



Cancer cachexia: assessment methodology - biological

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Current cachexia assessment/therapy

Random cherry picking

v

Therapeutic nihilism

v

Ignorance

Why assess cachexia?

EBM (negligible)

v

Cost (QALY's)

v

Tradition (steroids)

Ideal context for assessing cachexia

- Grade A evidence base
- Simple tool
- Nurse – led
- Inexpensive

Four Domains of the Conceptual Framework

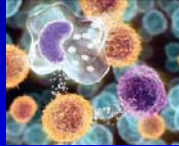
I. Depletion of Reserves



II. Limitation of food intake



III. Catabolic Drivers



IV. Impact and outcomes



ASSESSMENT

- **Who:** all cancer; all advanced cancer, all patients receiving therapy?
- **When:** all patients, all time?
- **By whom:** patients, nurses, dieticians, oncologists, GP's, researchers?

ASSESSMENT

- **What target:** primary or secondary factors?
- **What strategy:** screening, therapy, clinical trials
- **Means:** self-reported, biological

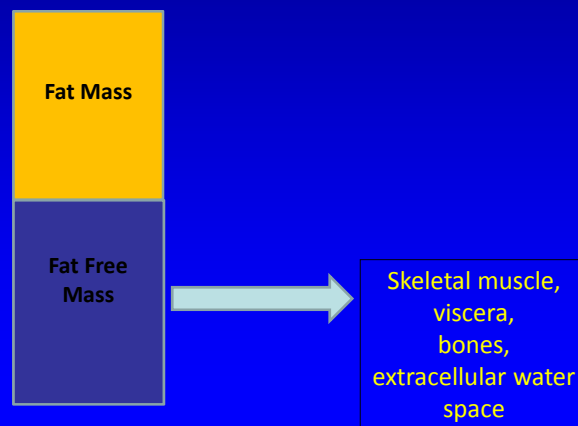
ASSESSMENT

- **Cost:** assessment, therapy?
- **Benefit:** symptoms, QoL, treatment tolerance, survival?

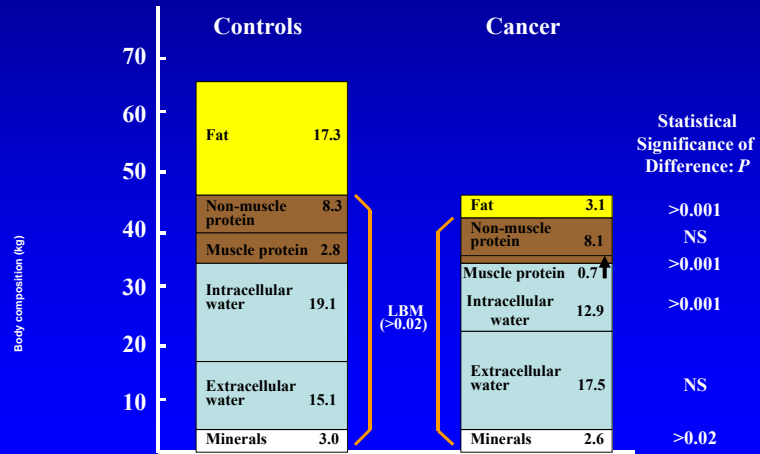
Body composition analysis

Methods of body composition

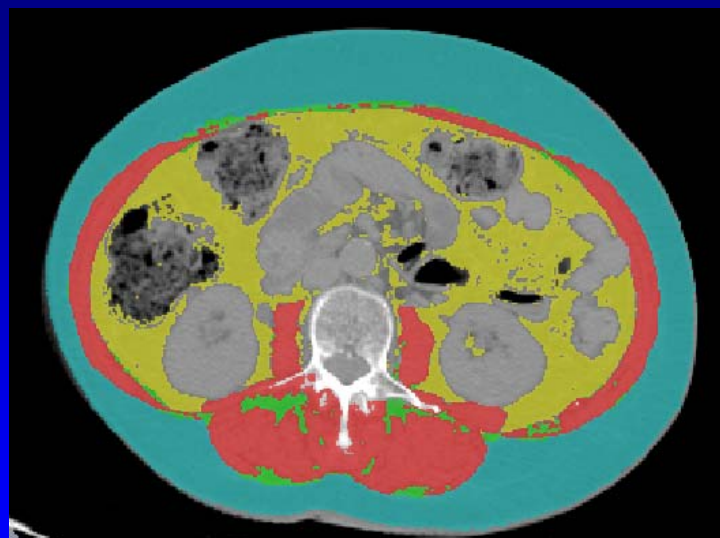
- Most common methods are bioelectrical impedance (BIA) and dual energy X-ray absorptiometry (DEXA)



Body composition in cancer cachexia



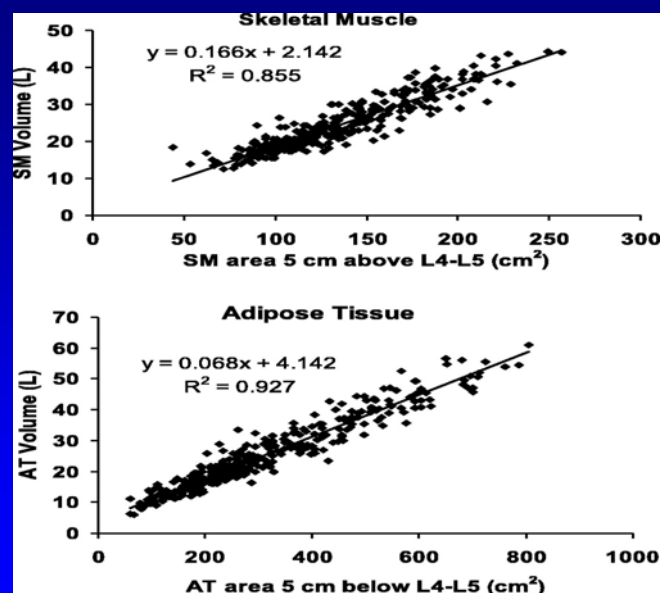
Fearon and Preston, 1990



■ Lumbar Muscles
 ■ Subcutaneous Fat
 ■ Intramuscular Fat
 ■ Visceral Fat

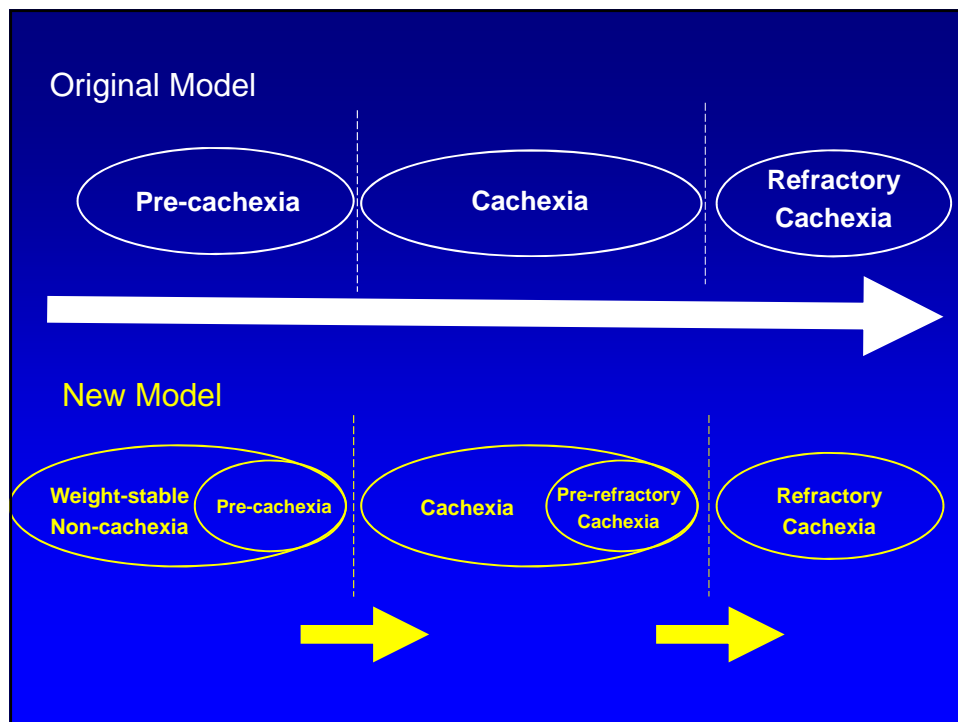
CT analysis technique

- Landmark – 3rd Lumbar vertebrae
- Two consecutive images at L3 analysed using SliceOMatic software
- Skeletal muscle and adipose tissue quantified using respective Hounsfield units.
- Surface area of tissue (cm²) of each slice calculated and mean value of two slices taken.

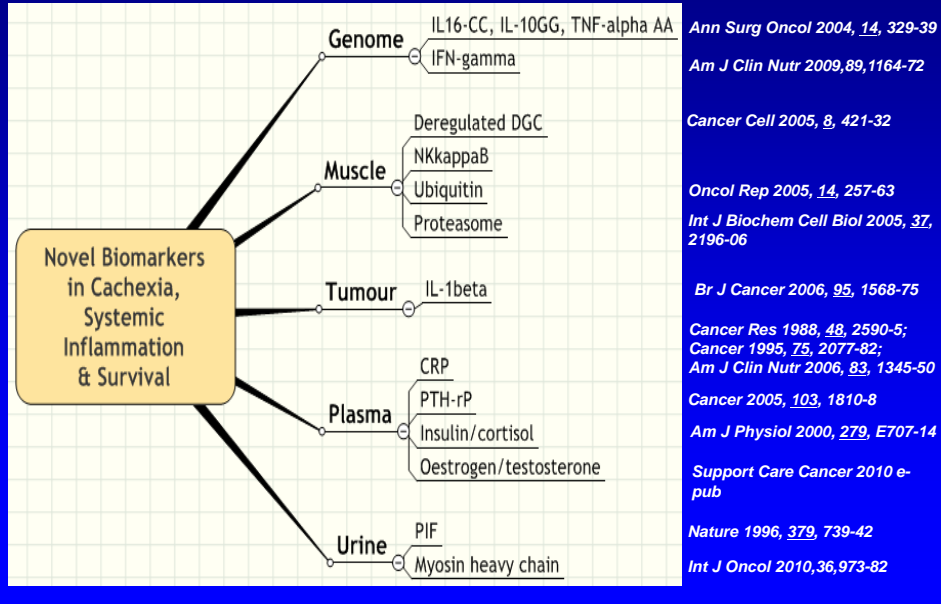


Data from Shen et al. *J Appl Physiol* 2004; 97: 2333–38

Biomarkers



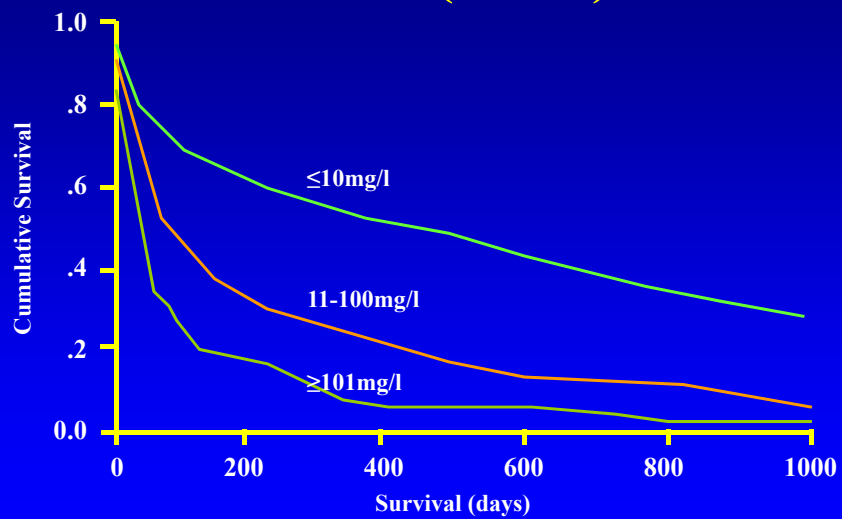
Biomarkers



Systems biology

- Genomics
- Transcriptomics
- Proteomics
- Metabolomics

Cancer Specific Survival in Advanced Cancer (n=772)



McMillan et al, Nutrition and Cancer, 2001, 41; 64-51

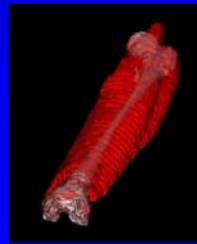
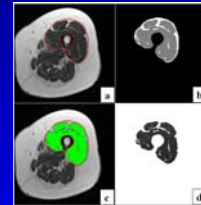
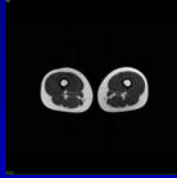
Patient-centred outcomes



Combined measurement of quadriceps muscle mass and strength to provide an index of mechanical quality

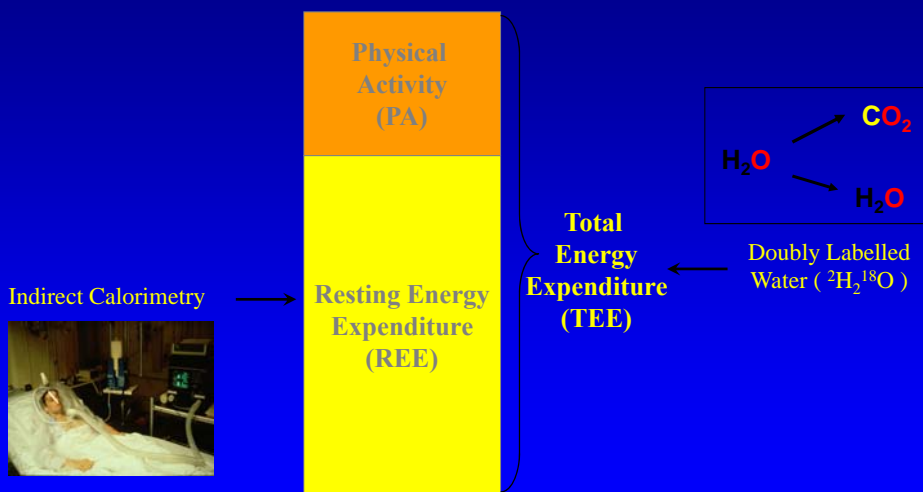


Quadriceps muscle strength



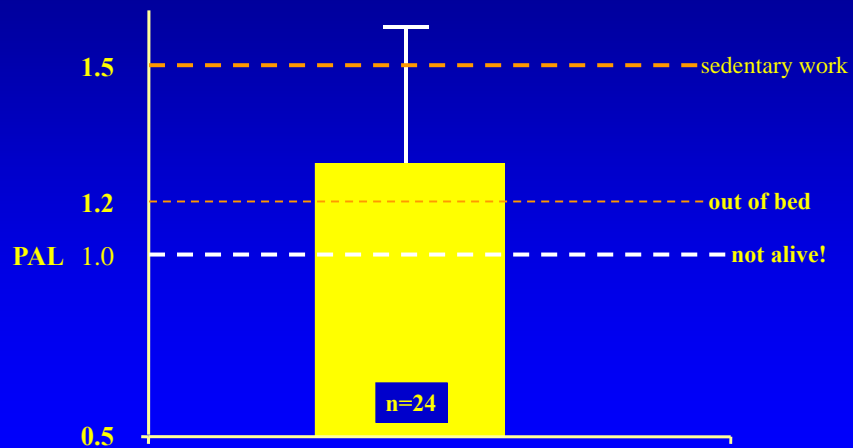
Quadriceps muscle mass

Measurement of Physical Activity



Physical Activity Level (PAL) = TEE/REE

Physical activity level (PAL) in cachectic cancer patients

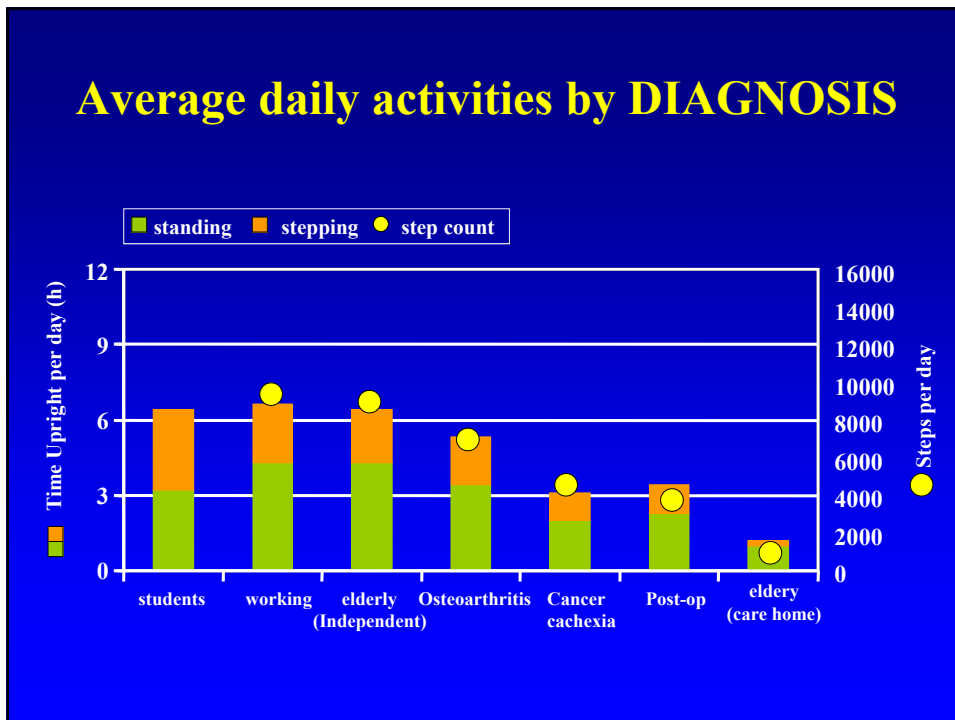
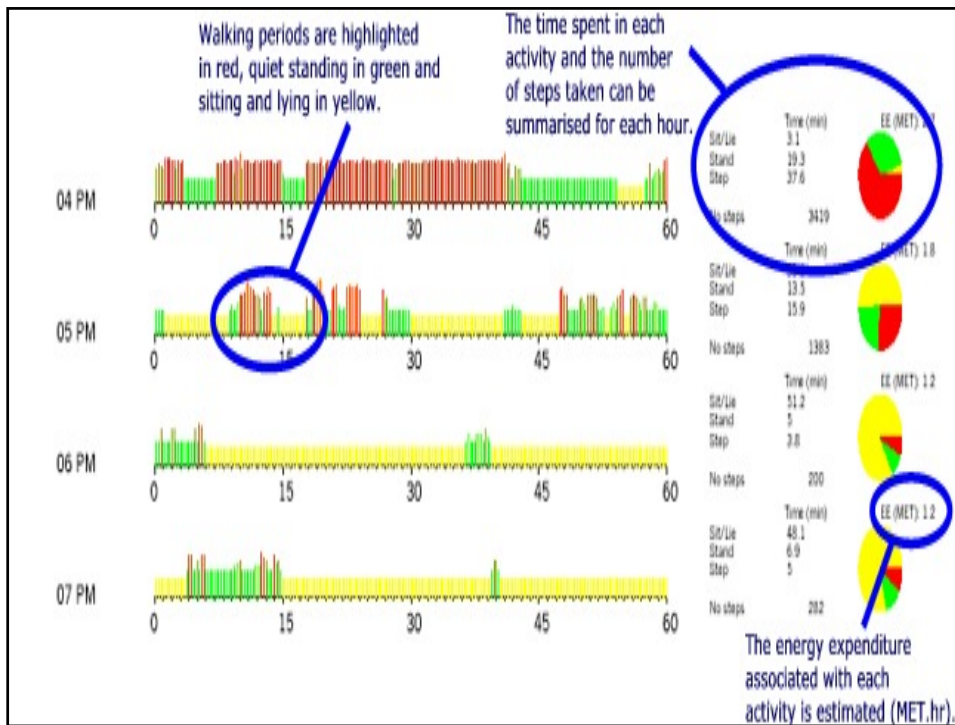


Moses et al, BJC 2004

ActivPAL™ Professional : PAL Technologies

- records time spent lying/sitting, standing and stepping. Also up-down/down-up transitions, stepping cadence, estimated energy expenditure and derived PAL





Summary

The Missing Link

Definition
Classification

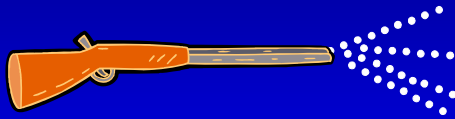


Assessment

Therapeutic
Evidence
Base

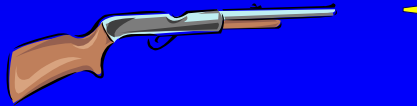
Approach to Management of Cachexia

Shot gun



Treat everything

Rifle



One thing at a time