DSKE temadag
23. sept. 2014
Ernæring og livskvalitet

Hvad koster livskvalitet ?
Økonomi med patienten i centrum

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Three month post-discharge intervention with protein and energy rich supplements improve muscle function and quality of life (SF-36) in malnourished patients with non-neoplastic gastrointestinal disease. Norman et al. Clin Nutr 2008;27:48-56

Table 3 Changes of quality of life during the study period.

(%)	ONS patients ($n = 38$)			DC patients ($n = 42$)		
	Baseline	3 Months	*P*	Baseline	3 Months	*P*
Physical functioning	54.5 ± 25.8	77.6 ± 23.6	<0.0001	52.1 ± 26.7	60.6 ± 27.9	0.030
Role physical	25.7 ± 37.0	65.5 ± 40.2	<0.0001	21.8 ± 31.5	34.8 ± 41.4	n.s.
Role emotional	65.7 ± 44.1	91.0 ± 25.6	<0.001	64.9 ± 45.2	81.3 ± 35.8	n.s.
Social functioning	67.2 ± 34.8	86.5 ± 23.4	<0.001	66.3 ± 30.5	75.6 ± 32.4	n.s.
Bodily pain	50.3 ± 39.5	68.3 ± 34.5	0.013	44.2 ± 35.7	61.4 ± 34.1	0.019
General health	41.1 ± 16.3	54.3 ± 21.1	<0.0001	42.2 ± 16.8	43.9 ± 22.6	n.s.
Vitality	35.9 ± 19.6	57.4 ± 23.1	<0.0001	32.2 ± 21.4	44.0 ± 19.8	0.014
Mental health	56.2 ± 24.2	72.8 ± 20.6	<0.0001	59.1 ± 23.2	67.3 ± 20.9	n.s.

The change in hand-grip strength correlated with the change in physical functioning ($r = 0.30$, $P = 0.009$) and physical role ($r = 0.26$, $p = 0.023$).

Utility and cost utility

- The 36 items of SF-36 can each be answered at several levels, which can generate many millions of health states (if an average of 5 levels per item: 5^36 = about 14 * 10^{24} possible combinations of health states)
- How do the states compare?
  Which one is most important to the patient?

Brazier et al. J Clin Epidemiol 1998;51:1115-28.

www.nice.org.uk: Methods for the development of public health guidance 3rd edition 2012

- Cost–utility analysis will be required routinely
- If there are not enough data to estimate QALYs gained, an alternative measure of cost-effectiveness may be considered (such as life years gained, cases averted or a more disease-specific outcome)
- Cost-benefit analysis: a balance sheet in which costs and benefits are weighed up against each other, measured in the same unit (£)
- Cost–consequences analysis: accepts benefits that cannot be measured in the same units. Different decision makers will place their own weights on the different benefits and on costs, implicitly if not explicitly

Norman: Follow-up by a cost-effectiveness analysis in 2011, but first **intro:**

A cost effectiveness analysis reports the cost of an intervention relative to a health benefit that can be quantified using a wide variety of units, such as lives saved, life years saved, cases of disease prevented, or additional symptom-free days.

Cost-utility analyses quantify health benefits in terms of gained quality adjusted life years (QALYs).

QALY: Quality Adjusted Life Years

QALY measured = a given Utility x duration (years)

Utility = Willingness to pay for a preferred item (consumer utility)

Cost-effectiveness analysis registry online
https://research.tufts-nemc.org/cear4/Home.aspx#

In clinical studies:
Utility is the patient's preference for one Quality of Life health state over another, expressed on a scale from 0 to 1.
0 = dead; 1= fully alive

Utility is 'measured' by a simplified questionnaire, developed from common Quality of Life questionnaires and 'calibrated' against patients' or volunteers' expression of preference for one utility state over another

Cost-utility = society's willingness to pay for the patient's preference

Common upper threshold for society's willingness to pay:
2 x Gross Domestic Product (GDP) per capita for a QALY

Upper threshold for introducing a new therapy in Europe:
≈ €20.000 - € 50.000 for a QALY

In the UK, the National Institute for Clinical Excellence (NICE) does not have "hard" decision rules, but new medical technologies with costs of £20,000-30,000/QALY are typically accepted.

Actual historical data in the UK:

Basing the threshold on past decisions

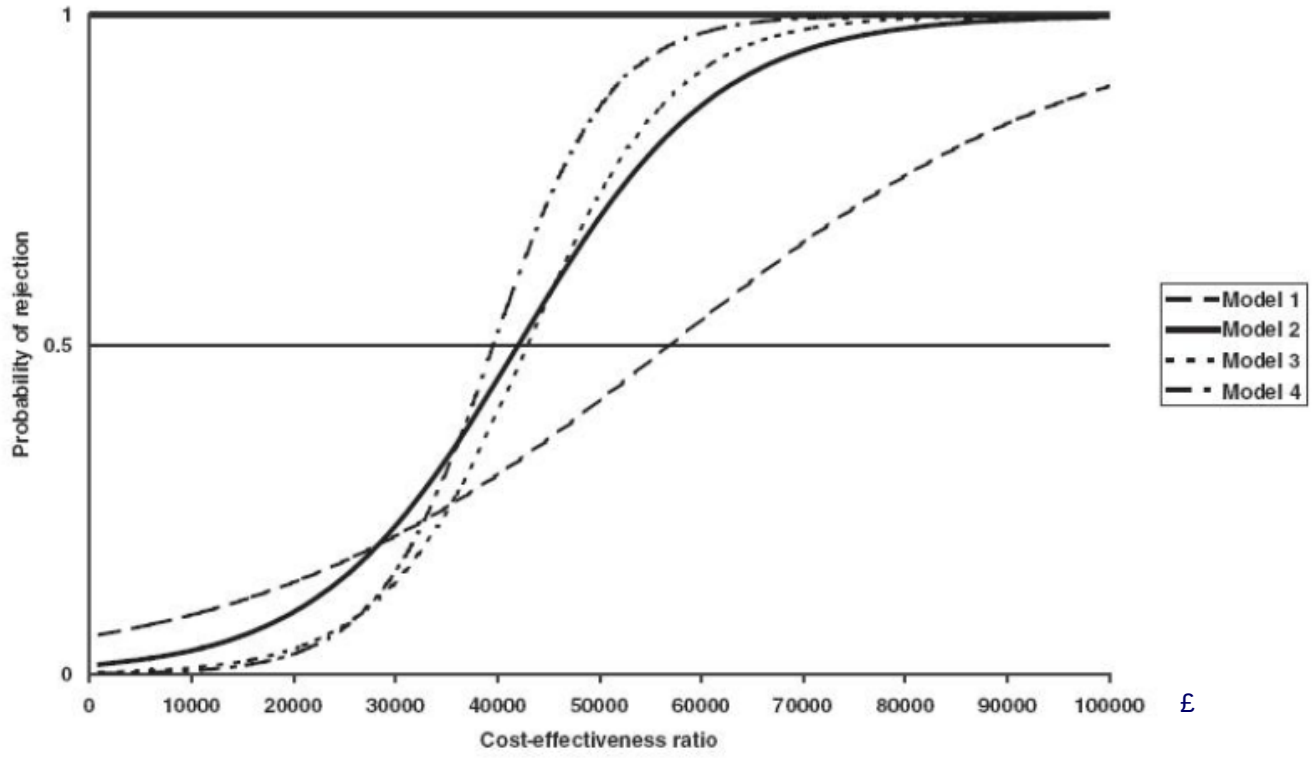
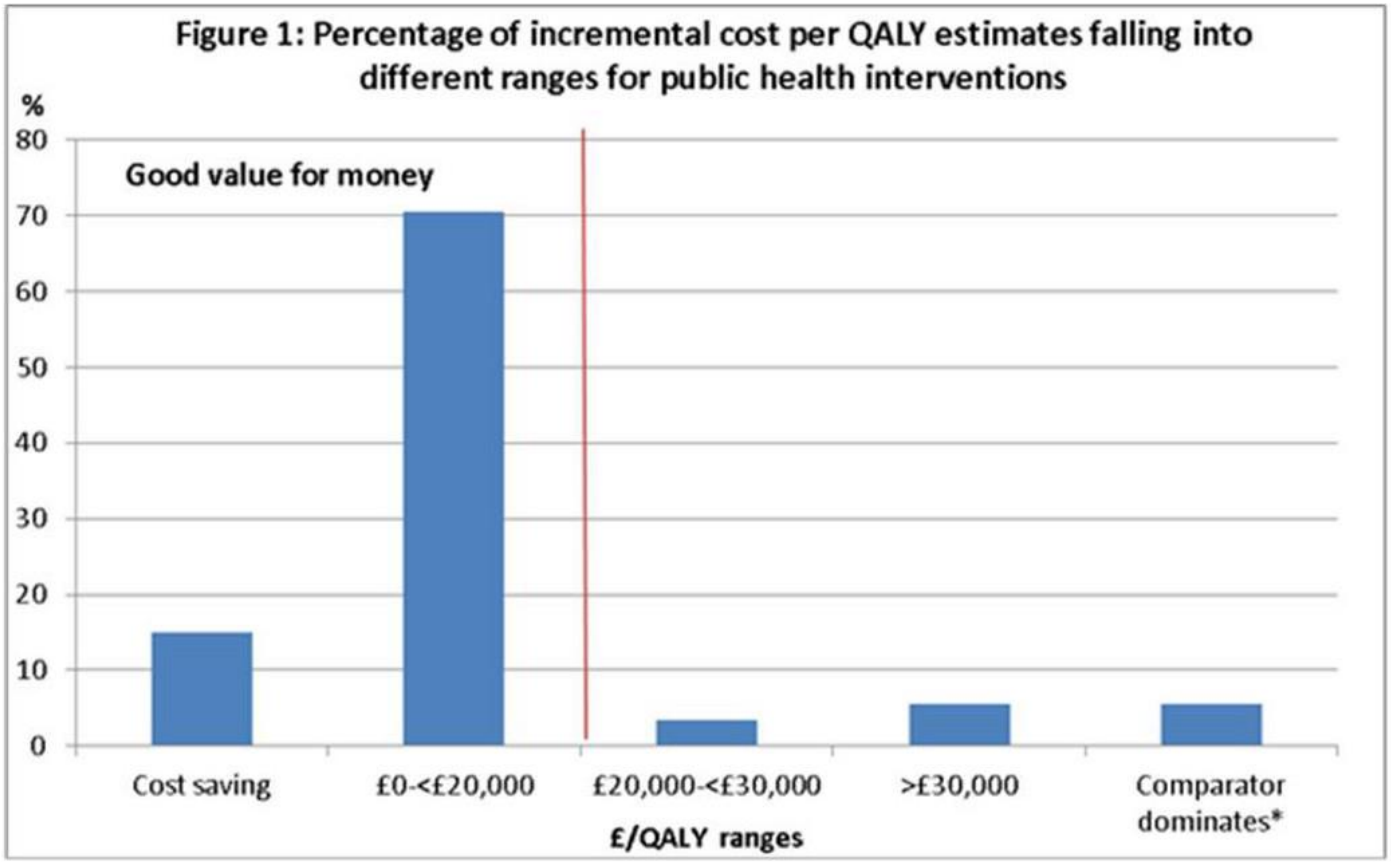


Figure 5. Probabilistic cost-effectiveness thresholds for NICE decisions

Source: Devlin N, Parkin D. *Health Economics* 2004;13:437-52.

200 cost-effectiveness estimates of various interventions that informed public health guidance published by NICE between 2006 and 2010

www.nice.org.uk/advice/lgb10/chapter/judging-the-cost-effectiveness-of-public-health-activities

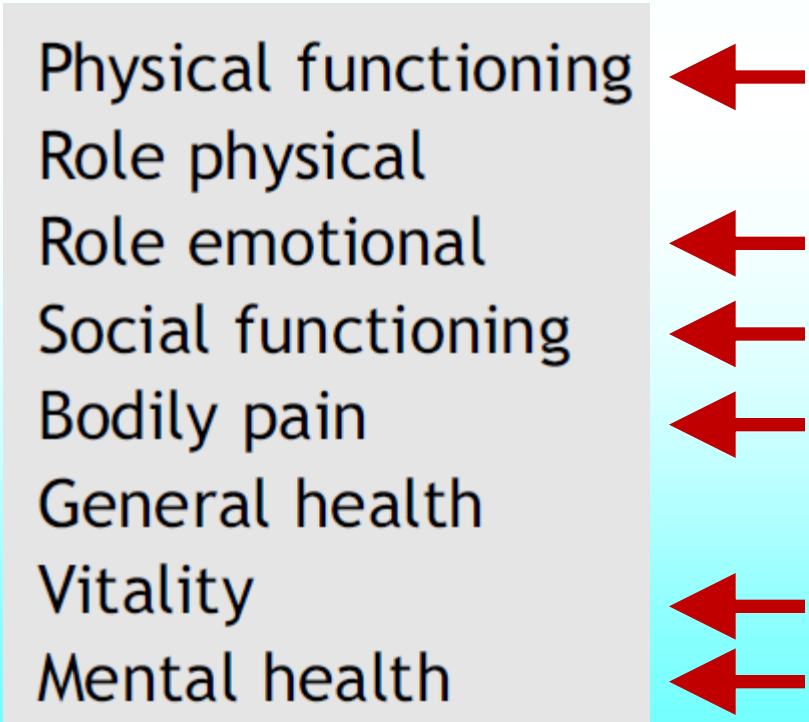


Utility derived from SF-36: SF-6D

Brazier et al. J Health Econ 2002;21:271-92.

Utility is…the price which a person is willing to pay for the fulfillment of his desire.

Alfred Marshall. 1920



1) Number of 'dimensions' reduced to 6 by factor analysis
2) Each dimension given 2-6 well-defined levels
3) Preference among 250 different health states evaluated by about 800 healthy volunteers
4) Each volunteer chose and ranked only 6 of the 250 health states (Good health → Almost dead)
5) Expressed as a value between 1 and 0.

Cost-effectiveness of a 3-month intervention with oral nutritional supplements in disease-related malnutrition: a randomised controlled pilot study.

Norman et al. Eur J Clin Nutr 2011;65:735-42.

Change in utility during intervention, mean (95% CI)		
	Counselling (N=54)	Supplement (N=60)
Baseline	0.62 (0.58-0.66)	0.59 (0.56-0.63)
At 3 months	0.67 (0.64-0.71)	0.73 (0.70-0.76)
Change	0.07 (0.03-0.10)	0.13 (0.10-0.16)*
		*P=0.022

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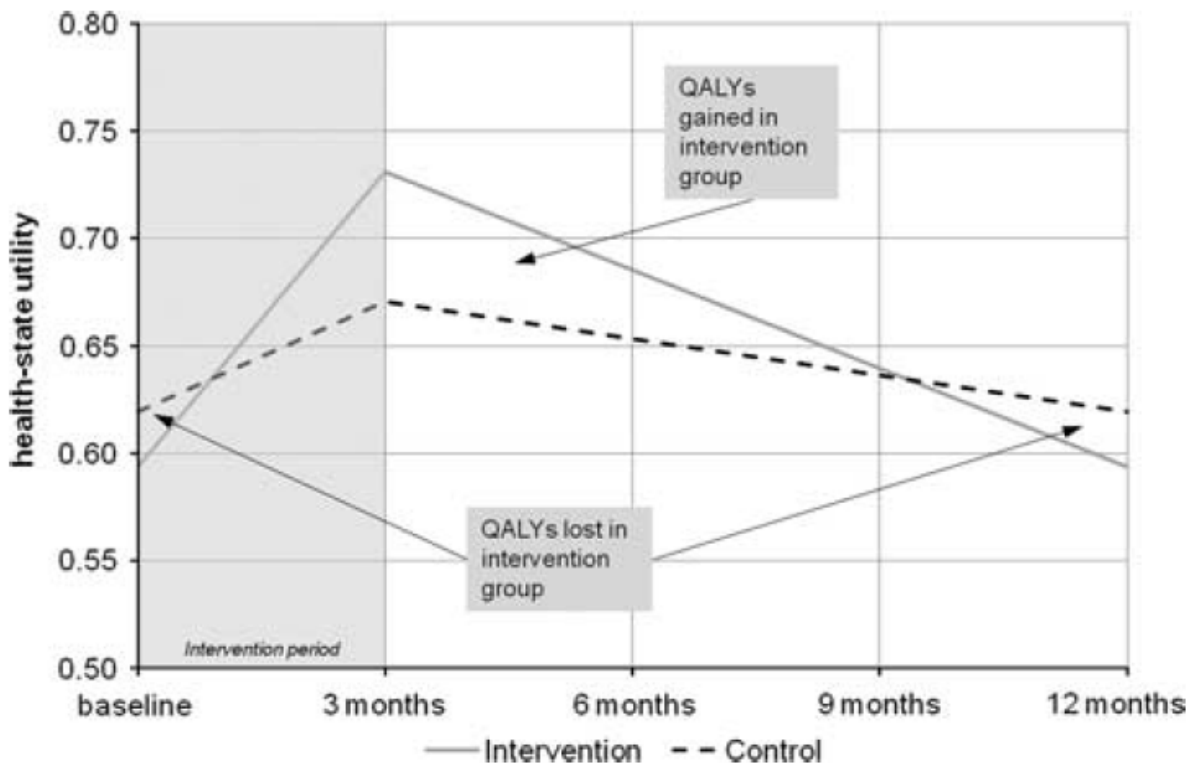

Figure 2 Concept of quality adjusted life years (the area under the curves can be interpreted as the quality-adjusted life years associated with intervention or control strategy).

QALY =
Qyality of life adjusted life years

1) Increase in utility assumed to disappear within a year
2) QALY calculated from area-under-curve (AUC) = year-averaged utility

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QALY during and after intervention, mean (95% CI)		
	Counselling (N=54)	Supplement (N=60)
QALY, AUC	0.62 (0.60-0.63)	0.66 (0.64-0.68)
Cost of supplement, €	21 (0-73)	561 (514-609)
Δ QALY	0.045[§]	
Δ cost, €	540	
cost/1 QALY, €	12,099 (vs. max accepted = € 20.000 - € 50.000)	

[§] Equivalent to extra 16 days of full quality of life per year for each patient (= 0.045 x 365)

Konklusioner

Livskvalitet koster
- Det er økonomi med patienten i centrum

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