


Is the value of a test adequately reflected in the QALY?
Some thoughts on tests, desires, needs, and (reimbursement) decisions

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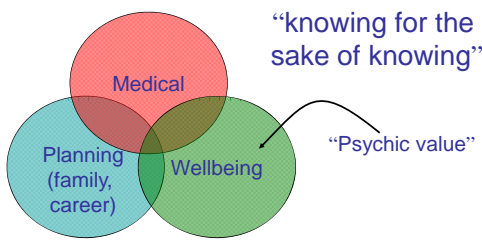
QALY is an inadequate reflection of overall value (of tests, drugs, whatever)

- Let's say we have two drugs to treat a disease
 - There are no differences in total costs, QALYs, safety, etc.
 - No differences in per-patient costs or budget impact.
 - However, one requires self-injection 1/week, the other 1/day.
- You're the patient: which would you prefer?
- The current "QALY" inadequately captures the value of a technology
- Does the QALY need an overhaul?
- Focus: value of tests and the QALY




Do QALYs adequately describe the virtues of a test?

- Tests can be valuable for different reasons

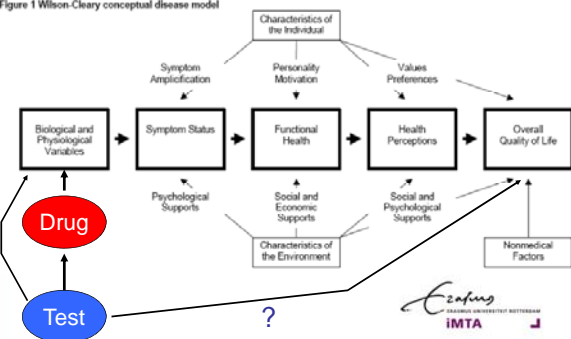



Lee, Neumann & Rizzo, Val Hlth, 2010



Effect of tests on QOL (& QALYs)

Figure 1 Wilson-Cleary conceptual disease model

Willingness-to-pay results (Neumann et al.)

Table II. Proportion of respondents who would take the test and willingness to pay for all respondents^a

Test accuracy disease	Disease risk 10%		Disease risk 25%	
	Perfect	Imperfect	Perfect	Imperfect
Alzheimer's disease				
Pct who would take test ^a	74.0%	70.4%	74.8%	71.2%
Median – all respondents ^a	\$153	\$120	\$162	\$128
Mean – all respondents ^a	\$479	\$409	\$500	\$428
Arthritis				
Pct who would take test ^a	80.2%	77.2%	80.8%	77.9%
Median – all respondents ^a	\$135	\$109	\$142	\$116
Mean – all respondents ^a	\$370	\$320	\$385	\$333
Breast cancer				
Pct who would take test ^a	81.9%	79.0%	82.4%	79.7%
Median – all respondents ^a	\$221	\$181	\$232	\$191
Mean – all respondents ^a	\$587	\$508	\$610	\$529
Prostate cancer				
Pct who would take test if free ^a	87.5%	85.4%	88.0%	85.9%
Median – all respondents ^a	\$251	\$212	\$263	\$222
Mean – all respondents ^a	\$600	\$576	\$627	\$546

^aThe percentage of respondents who would take the test, includes those who would only take it if it were free, as well as those who were willing to pay for testing. ^aAll respondents refers to both those who would take the test if it were free and those who would not. The mean reported here reflects the assumption that the test is worth zero to respondents who would not take it even if it were free. The median reported here reflects the assumption that the test is worth no more than zero to this group.

Willingness-to-pay results (2)

Variables	Probability subject would take test				Natural log of the geometric mean WTP			
	Simple model		Expanded model		Simple model		Expanded model	
	Estimate	SD	Estimate	SD	Estimate	SD	Estimate	SD
Intercept	1.22***	0.046	2.45***	0.67	5.38***	0.10	3.73***	0.55
Disease								
Alzheimer's disease	-0.35***	0.072	-0.36***	0.073	0.34***	0.12	0.31***	0.11
Prostate cancer	0.55***	0.087	0.46***	0.11	0.40***	0.11	0.22*	0.12
Breast cancer	0.11	0.080	0.21**	0.099	0.44***	0.11	0.65***	0.12
Arthritis (ref.)								
Prior risk								
25% (ref.)	0.040	0.044	0.031	0.045	0.032	0.075	0.038	0.073
10% (ref.)								
Test accuracy								
Perfect	0.18***	0.045	0.18***	0.045	0.032	0.075	0.11	0.073
Imperfect (ref.)								
LN income			-0.0089	0.056			0.20***	0.046
Education								
High school			0.056	0.077			-0.085	0.14
Some college			-0.11	0.079			0.046	0.14
Bachelor's degree or higher			-0.17**	0.083	←		0.14	0.14
Less than high school (ref.)								
Gender								
Female			-0.13**	0.058			-0.39***	0.11
Male (ref.)								
Age (years)								
Age (years)			-0.012***	0.0029	←		0.0003	0.0024
Risk Score			-0.052***	0.012	←		-0.032***	0.010

Note: *p<0.10; **p<0.05; ***p<0.01

Willingness-to-pay results (3)

Table IV. Attitudes about testing

	Disease				
	Overall (%)	Alzheimer's (%)	Arthritis (%)	Prostate cancer (%)	Breast cancer (%)
What would you do with a positive test?					
Get a second medical opinion	59	53	31	61	59
Seek medical care from a medical specialist	59	50	36	61	59
Sign a document specifying how you want to be treated if you became ill	51	53	74	50	53
Spend more time with your family	51	51	27	49	55
Get your finances in order	48	43	25	48	50
Travel more	31	42	71	78	33
Seek help from a mental health professional	27	37	6	23	31
Change jobs	7	3	3	6	8
Quit working/retire	7	9	7	7	6
Who would you tell?					
Spouse or partner	69	55	67	73	66
Other family members or relatives	55	48	57	58	53
Close friends	50	40	48	50	52
Children	49	46	65	53	45
Minister/rabbi/clergy member	34	28	31	36	33
Co-workers	22	10	32	23	22
How worried are you about people gaining access?					
Insurance company	37	45	38	37	37
The government	28	34	17	28	27
Employer	24	28	27	23	24

The QALY is dead, long live the QALY?

- The current definition of QALYs will surely evolve
 - Either the definition of quality will evolve, or QALYs will evolve into something like WALYs
 - The term HALYs is not recommended, since happiness is not always good (Gruber et al., 2011)
- However, the need for peace of mind is an insufficient argument against the value of QALYs
- As with medicines, the irrational need/desire for tests should be ignored in economic evaluations & policymaking
- But is {QALY ⇒ ICER ⇒ reimbursement decision} really valid?
- Inadequacies of QALY do not endanger the ability to make optimal reimbursement decisions
- Multiple criteria already used in practice

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Should tests be reimbursed?

- People are willing to pay for inaccurate tests that may be completely useless (Barnum's suckers?)
- Even with perfect tests, they'll still want a second opinion!
- Should tests be available to a public that does not sufficiently understand their value?
- If so, should society pay for these tests?
- Who will pay for the tests and treatments that will follow?
- We need to make reimbursement decisions carefully
- We've got to ensure that tests are used optimally
- Are doctors and the public equipped to handle the truth?
- Reimbursements and education are the key



The value of diagnostic tests for patients?

Sox et al., Assessment of Diagnostic Technology (1989):

THE PATIENT'S PERSPECTIVE

The impact of a diagnostic test is felt most directly by the patient. The patient's concern is improving his or her health status. From the patient's perspective, the most important characteristics of a diagnostic test are its safety and efficacy. The economic aspect of testing may also assume importance, but it is often a secondary consideration.

How well do we understand tests?

- Assume that you undergo 10 tests for 10 different diseases (one test per disease).
- The sensitivity and specificity of all tests are 90%.
- What's the chance of having 10 normal test results if you don't have any of these diseases?
- And the answer is

A brief history

- In the beginning, there was life... and death.
- Then came an interest in functional status
- The five D's (death, disability, discomfort, drug toxicity, dollars!)
- Quality of life, or technically health-related quality of life (HRQOL)
- Quality-adjusted life-years (QALYs) to unify 4 of 5 D's
- Now viewed as THE means to describe the value of a technology, including medical tests
- Is this view misplaced? Is it time to move on?



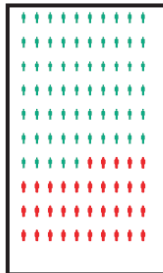
Willingness-to-pay for predictive tests with no immediate treatment implications

- Neumann et al. (Hlth Econ, 2010)
- Internet survey of 2223 US residents
- Hypothetical scenarios described:
 - Alzheimer disease, arthritis, breast cancer, prostate cancer
 - varied risk of disease, test accuracy
- Respondents asked to indicate whether they would be willing to pay for a predictive test (see example).



Example of a scenario

Imagine that you go to the doctor for your regular check up. Your doctor tells you that you are healthy but that someone your age has a 25% chance of some day getting Alzheimer's disease. The people in red represent the number out of 100 that might get Alzheimer's disease.



Example of a scenario (2)

As you may know, Alzheimer's disease is a disease of memory that worsens over time. Most people who get Alzheimer's disease are over age 65.

The doctor tells you that a new blood test is available that will tell you now whether or not you will one day develop Alzheimer's disease. The test is 100% accurate. You will have to pay for the test yourself because insurance does not pay for it.

Assume for this scenario that you cannot prevent the disease from occurring. For people who get the disease, there are treatments available that may help.

Would you want to take the test if it cost you \$50?



Willingness-to-pay results

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