

Fat percentage and hand grip strength in lung cancer: the influence on survival and toxicity



ICTR-PHE

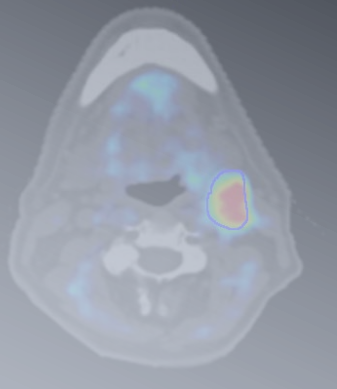


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WHO performance status



WHO performance status is used to guide treatment decisions, but rough and subjective → need for additional, objective measures

| WHO grade | Description |
|-----------|--|
| 0 | Able to carry out all normal activity without restrictions |
| 1 | Restricted in physically strenuous activity but ambulatory and able to carry out light work |
| 2 | Ambulatory and capable of all self-care but unable to carry out any work; up and more than 50% of waking hours |
| 3 | Capable of only limited self-care; confined to bed or chair more than 50% of waking hours |
| 4 | Completely disabled; cannot carry on any self-care; totally confined to bed or chair |

(Adapted from: Oken MM, Creech RH, Tormey DC, *et al.* (1982). Toxicity and response criteria of the Eastern Cooperative Oncology Group. *Am. J. Clin. Oncol.* 5 (6): 649–55)

Fat % and hand grip strength



Fat percentage measure for:

- Body composition
- Nutritional status

Hand grip strength measure for:

- General muscle function
- Muscle breakdown
- Overall physical condition

Decrease of muscle strength and/or poor nutritional status might be used to predict prognosis or radiation-induced toxicity in NSCLC

Previous results



Chen et al. *Journal of Cardiothoracic Surgery* 2011, 6:98
<http://www.cardiothoracicsurgery.org/content/6/1/98>



RESEARCH ARTICLE

Open Access

Hand-grip strength is a simple and effective outcome predictor in esophageal cancer following esophagectomy with reconstruction: a prospective study

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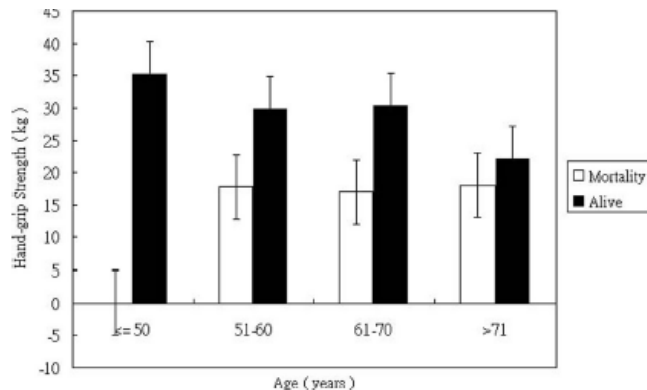


Figure 5 The hand-grip strength in mortality and survived patients was stratified according to age. The mean hand-grip strength in mortality patients is significantly lower than survived patients in the range from 51 to 60 years and 61 to 70 years. (p value was 0.024 and 0.014 respectively) The difference in patients older than 71 years old was not significant.

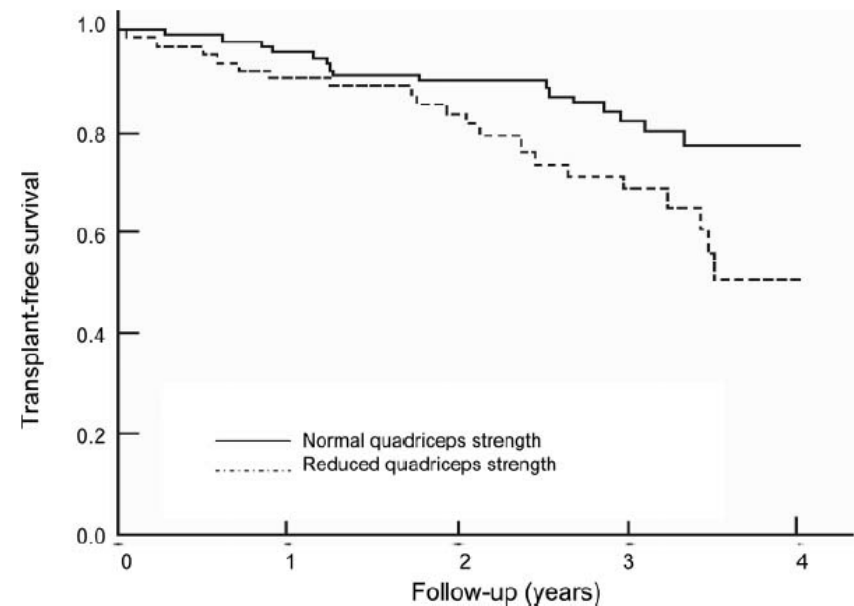
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CLINICAL REVIEW

COPD Recent Findings: Impact on Clinical Practice

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Previous results



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 0360-3016/09/\$-see front matter

doi:10.1016/j.ijrobp.2008.08.052

CLINICAL INVESTIGATION

DEVELOPMENT AND EXTERNAL VALIDATION OF PROGNOSTIC MODEL FOR 2-YEAR SURVIVAL OF NON-SMALL-CELL LUNG CANCER PATIENTS TREATED WITH CHEMORADIOTHERAPY

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 HISKA VAN DER WEIDE, M.D.,* AND PHILIPPE LAMBIN, M.D., Ph.D.*

Can the addition of baseline or during-RT fat% or hand grip strength (HGS) add prognostic value?

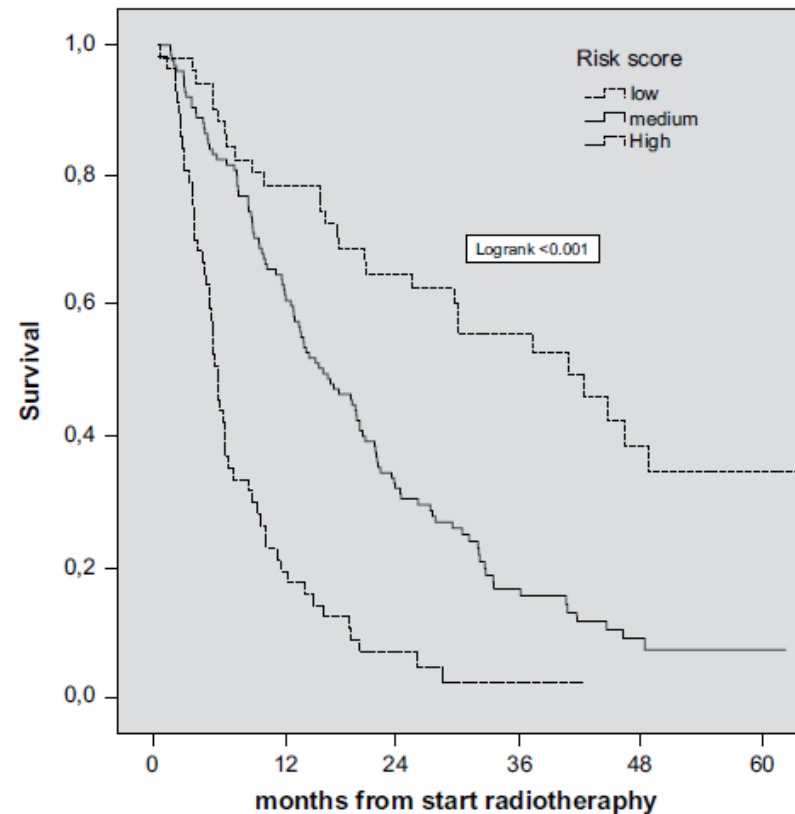


Fig. 4. Kaplan-Meier curves stratified by low-, medium-, and high-risk score.

Aims



Fat percentage and hand grip strength in lung cancer: the influence on survival and toxicity

- 1) Evaluate the association between hand grip strength (HGS) at baseline and WHO performance status
- 2) Evaluate the association between fat percentage at baseline and WHO performance status
- 3) Evaluate the association between HGS, fat% and survival and/or radiation-induced toxicity

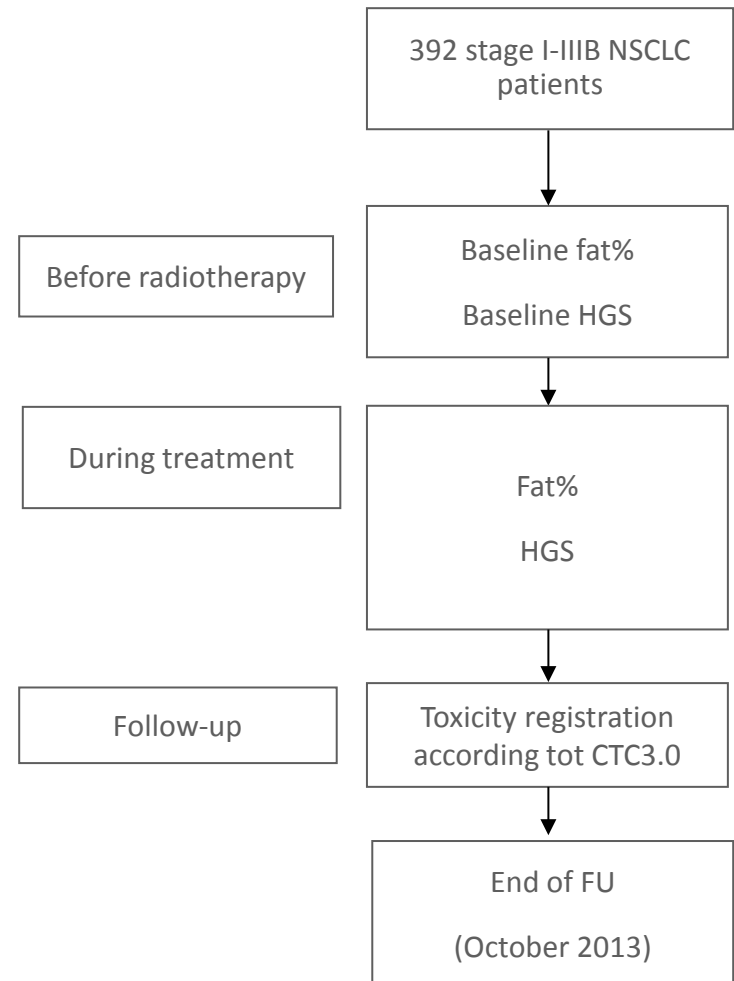
Materials & Methods



392 stage I-IIIb NSCLC patients

- 67.6% male
- 72.1% deceased by the end of FU
- Median survival 19 months
- Treated with RT alone or combined with chemo in 2006-2011

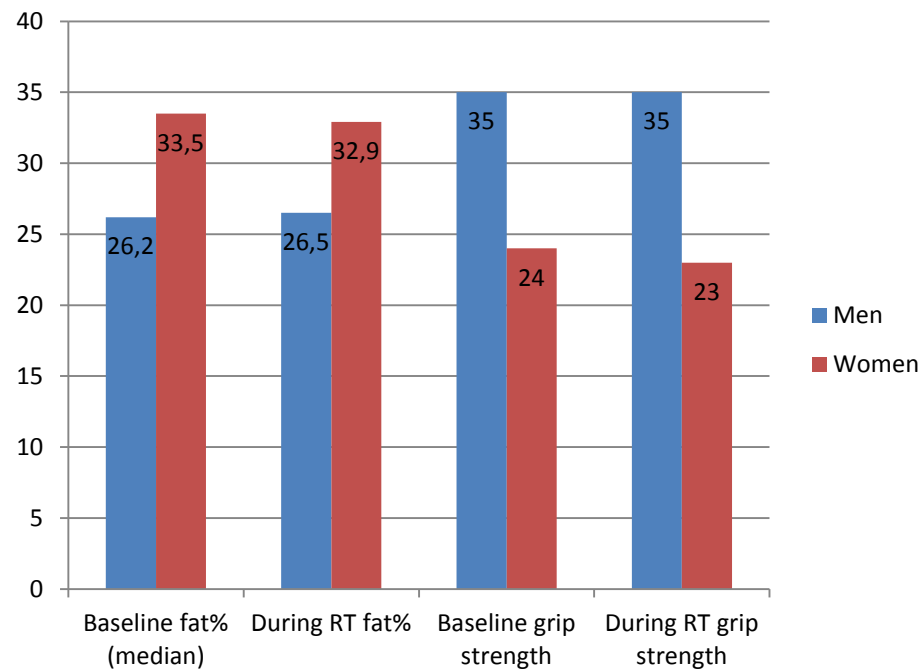
Analyses → Kaplan-Meier, Cox proportional hazard, multivariate logistic regression



No differences between baseline – during RT



Baseline vs. during-RT measures → no differences

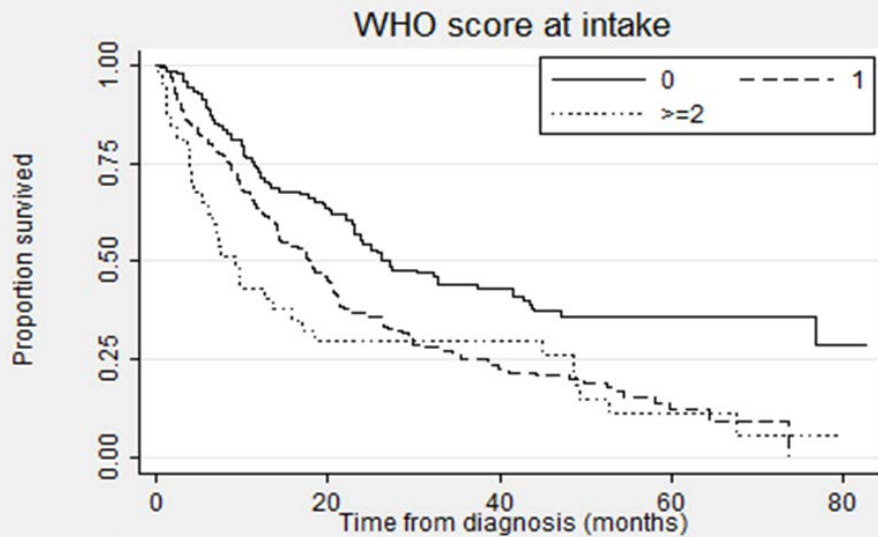


Fat% & HGS associated with WHO in men

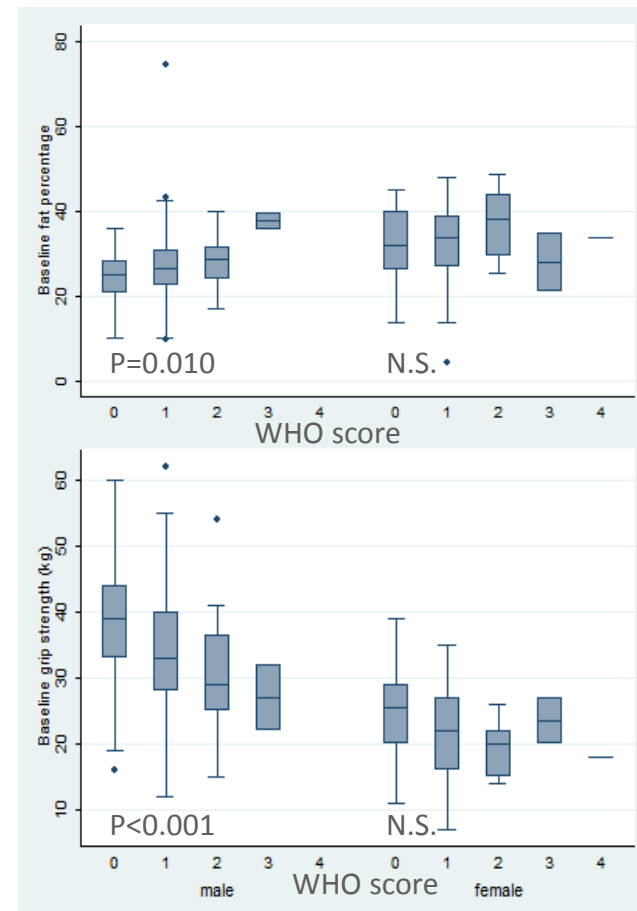


WHO performance status

Associated with prognosis:



Associated with fat% and HGS in men:



HGS associated with survival in men

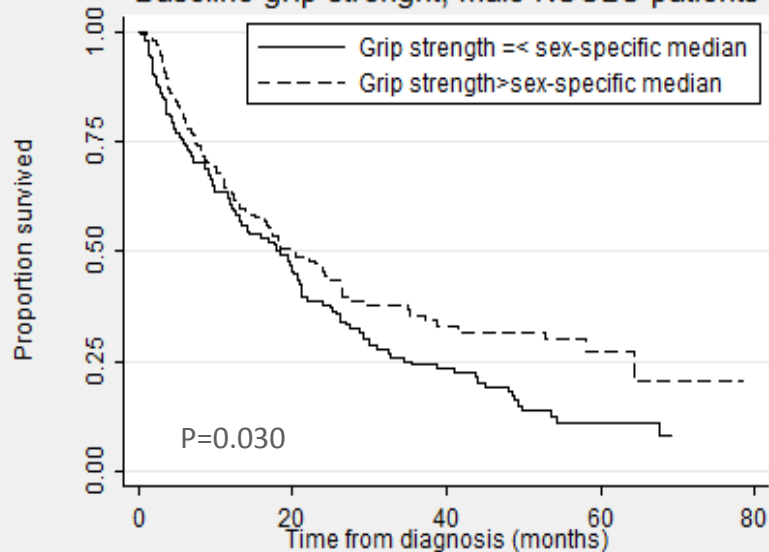


Fat% and HGS

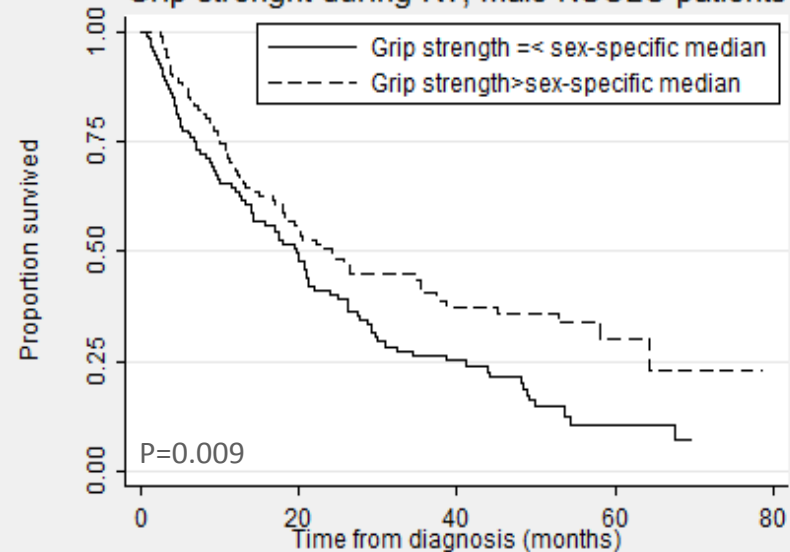
- No association between fat% and survival
- No association between HGS and survival in women

Association between HGS and survival in men:

Baseline grip strength, male NSCLC patients



Grip strength during RT, male NSCLC patients



No additional prognostic value of HGS in multivariate analyses



Previously validated model including:

- Sex
- WHO
- GTV
- # positive lymph nodes (FDG-PET)
- FEV₁

Comparing -log likelihood & c-statistic:

HGS does not add to the previous overall predictive model (www.predictcancer.org)

But...indications that HGS might be important in subgroups (WHO \geq 2) \rightarrow groups currently too small; further research needed

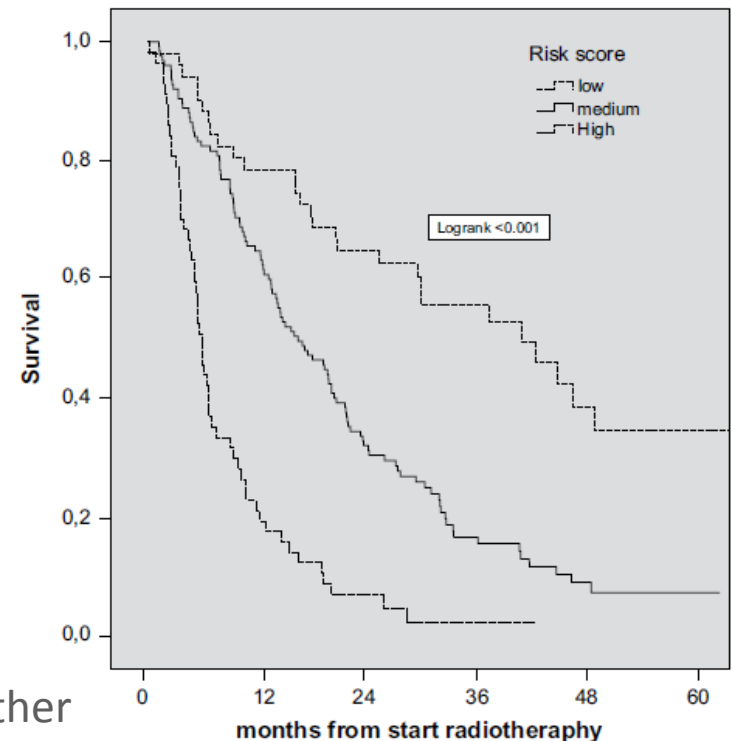


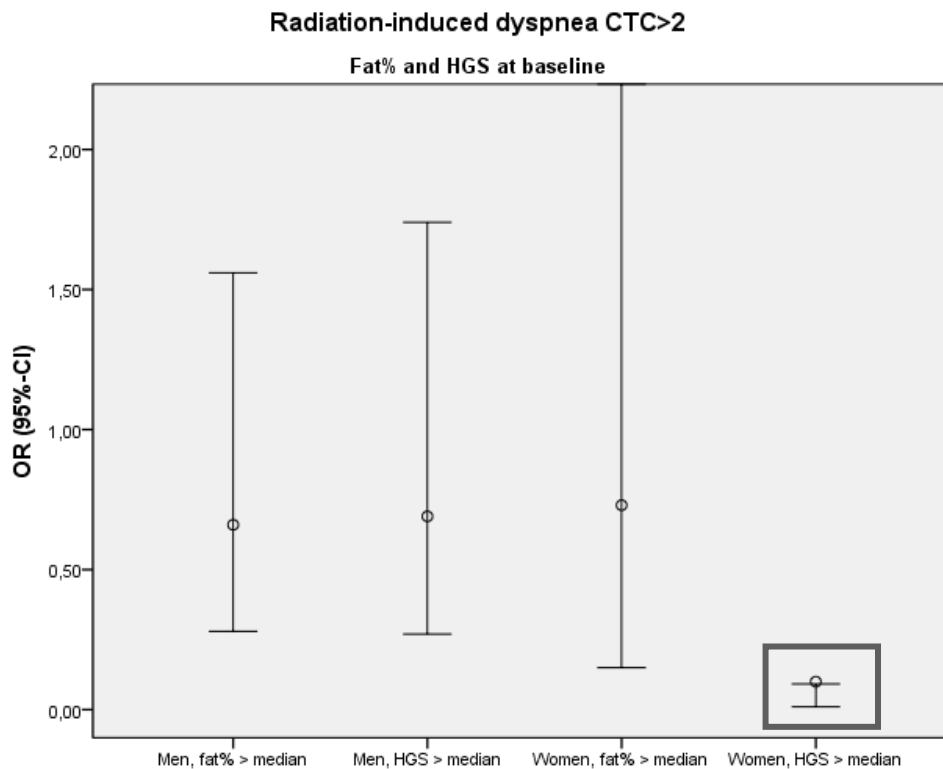
Fig. 4. Kaplan-Meier curves stratified by low-, medium-, and high-risk score.

High HGS → low dyspnea risk in women



Toxicity (CTC score dyspnea >2)

- Female patients with HGS >22 kgs → 90% decrease in post-RT dyspnea risk



But this group very small!

Conclusions



Baseline fat% and HGS associated with WHO score

Higher HGS associated with better survival in male patients

Addition of HGS to existing predictive model shows no additional prognostic value

Association of HGS and toxicity suggested, but groups are too small for definite conclusions

As HGS is an easy and low-cost measure, its evaluation in subgroups (especially WHO \geq 2) is warranted

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