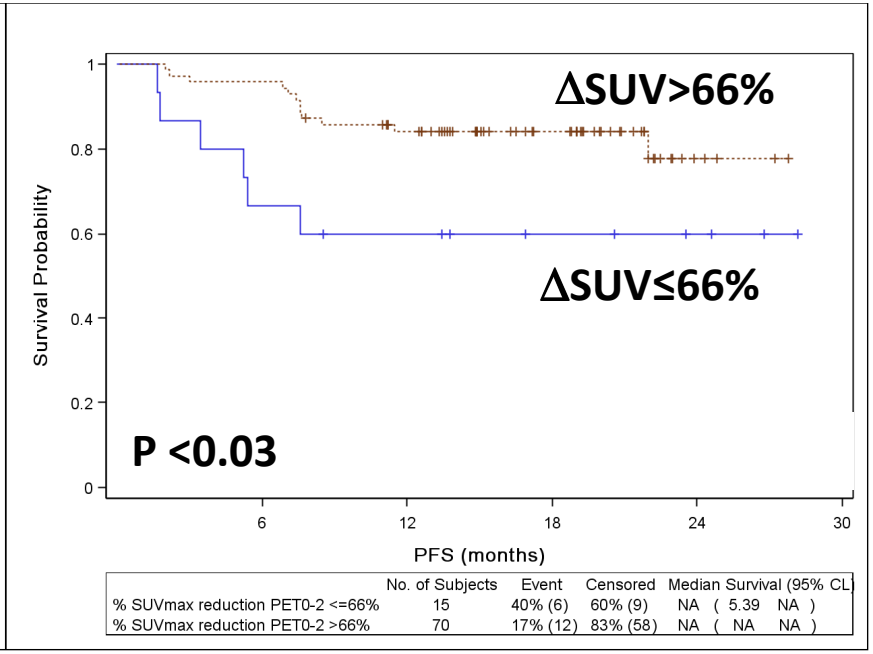
LNH 2007-3B

# PFS according to PET2 results

## Visual Analysis (IHP)



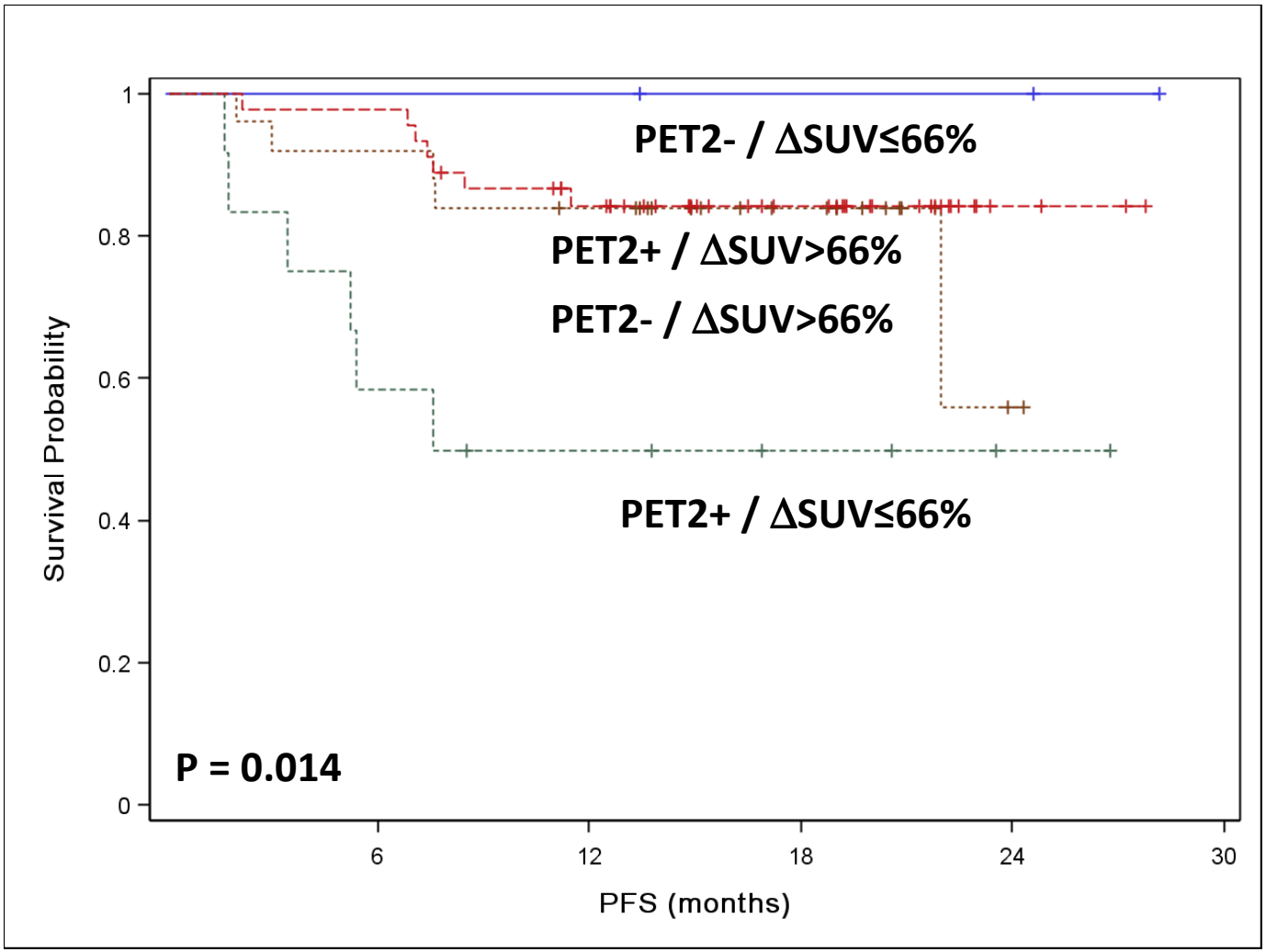

## ΔSUVmax PET0-2




*RO. Casasnovas et al, Blood 2011; 118:37*

LNH 2007-3B

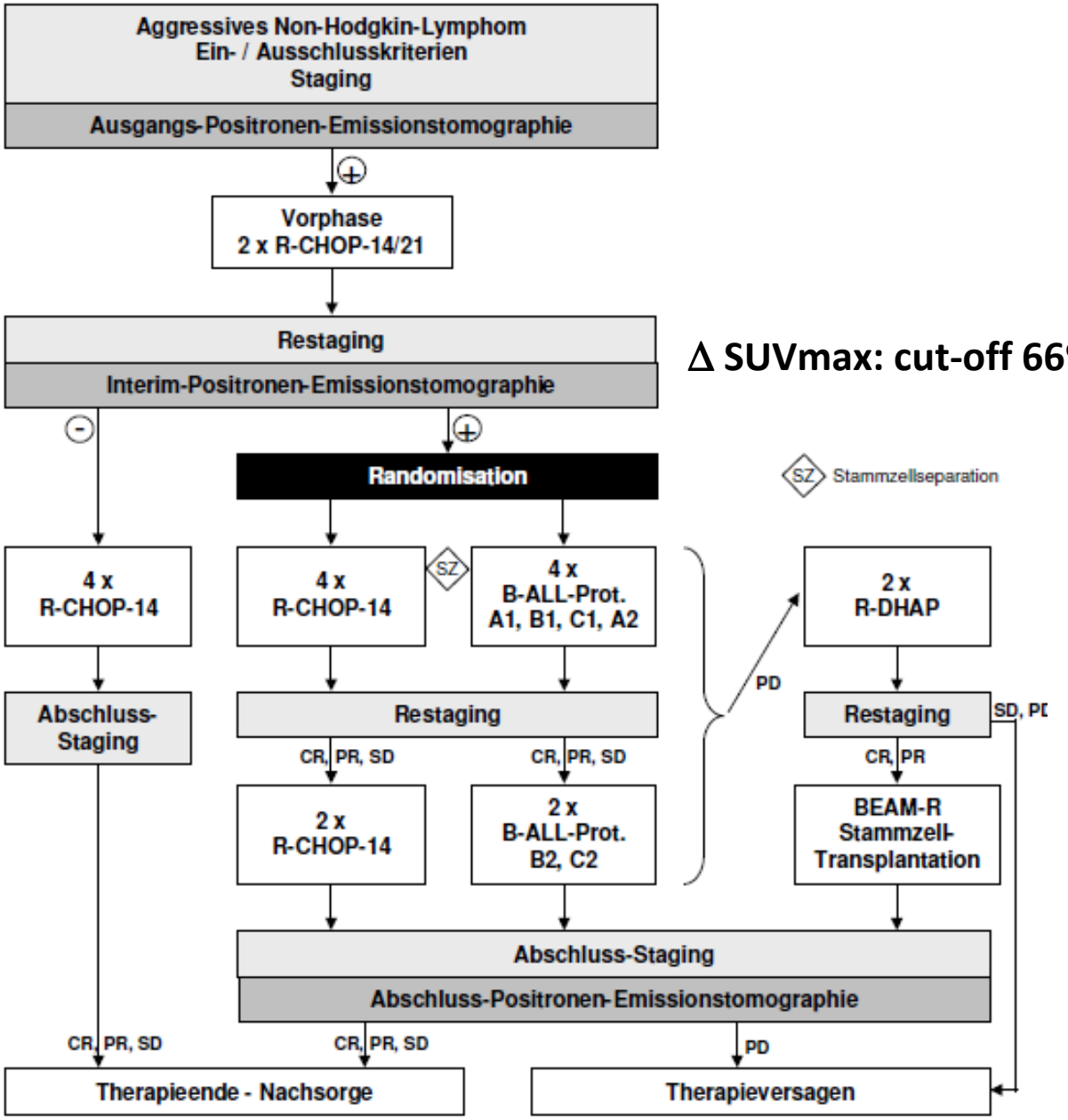
# PFS according to visual and quantitative PET2 results




*RO. Casasnovas et al, Blood 2011; 118:37*

# PETAL

**DLBCL: 18-60y**




**Δ SUVmax: cut-off 66%**

## Conclusions – Vote

Recommendations of the Experts to be presented in plenary session on Thuesday 27th September

- **Do the LNH07-3B, PETAL & IVS provide sufficient external validation to propose quantification use**:
  - **In a trial setting** YES (n = 25) / NO (n = 0 )
  - **In current practice** YES (n = 6 ) / NO (n = 19)
  - **To drive treatment strategy** YES (n = 6 ) / NO (n = 19 )
- **Are patients with low baseline SUVmax eligible for ΔSUVmax analysis** YES (n = ) / NO (n = )
- **Are patients with a ΔSUVmax above the target cutoff can be considered good responders despite a high interim SUVmax value** YES (n = ) / NO (n = )

# ISSUES REGARDING BASELINE SUV < 10 AND INTERIM SUV > 5.0

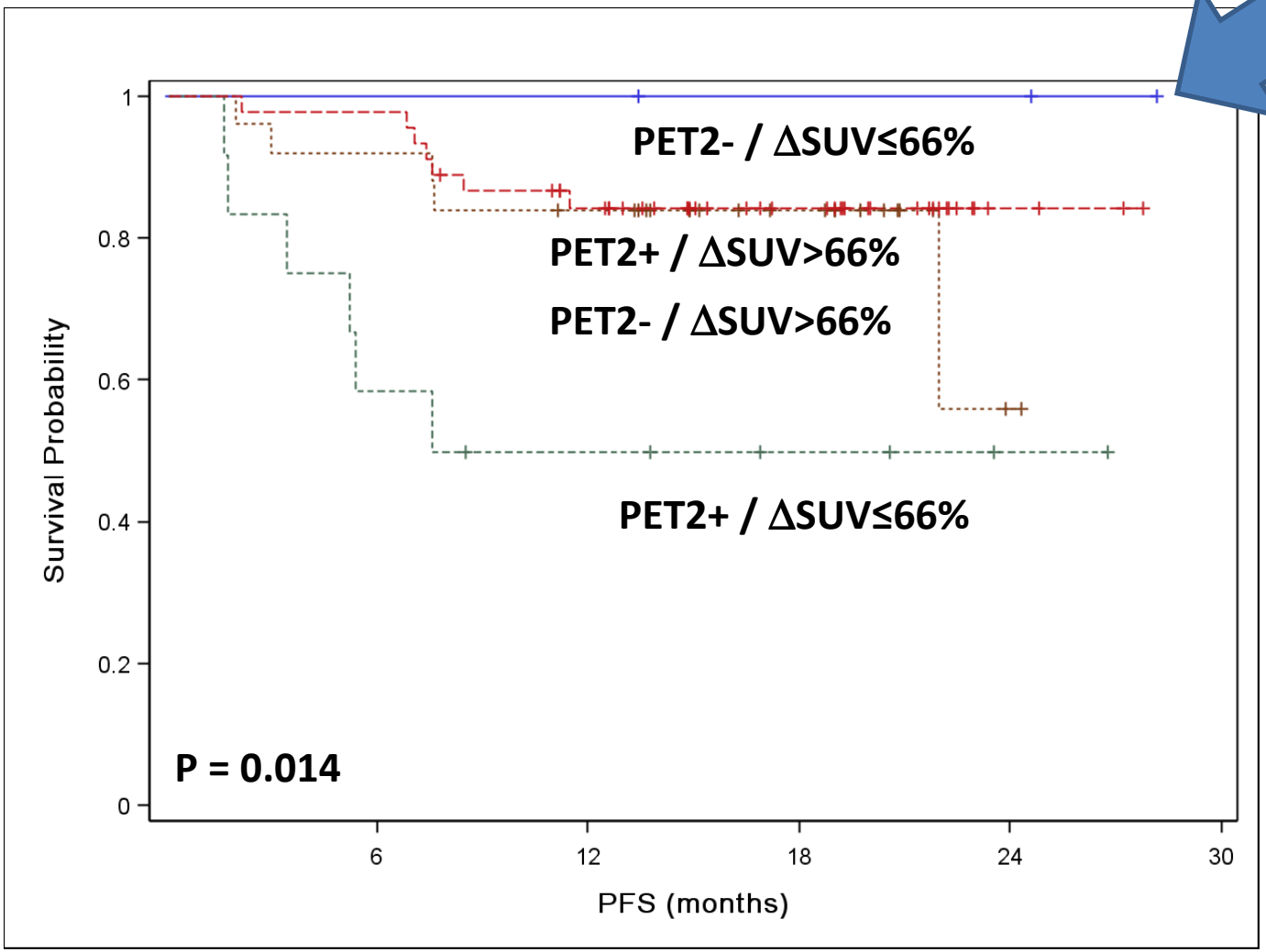
# Issues regarding SUVmax values

- **Are patients with low baseline SUVmax eligible for ∆SUVmax analysis ?**
  - More the Baseline SUVmax is close to the nearby background more the SUVmax reduction under the cutoff is unlikely

- **Are patients with a ∆SUVmax above the target cutoff can be considered good responders despite a high interim SUVmax value?**

LNH 2007-3B

# PFS according to visual and quantitative PET2 results




*RO. Casasnovas et al, Blood 2011; 118:37*

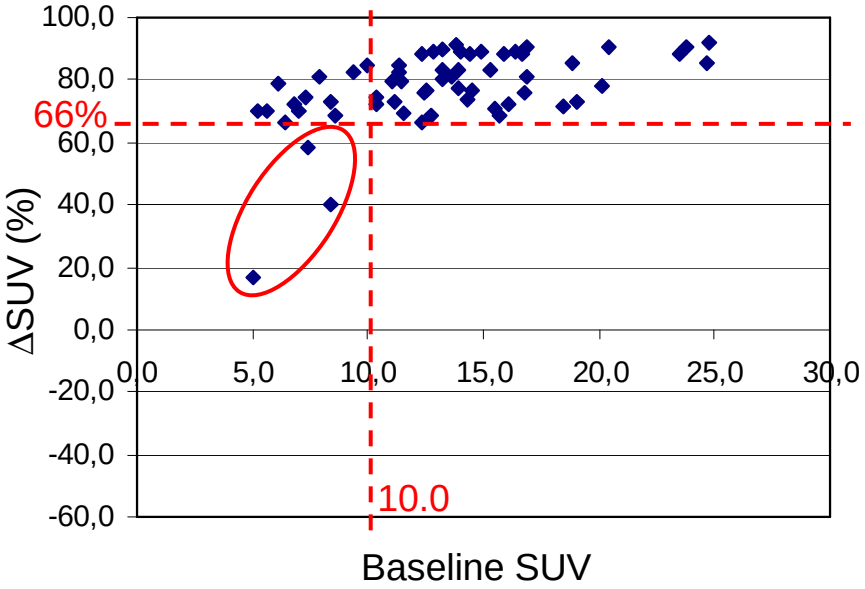
# Tumors with baseline uptake <10.0

## influence of baseline SUV on ΔSUV

### Lin et al. data 92pts

No event, EFS = 0

*(n=60)*

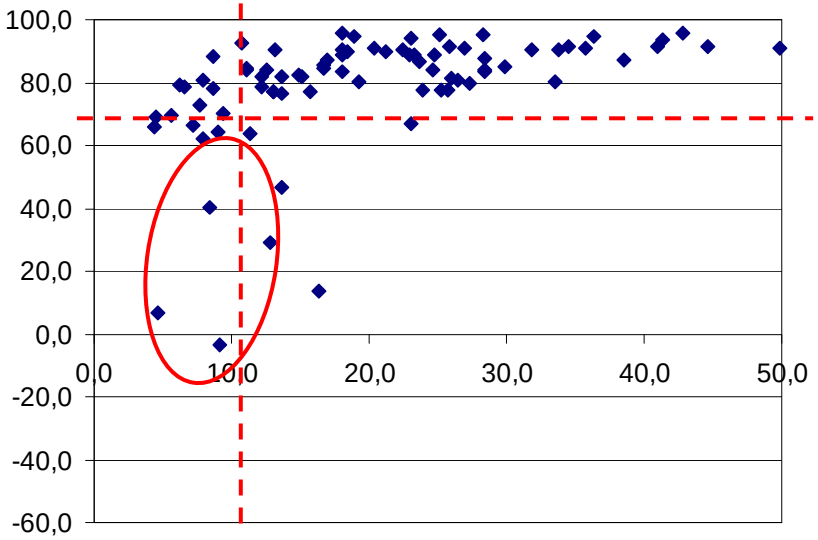



→ 3 FP pts w/ baseline SUV<10.0, ΔSUV<66%, no event

### IVS data (09/11) 120pts

No event, EFS = 0

*(n=80)*



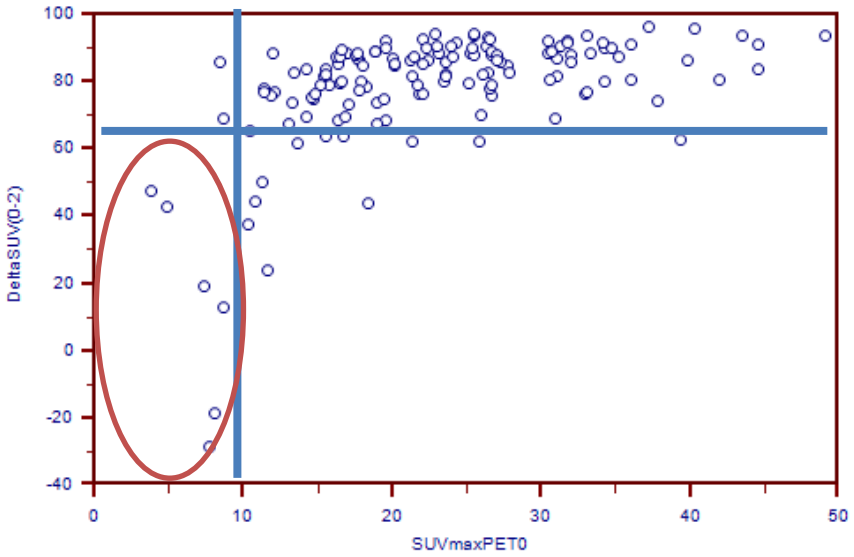

→ 5 FP pts w/ baseline SUV<10.0, ΔSUV<66%, no event

# Tumors with baseline uptake < 10

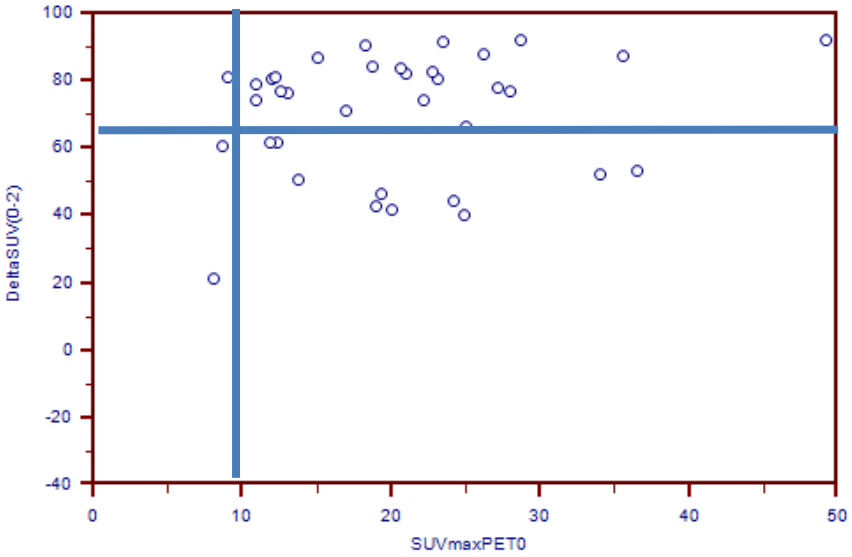
## LNH 2007-3B

**N = 179; Median Fu =15 months**

**No Event**




**Event**




False positive rate

6/8 (75%) cases with **baseline SUV<10**, ΔSUVmax<66%, have no event

12/22 (54%) cases with **baseline SUV>10**, ΔSUVmax<66%, have no event

# Issues regarding SUVmax values

- **Are patients with low baseline SUVmax eligible for ∆SUVmax analysis ?**
  - More the Baseline SUVmax is close to the nearby background more the SUVmax reduction under the cutoff is unlikely

- **Are patients with a ∆SUVmax above the target cutoff can be considered good responders despite a high interim SUVmax value?**

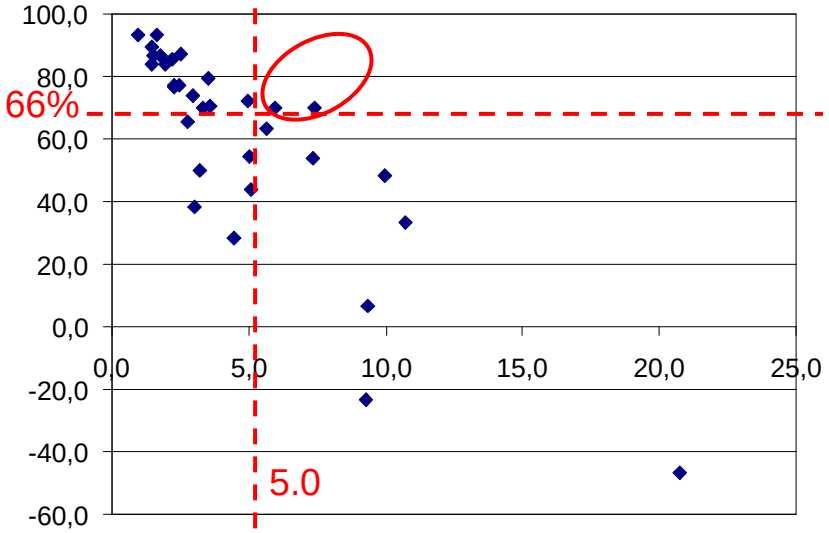
# Tumors with PET2 uptake > 5.0

## influence of interim SUV on ΔSUV

### Lin et al. data 92pts

Event, EFS = 1

*(n=32)*

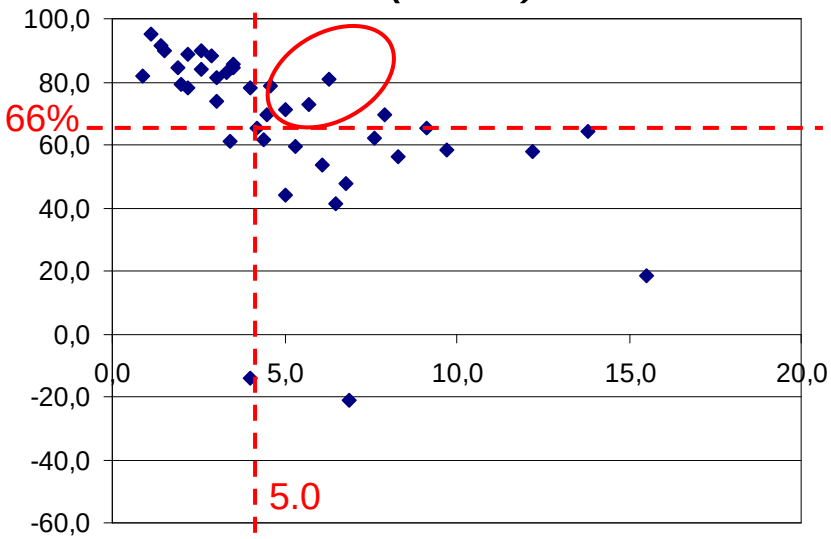



→ 2 FN pts w/ ΔSUV>66%, interim SUV>5.0, having event

### IVS data (09/11) 120pts

Event, EFS = 1

*(n=40)*

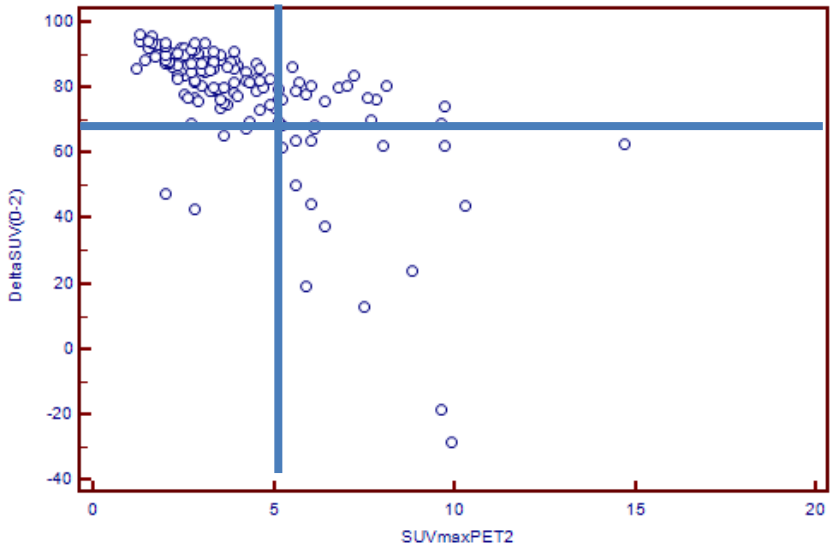



→ 3 FN pts w/ ΔSUV>66%, interim SUV>5.0, having event

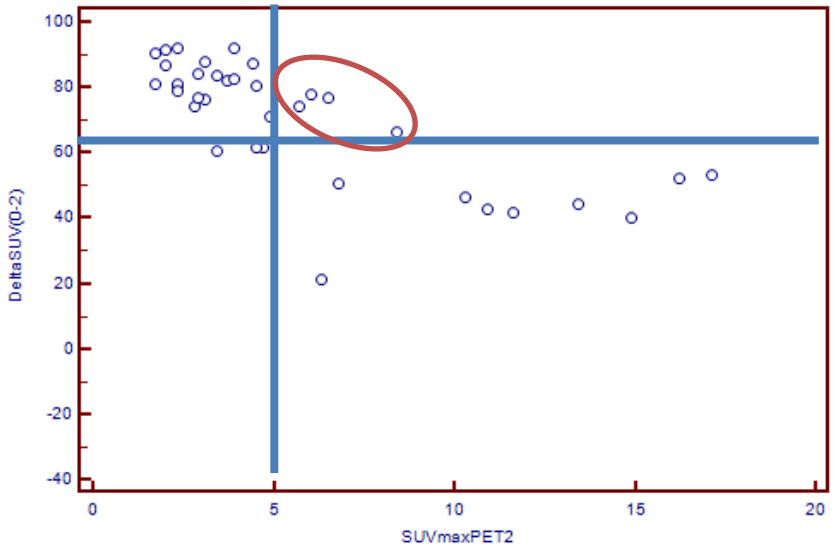
# Tumors PET2 uptake > 5
# LNH2007-3B

**N = 179; Median Fu = 15 months**

**No Event**




**Event**




False negative rate

4/26 (15%) cases with **PET2 SUVmax >5**, ΔSUVmax>66%, have event

20/123 (16%) cases with **PET2 SUVmax <5**, ΔSUVmax>66%, have event

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