WORKSHOP health economic evaluations of mental healthcare
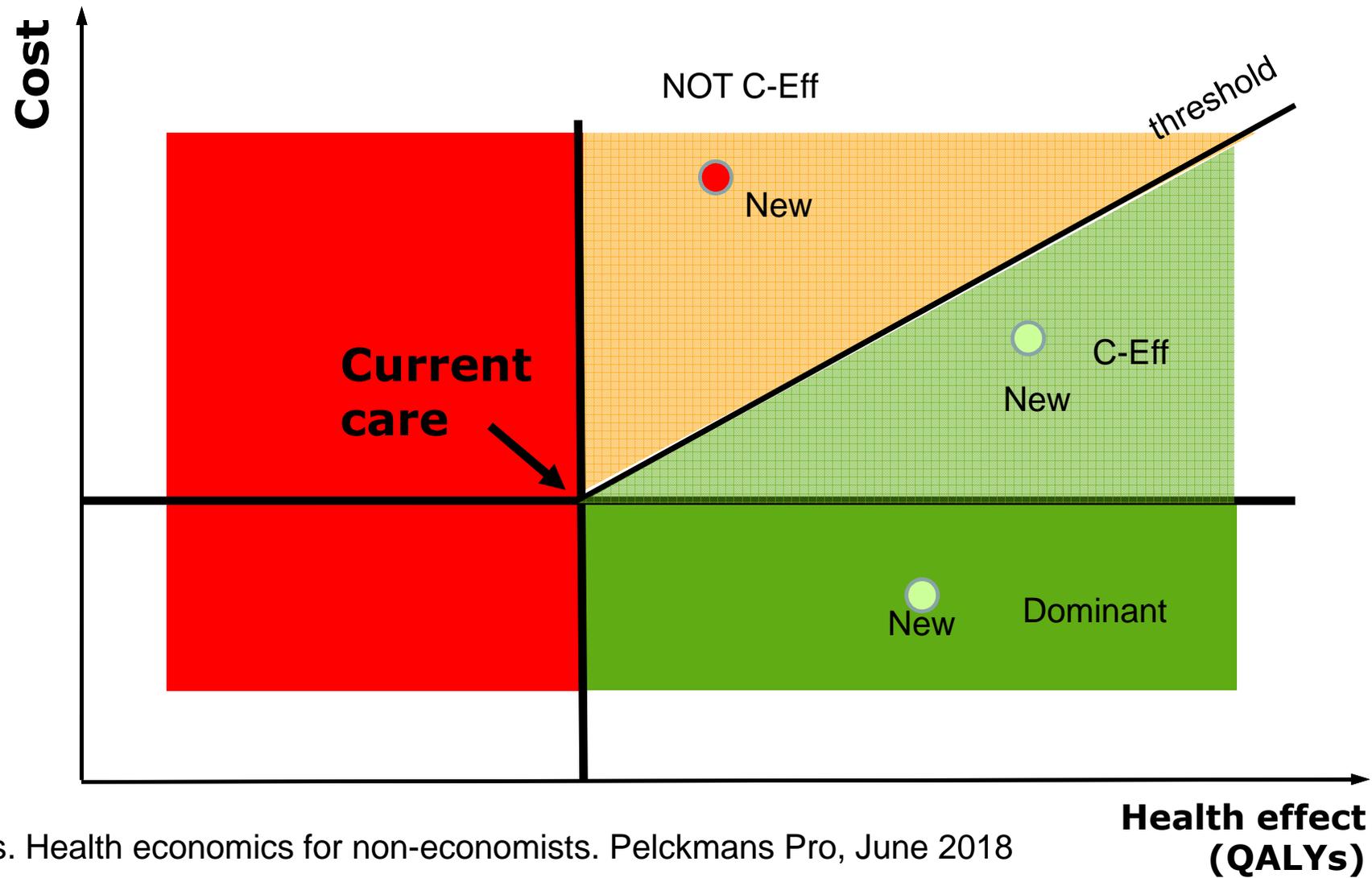
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Recap: Cost-effectiveness

L. Annemans. Health economics for non-economists. Pelckmans Pro, June 2018

Method = decision tree ; example

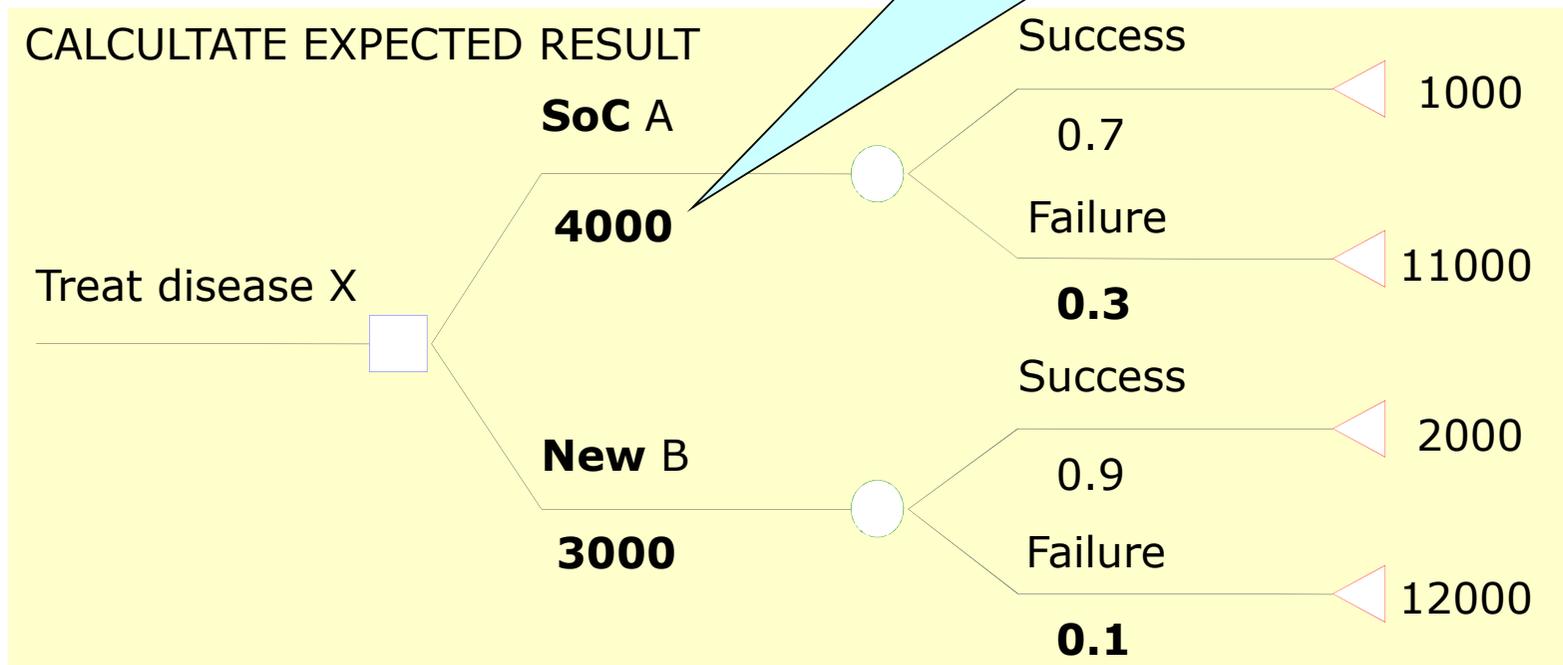Cost treatment A (Standard of Care) = 1000
Cost new treatment B = 2000
Cost of "failure" = **10000***

* Needs separate study to obtain data

7/10 x 1000 + 3/10 x 11000

CALCULTATE EXPECTED RESULT

Treat disease X

SoC A
4000

Success
0.7
1000

Failure
0.3
11000

New B
3000

Success
0.9
2000

Failure
0.1
12000

Example : Depression: combination (psycho + pharma) vs pharma alone
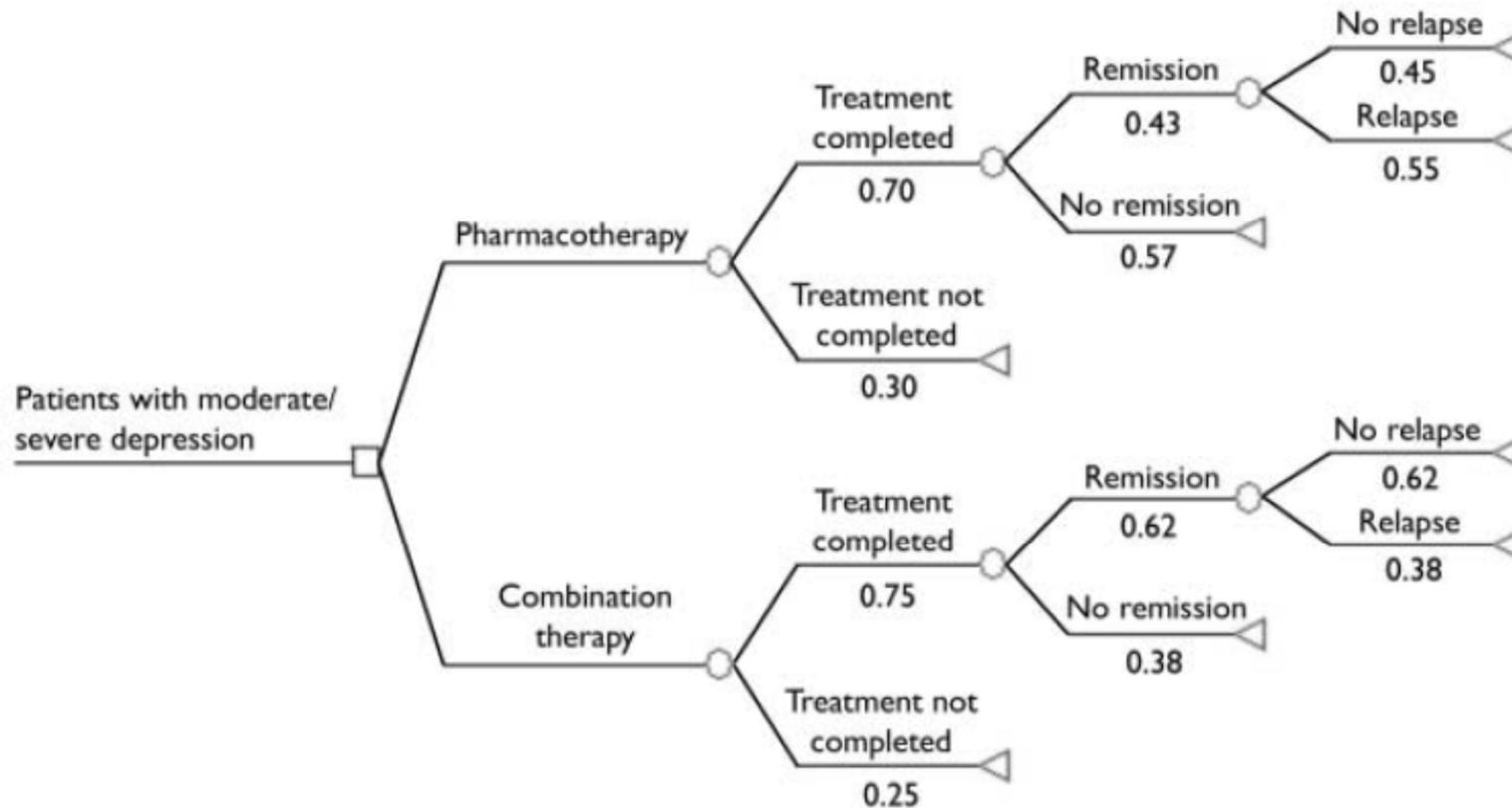
Note: Psuccess = 0.70*0.43*0.45 = 0.135

Simon et al, Br J Psych, 2006

Results (15 months)

	Pharmaco-therapy	Combination therapy	Difference
Costs, £[1]			
Total healthcare cost per person	660	1297	637
Effects			
Probability of successful treatment per person	0.14	0.29	0.16
QALY per person with severe depression	0.52	0.63	0.11
QALY per person with moderate depression	0.84	0.89	0.04
Cost-effectiveness, £[1] (95% CI)			
Cost per additional successfully treated patient		4056 (1400–18 300)	
Cost per QALY gained with severe depression		5777 (1900–33 800)	
Cost per QALY gained with moderate depression		14 540 (4800–79 400)	

Simon et al, Br J Psych, 2006

Example 2: Depression: combination (psycho + pharma) vs pharma alone: more remission, less relapse
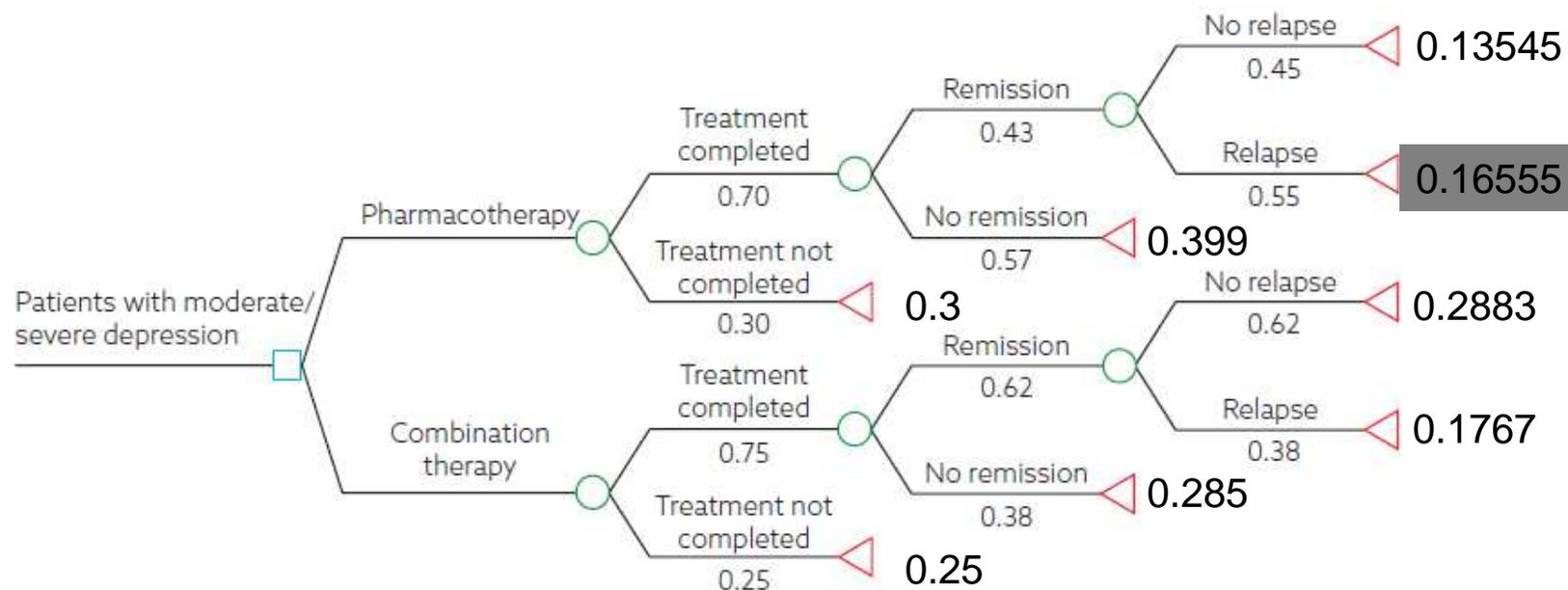
Note: P "success" (treatment completed AND Remission AND No relapse)
 for Pharmacotherapy = 0.70*0.43*0.45 = 0.13545
 for Combination = 0.75*0.62*0.62 = 0.2883

INPUTS (rounded)

Description	Cost or utility
Treatment cost pharmacotherapy	€ 50
Treatment cost psychotherapy	€ 200
Treatment cost combination	€ 250
Treatment cost pharmacotherapy in case of premature termination	€ 25
Treatment cost psychotherapy in case of premature termination	€ 100
Treatment cost combination in case of premature termination	€ 125
Cost of no remission	€ 300
Cost of relapse	€ 400
Utility of major depression	0.4
Utility of remission	0.8

Example: pharmacotherapy … remission … relapse (scenario 2)

= 50€ + 400€ = 450€

ASSUMPTIONS!

Example: utilities in case of remission and then relapse (scenario 2)
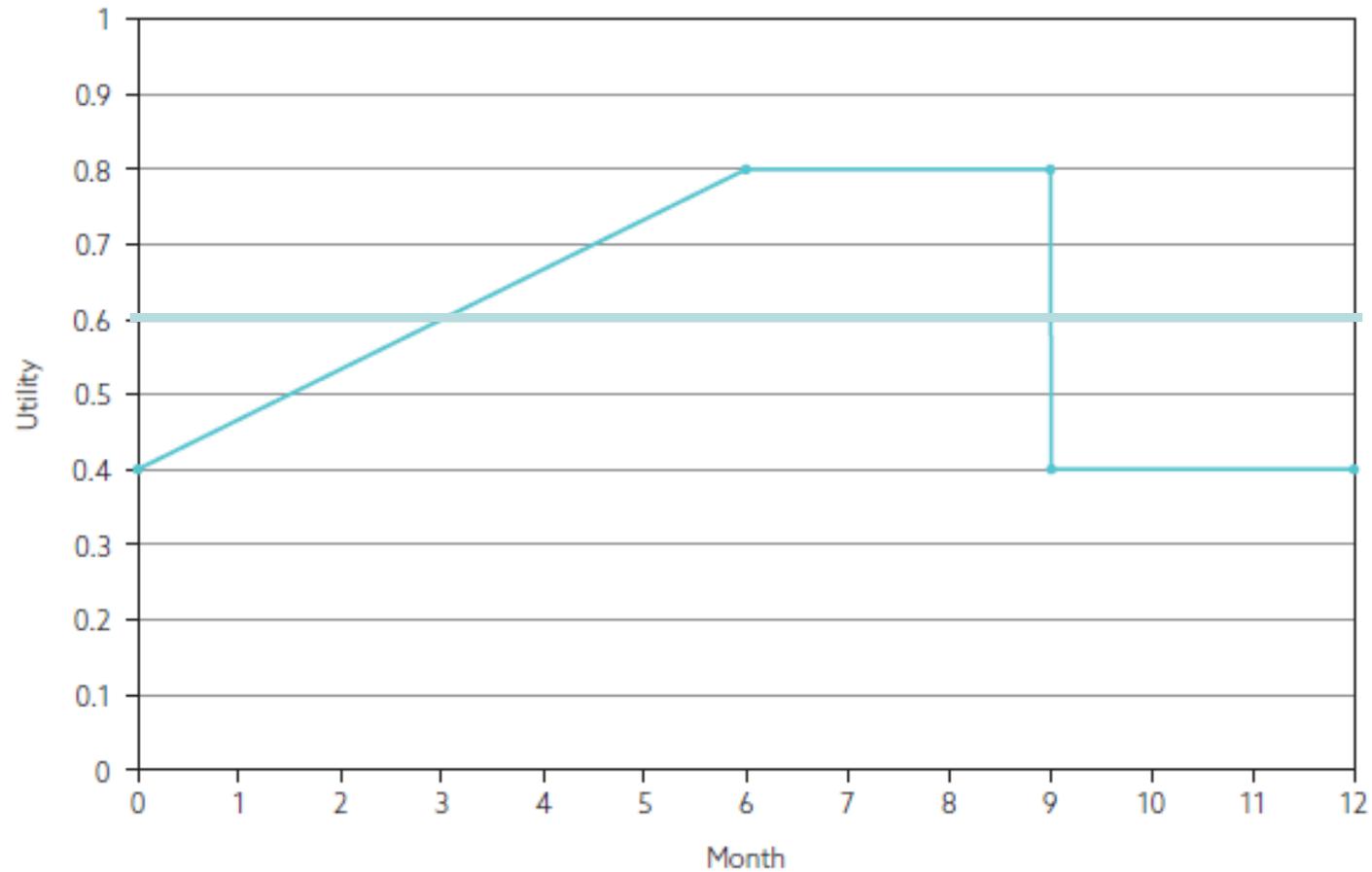

→ Average utility over 1 year = 0.6

CALCULTATE EXPECTED RESULT (weighted average)

Strategy A: Pharmacotherapy	Prob.	Cost (€)	Utility
1. The treatment is completed, there is remission and there is no relapse.	0.13545	50	0.70
2. The treatment is completed, there is remission but there is relapse.	0.16555	**450**	**0.60**
3. The treatment is completed but there is no remission.	0.399	350	0.40
4. The treatment is not completed and there is no remission.	0.3	325	0.40
Average result A Weighted average →		318.4	0.474
Strategy B: Combination therapy	**Prob.**	**Cost (€)**	**Utility**
1. The treatment is completed, there is remission and there is no relapse.	0.2883	250	0.70
2. The treatment is completed, there is remission but there is relapse.	0.1767	650	0.60
3. The treatment is completed but there is no remission.	0.285	550	0.40
4. The treatment is not completed and there is no remission.	0.25	425	0.40
Average result B Weighted average →		449.9	0.522

ICER: (449.9€ − 318.4€) / (0.522 − 0.474) = 131.5 / 0048 = **2735€ per QALY**

Markov Model – simple example

- 3 health states (at risk, sick, death); 1 cycle = 1 year
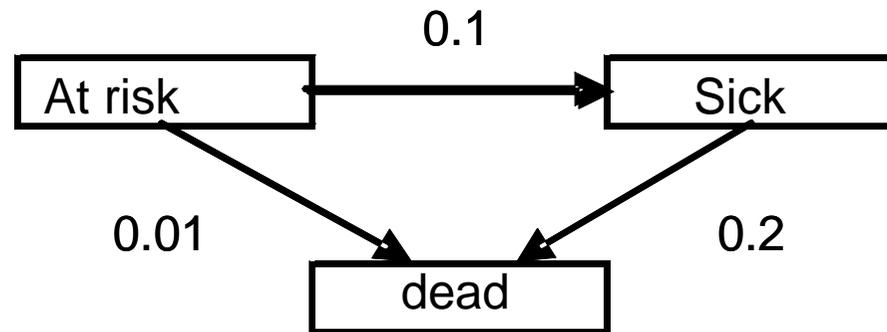
	Upon start	after 1 year	after 2 years	after 3 years
At risk	1000	890	792	705
Sick	0	100	169	214
Dead	0	10	39	81
Total	**1000**	**1000**	**1000**	**1000**

100 – 20 + 89 = 169

Prospective Research for Health Economic Evaluations.
Some Conflicts Between the Clinical Purpose and the Health Economic Purpose.

Relative effectiveness = the extent to which an intervention does <u>more good than harm</u> <u>compared to one or more intervention</u> <u>alternatives</u> for achieving the ***desired results*** when provided <u>under the usual</u> <u>circumstances of health care practice</u>.

| Efficacy		Effectiveness
Highly selected	**Patients**	Closer to real life
Placebo/"golden standard"	**Comparator**	Most likely to be replaced
Surrogate endpoints	**Outcomes**	Clinical Relevant Endpoints
Strict protocol instructions	**Design**	Closer to routine follow up

Example: IAPT (improving access to psychological therapy)

- Gross cost per person treated   £650

- Savings on physical healthcare   > £650
- Savings on benefits/taxes   > £ 650

David Clark, IAPT programme

Reliable Improvement − Mean number of days people waited to enter treatment
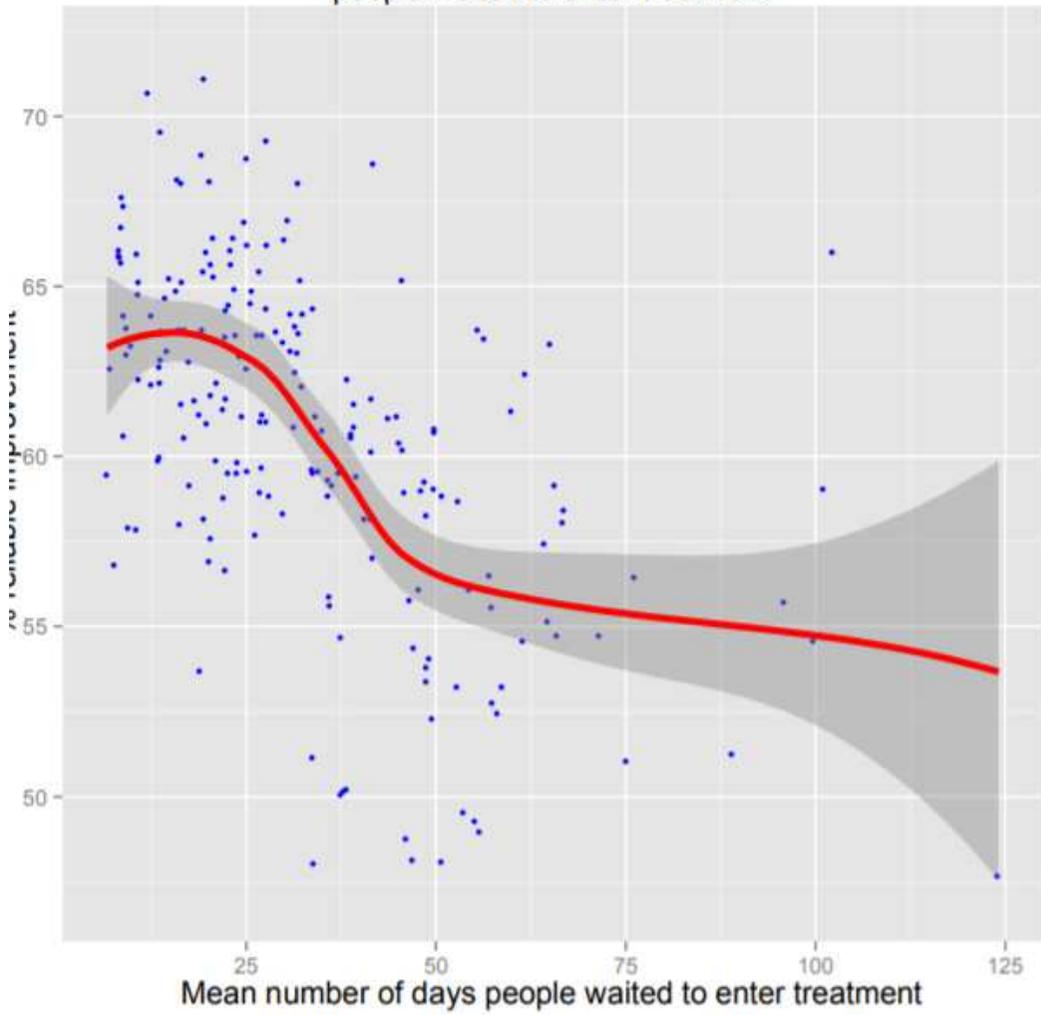
Reliable Improvement − Mean number of treatment appointments
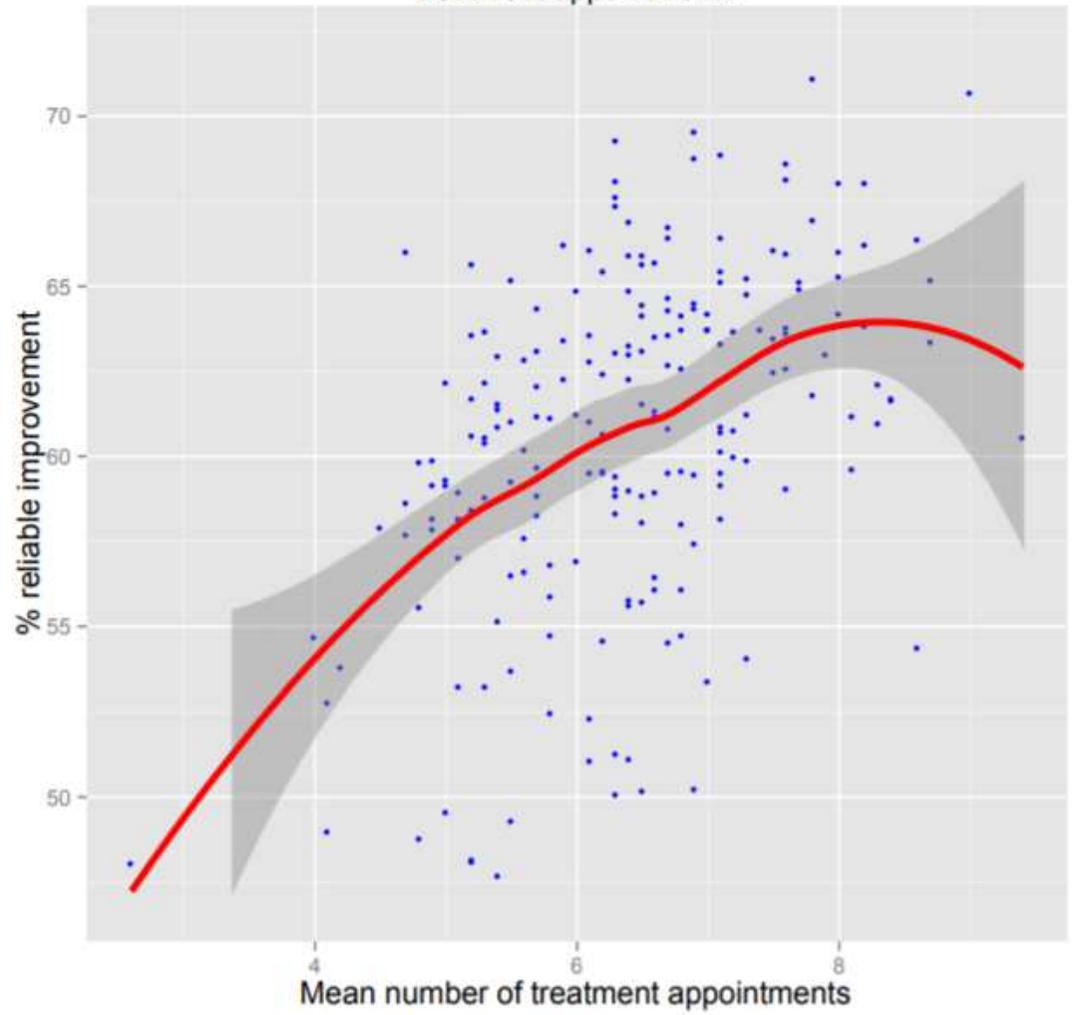
IAPT

Recovery Rates are higher when therapists stick to NICE recommended treatments

Self-help treatment for Depression:
Guided 50%   vs Pure 36%   (p <.0001)

Generalized anxiety disorder treatment
CBT 55% or Guided Self-help 59%
vs
Counselling 46% (ps<.0001)

TASK

- You are asked to demonstrate the cost-effectiveness of « first line » psychotherapy for major depression in order to get it reimbursed by the health insurance

- What will you do?
  - Decision tree / markov model based on existing clinical and economic inputs
  - New RCT with health economic data included
  - Retrospective or prospective analysis of real world data

1. *List the pros and cons of all the 3 options above*

2. *What data do you need to collect for your preferred option*

3. *Design a Markov model that allows to estimate the cost-effectiveness over at least 5 years*

Discussion

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