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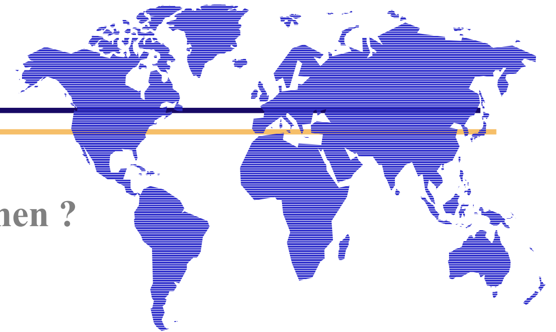
Wertekonfusion?



Warum und wie unterscheiden sich zentrale Wertvorstellungen von Ärzten und Ökonomen ?

Michael Schlander

Institute for Innovation & Valuation in Health Care (INNOVAL^HC)
University of Applied Economic Sciences Ludwigshafen and University of Heidelberg

Personal

- Institute for Innovation & Valuation in Health Care (INNOVAL^HC) e.V.
  - Founded in Aschaffenburg/Germany in June 2005
  - Formally associated with the University of Applied Economic Sciences Ludwigshafen
  - Independent Not-For-Profit Research Organization (Not a Commercial Contract Research Organization)
  - Funding of Research Projects
    - Accepted under an “unrestricted educational grant” policy only
    - Receiving support from National Institute of Mental Health (NIMH, Bethesda, Md.), Physician and Payer Organizations (~80% international projects)
- Chairman: Prof. Dr. med. Michael Schlander, M.B.A.
- Vice-Chairman: Prof. Dr. rer. pol. Oliver Schwarz

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Personal

- **Institute for Innovation & Valuation in Health Care**
  - Founder and Chairman of INNOVAL^{HC}, since 2005
- **University of Heidelberg**
  - Mannheim Medical Faculty, Dep't for Public Health, since 2006
  - Previously Foundation Member of Scientific Steering Committee in "Pharmaceutical Medicine" (Postgraduate Studies Program) at the Universities of Witten/Herdecke and Duisburg-Essen (1996-2007)
- **University of Applied Economic Sciences Ludwigshafen**
  - Professor of Health Care Management, since 2002
- **Pharmaceutical Industry**
  - General Management (Germany) 1999-2002
  - Commercial Roles (in USA, Belgium, and Germany) 1993-1999
  - Clinical Research & Development (Europe) 1987-1993
- **Health Economics**
  - Venia legendi, University of Heidelberg (2007)
  - Diploma, Stockholm School of Economics (2002)
- **Master of Business Administration (M.B.A.)**
  - City U of Bellevue/Washington, Valedictorian of the class of 1994
- **M.D. (Dr. med.)**
  - University of Frankfurt am Main, summa cum laude (1985/87)
- **Experimental Brain Research**
  - Academia (University of Frankfurt a.M.) 1982-1987

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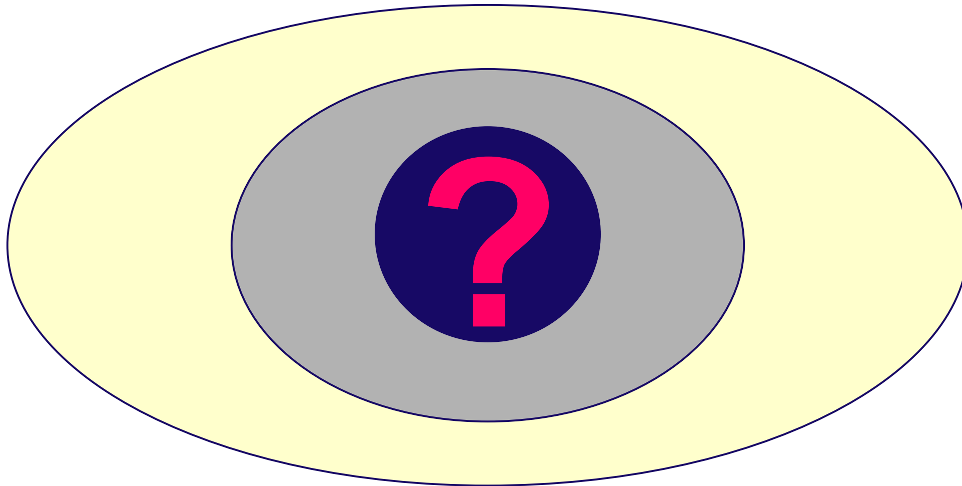
CONVENTIONAL WISDOM

- The Notion of ‘Affordability’
- Rationing Health Care?

IV

A word of warning before:
The scope of the presentation will be limited to a core area of "essential" health care[1]

Health is defined by WHO's Constitution as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.



[1]while recognizing that, apart from theoretical reasoning, there is no simple universally accepted approach to define "essential" health care in practical terms.

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"Conventional Wisdom"

„Wer leben will, muß zahlen:

Die Kostenexplosion und ihre möglichen Auswirkungen."[1]

"Serious and Unstable Condition:

Financing America's Health Care"[2]

"The Painful Prescription:

Rationing Health Care"[3]

[1]W. Krämer (1982)

[2]H.J. Aaron (1991)

[3]H.J. Aaron & W.B. Schwartz (1984)

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International Health Care Spending Trends

Growth of Health Care Spending

Health Expenditures

THE per capita (expressed in US-$ PPPs)[1]

$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$-

1960 1965 1970 1975 1980 1985 1990 1995 2000 2005

Germany
United Kingdom
USA

[1]on the basis of OECD Health Data (2007)

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International Health Care Spending Trends

Growth of Health Care Spending

Health Expenditures

THE as a percentage of GDP[1]

Year	Germany	United Kingdom	USA

Chart axis: 0, 2, 4, 6, 8, 10, 12, 14, 16; years 1960, 1965, 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005

Legend: Germany, United Kingdom, USA

[1]Source: OECD Health Data 2007

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Income Elasticity of Health Care Spending

Income and Health Expenditures[1]

Elasticity ε = 1.4

$y = 0.0016x^{1.39}$ $R^2 = 0.92$

Total Health Spending per capita (US-$-PPP [2000])

5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0

USA
Switzerland
Germany
France
United Kingdom

0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000

GDP per capita (US-$-PPP [2000])

[1]**Cross-sectional analysis** based on OECD Health Data 2002 (26 OECD member states); cf. Kleiman (1974) and Newhouse (1977)

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Terminology: Sustainability and Affordability[1]

Spending on Health Care

- **Sustainability**
  - Multi-Dimensional Concept
  - Distinct Difficulties To Apply in Practice[2]
- **Affordability**[1]
  - *"A product price attribute that is proportional to our ability to pay that price"*
  - Level of the Economy as a Whole
  - Minimum Level of Non-Health Spending?
  - **What Share of the Increase in Income Over Time Can We Afford to Spend on Health Care?**
  - "The Importance of Value in the Health Spending Equation"[3]

[1] cf. Technical Review Panel (2000); Chernew et al. (2003); Schlander et al. (2004);
[2] unless interpreted with a strictly fiscal notion;
[3] cf. Iglehart (2003)

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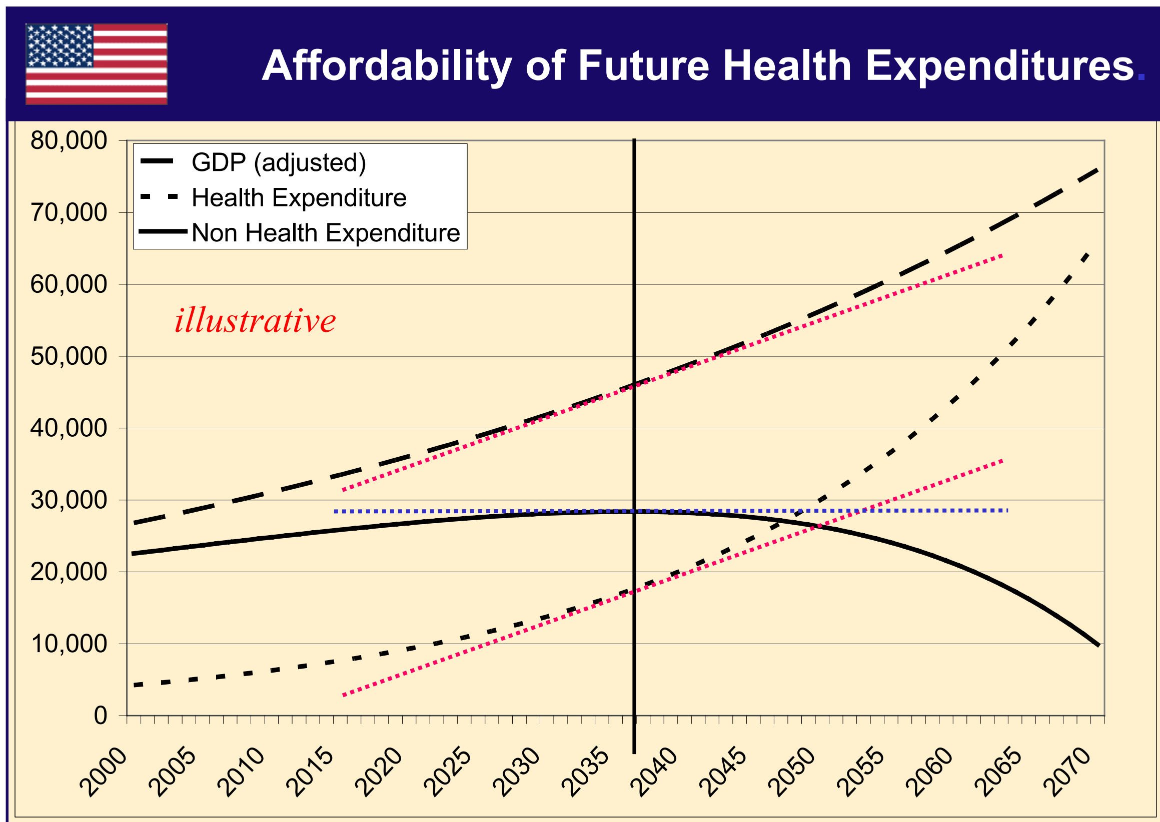
Real per capita GDP, health expenditures, spending on non-health goods and services assuming annual growth rates of 1.5 percent for GDP and 4.0 percent for health expenditures[1]



[1]Schlander et al. (2004); data source: OECD Health Data (2002), baseline values for year 2000: *adjusted* GDP per capita \$ 26,785, health expenditure per capita \$ 4,242 (both deflated to 1995 using GDP price index). GDP is gross domestic product.

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Calculations: time period of affordable health care spending growing faster than the economy as a whole (GDP)

Affordability[1]

$$(GDP_t - GDP_{t-1}) - (HE_t - HE_{t-1}) < 0$$

$$\left[GDP_0 \cdot (1+g_{GDP})^t - GDP_0 \cdot (1+g_{GDP})^{t-1}\right] - \left[HE_0 \cdot (1+g_{HE})^t - HE_0 \cdot (1+g_{HE})^{t-1}\right] < 0$$

$$GDP_0 \cdot (1+g_{GDP})^{t-1} \cdot g_{GDP} - HE_0 \cdot (1+g_{HE})^{t-1} \cdot g_{HE} < 0$$

$$t = \frac{\ln(HE_0 \cdot g_{HE}) - \ln(GDP_0 \cdot g_{GDP})}{\ln(1+g_{GDP}) - \ln(1+g_{HE})} + 1$$

[1]Schlander et al. (2004);
dynamic GDP adjustment for 18% investment share (USA) not represented in formulas shown.

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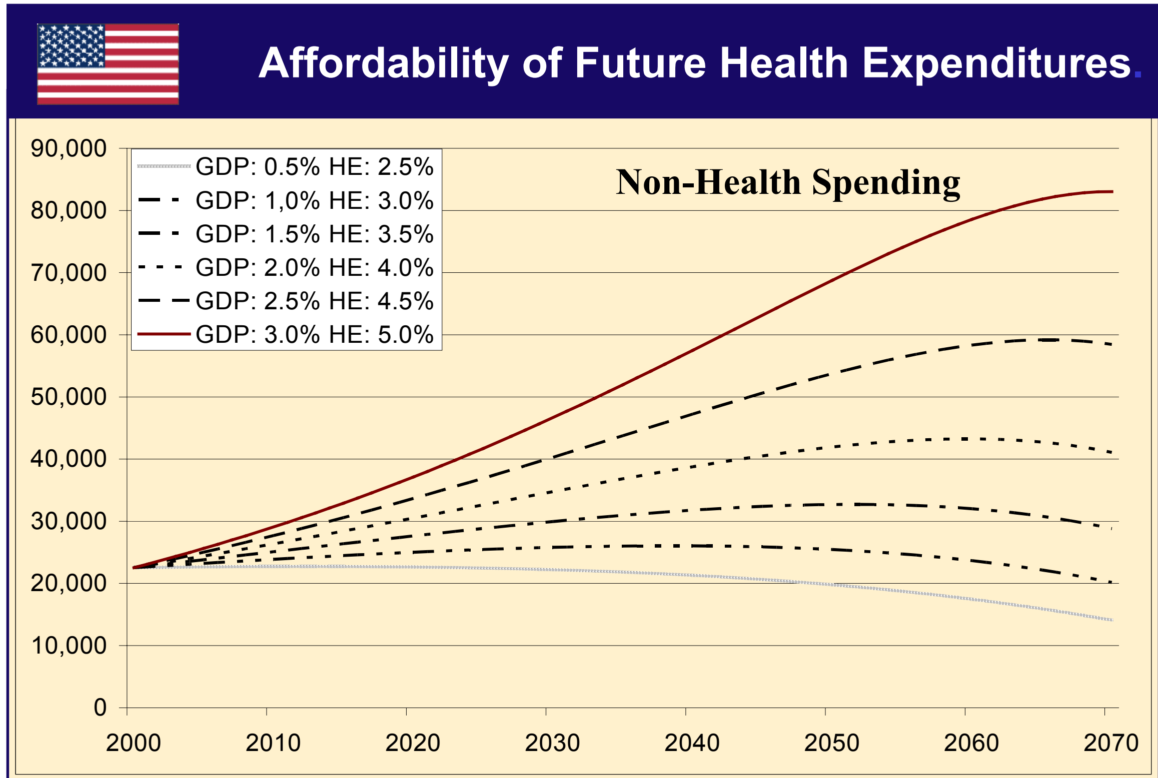
Non-health spending as an indicator of "affordable" health spending:
Sensitivity to different real per capita GDP growth rates[1]



[1]Schlander et al. (2003, 2004); calculations based upon a **two-percentage point gap** between real per-capita GDP and HE growth rates. GDP is gross domestic product, HE is health expenditure (per-capita, deflated in 1995 Dollars).

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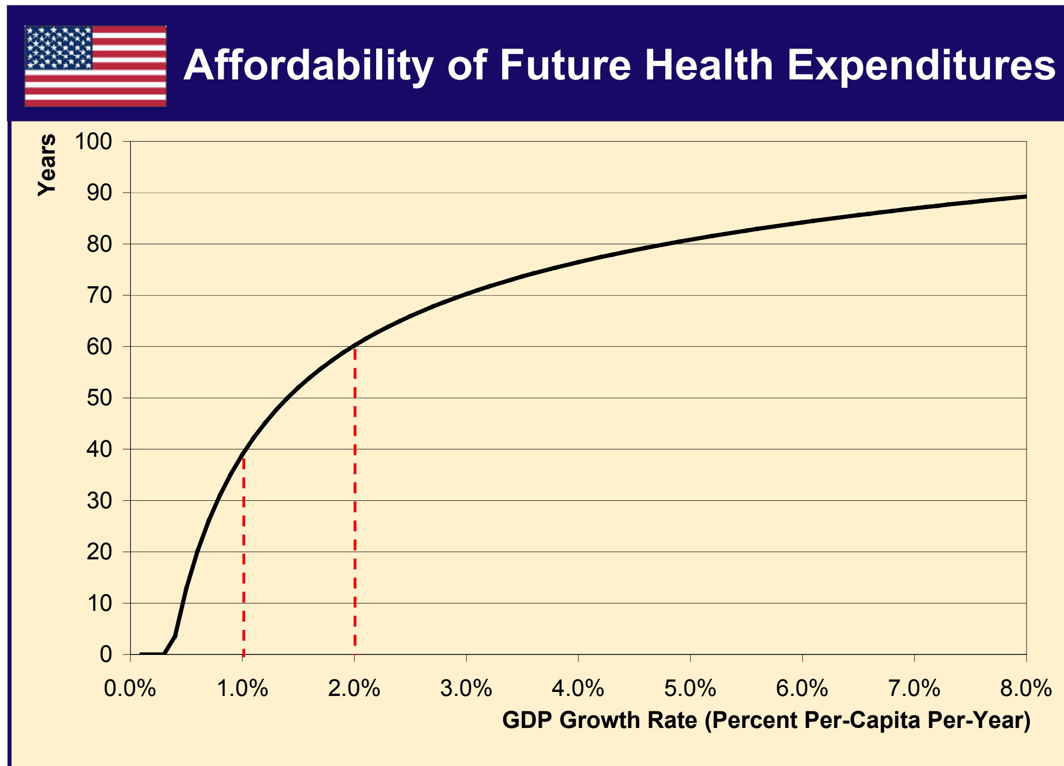
Sensitivity analysis: number of years of rising non-health expenditures as a function of the assumed GDP growth rate[1]



[1]Schlander et al. (2003, 2004), assuming a **two-percentage point gap** between the growth rates of health expenditure and GDP growth. GDP is gross domestic product.

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Stepping Back to Sort Out a Confusion: "Affordability" or "Willingness to Pay"?

"Affordability": An Ill-Defined Concept

- **Terminology**
  - **Affordability**?
  - (Societal) **Ability to Pay**?
  - (Societal) **Willingness to Pay**?
- **Affordability**[1]
  - In principle, (assuming real per-capita economic growth rates exceeding one percent,) we could afford health expenditures rising (2% points) faster than GDP for the next several decades.[2]
  - A real issue includes competing [social] objectives (**opportunity cost?**)
  - A related issue includes society's **Willingness to be Taxed**
  - **"The Importance of Value in the Health Spending Equation"** **!** [3]

[1]cf. Technical Review Panel (2000); Chernew et al. (2003); Schlander et al. (2004);
[2]These would enable to mount the likely financial impact of technological change (and demographic change).
[3]cf. Iglehart (2003)

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CONVENTIONAL WISDOM

- The Notion of ‘Affordability’
- Rationing Health Care?

IV

CONVENTIONAL WISDOM

- The Notion of ‘Affordability’
- Rationing Health Care?
  [Which interventions provide ‘value for money’?]

IV

A case for economic analysis

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Some commonly held assumptions

Basic Premises

- Resources in health care are not allocated in an efficient way.
- Adopting health economic evaluation methods may improve this situation (usually applied on a "program level"):
- Economic evaluation as a substitute for the failing market – i.e., applying the values embedded in the market model.

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Some Foundations of Economics

Economic Analysis

- **Positive Analysis**
  - "Theory of **'Is'**".
  - "What is, what was, and what probably will be"
  - Presumably value-free
  - Falsifiable statements about reality
- **Normative Analysis**
  - "Theory of **'Ought'**"
  - Reasoning incorporating ["basic"] value judgments

Hume's Dictum

- **"One cannot deduce an Ought from an Is."**

(David Hume, *A Treatise of Human Nature*)

***Although*:**

- "Hume's guillotine" may be overstated[1]:
- Oughts are powerfully influenced by Ises.

[1]cf. Mark Blaug (1992)

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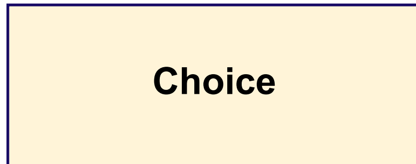
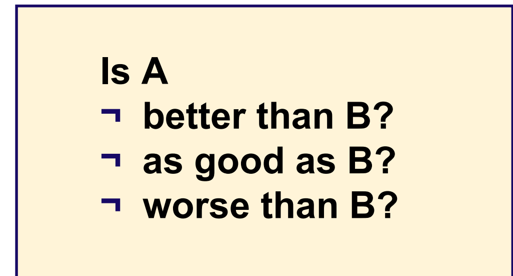
Economic Assessment Relates to Social Choice



A

B



Normative Approach:

Objective to maximize "social utility"

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Some Foundations of Economics

Key Concepts[1]

- **Scarcity of resources**
  - Desires exceed resources
  - Hence **choices** need to be made among competing objectives
- **Opportunity cost**
  - Everything and everyone has alternatives; resources used to satisfy one set of desires cannot be used to satisfy another set
  - The cost of any decision is measured in terms of the **value** placed on the opportunity foregone
- **Marginal analysis**
  - Choices are seldom made on an all-or-nothing basis – they are made "**at the margin**"
  - Consideration is given to the incremental effects and incremental costs of a decision – not average effects and costs

[1] J.W. Henderson, *Health Economics & Policy*, Mason, OH: 2nd ed., 2002

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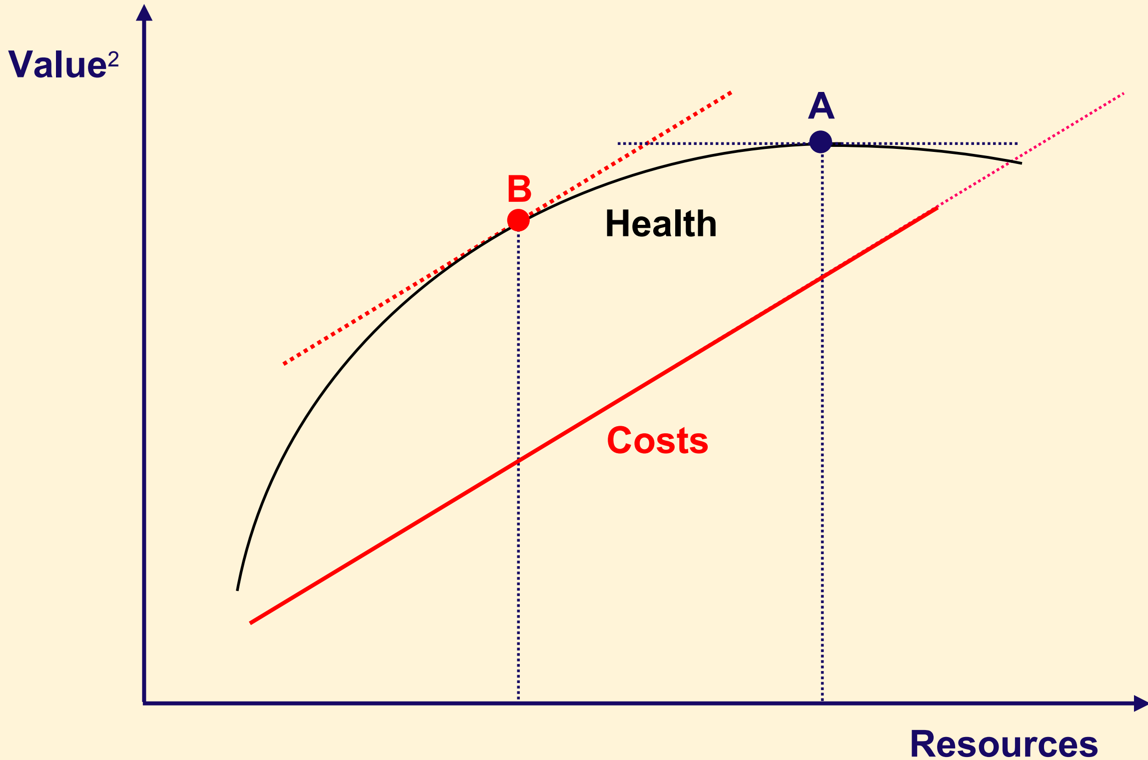
Some Foundations of Economics: Marginal Analysis and Opportunity Costs

Evidence Based Medicine (A) & *Economic* Evaluation[1] (B)



[1]cf. Victor R. Fuchs: "Health Care and the United States Economic System", *The Milbank Memorial Fund Quarterly*, April 1972: 211-237.
[2]Note different definitions of "value".

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Foundations:
Economic efficiency

Effectiveness

- Goals (objectives) can be defined as a desired future state of affairs.
- Effectiveness then is the degree to which an organization realizes its goals (objectives).
- Effectiveness may take into consideration a range of variables, and hence evaluate the extent to which multiple goals are attained.

Efficiency

- Efficiency can be defined as the amount of resources required to produce a unit of output:

  Resources
  => productivity
  => outcomes (objectives)

- Achieve given levels of health at minimum cost.
  or:
  Maximize improvements in health within a finite budget.

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Foundations: Economic efficiency

Technical Efficiency

- **Ability to produce the maximum possible output from a given set of inputs**
- **Does not routinely imply choosing between different patient (group)s**

  – hence individual persons

Allocative Efficiency

- **Choosing the most cost-effective set of programs for the given level of expenditure**
  (i.e.,optimal choice of input proportions, given their respective prices)
- **Does imply allocating resources across different patient (group)s**

  – hence individual persons

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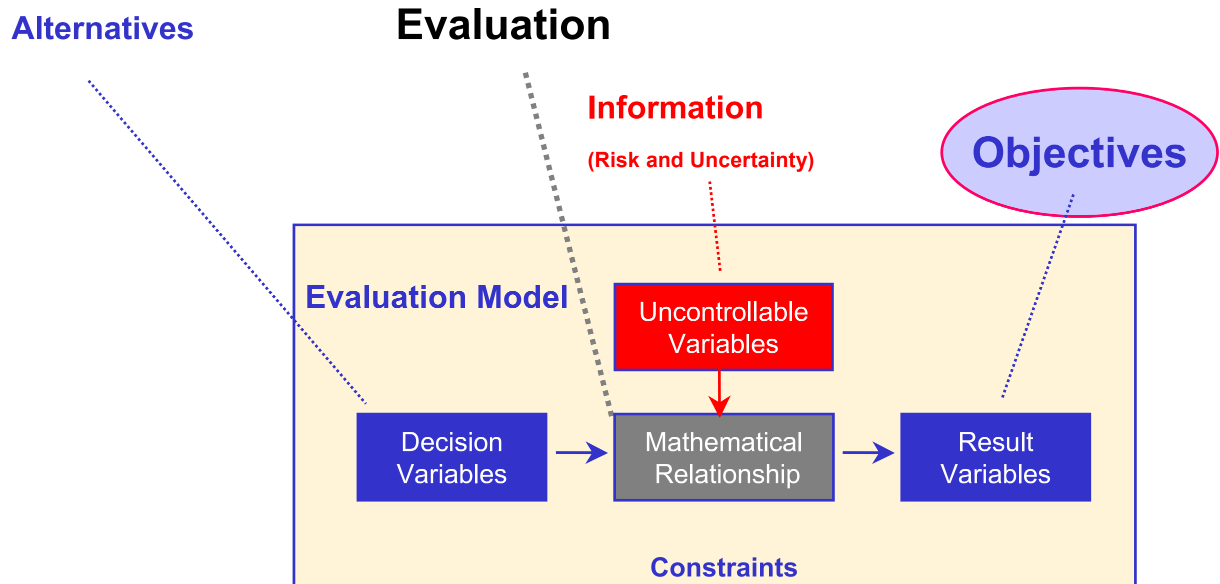
'Rational' Decision-Making Rests on Agreed Objectives[1]

'Rational' Decision-Making

Decision Analytic Principles[1]:



[1]From E. Turban and J.R. Meredith (4th ed., 1988)

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A Canadian Policy Analysis[1]

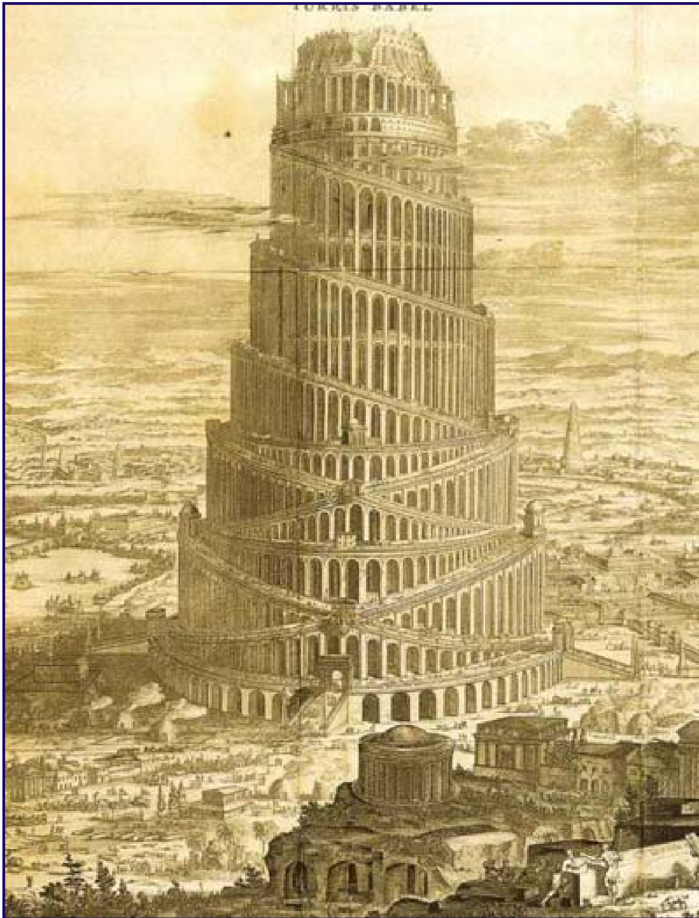

Illustration by Athanasius Kircher

A Tower of Babel …

- Referral to many different and often incommensurate things…
- **A key paradox**:

  The discourse about values is both very important and very ambiguous…
- Stakeholders may be tempted to react to this problem with either

  reductionism
  (focusing on one particular definition of values to the neglect of other relevant types)

  or

  nihilism…
  (either rejecting all values analyses as equally unreliable, or accepting all as equally credible)

[1] M. Giacomini et al. (2004)

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OBJECTIVES OF HEALTH CARE

- Traditional Objectives
- Stated Objectives
- Public Preferences
- Normative Issues

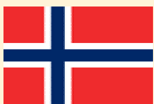
IV

What are the Objectives of Health Care?[1]

(1) Stated (Official) Objectives – (a.) Policy Makers

Canada:

- Canadian Medicare "is widely regarded as an **important symbol of community**, a concrete manifestation of mutual support and concern.
- It expresses a **fundamental equity** of Canadian citizens in the face of death and disease. As the Premier of Ottawa pointed out, there is no social program that we have that more defines Canadianism."[2]



Norway:

- "Two recent Norwegian commissions on priority setting in health care have identified that
- **an important rationale for government involvement in health care is to provide benefit to those with the worst health prospects**."[3]

[2]R. Evans, M. Law, in: World Bank Seminar Series (1995); [3]J.Olsen (1997), taken from P. Dolan et al. (2005)

[1]Related to collectively organized systems of health care delivery and financing.

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What are the Objectives of Health Care?[1]

(1) Stated (Official) Objectives – (b.) Payers

"**The principles of the NHS** require it to be:

- Universal in its reach, available to anyone who wishes to use it;
- High quality, applying the latest knowledge and the highest professional standards;
- Available on the basis of **clinical need**, without regard for the patient's ability to pay."[2]

Kaiser Permanente:

- "As a nonprofit health plan, we are driven by the **needs of our members** rather than the needs of shareholders."
- "Our core values: Our mission is to provide affordable, high-quality health services and improve the **health of our members** …"[3]

Statutory Health Insurance (SHI / GKV):

- §1 ("Solidarity, Individual Responsibility"): "The mission of the SHI is to maintain, to restore, and to improve the health status of its members."
- §12 ("Economic Efficiency"): "Services provided have to be sufficient, appropriate, and efficient; they should not exceed **medical need**."[4]

[2]White Paper published by UK Department of Health (1996); [3]Taken from the official website, www.kaiserpermanente.org; [4]Sozialgesetzbuch V

[1]Related to collectively organized systems of health care delivery and financing.

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Objectives of [collectively organized] health care

What are the Objectives of Health Care?[1]

(1) Stated (Official) Objectives – (c.) Providers

- **Physicians: The Hippocratic Oath**
  - "I will prescribe treatment to the best of my ability and judgement **to help the sick** …"
  - "I will enter the houses I visit in order **to help the sick**, and will not intentionally do harm or act corruptly …"

- **American Medical Association (AMA)[2]: Code of Medical Ethics**
  - "(I.) A physician shall be dedicated to providing competent medical care, with **compassion and respect for human dignity and rights**." …
  - "(VIII.) A physician shall, while caring for a patient, regard responsibility to **the patient as paramount**."
  - "(IX.) A physician shall support **access** to medical care **for all** people."

- **Code of Ethics for Nurses (developed from the "Nightingale Pledge")**
  - Respect for **human dignity**, primary **commitment to the patient**, protection of patient privacy…
  - The ideas are based on Kantianism as well as Judeo-Christian tradition.

[2]Of course, economists are well aware of the fact that revealed preferences may differ from stated preferences. However, Ises and Oughts should not be confused.

[1]Related to collectively organized systems of health care delivery and financing.

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What are the Objectives of Health Care?[1]

(2) Historic Roots

- **"From Monastery to Hospital"[2]:**
  - The "Monastic Health Care System" as a starting point, beginning with Basil of Caesarea:
- **The Birth of the Hospital: Social Services at Basil's Hospital (ca. 330)**
  - **The Poor** were in the forefront of Basil's conception of Christian praxis and thus of his hospital. A concern for the poor is demonstrated throughout Basil's writings.
  - **Strangers and the Homeless; Orphans** – housing, car, and education were central to the charitable program of the Basileias.
  - **Lepers**, caring for the terminally ill, something unheard of before in ancient medicine.
  - **The Elderly and the Infirm**, who were physically unable of providing for themselves.
  - **The Sick** were destigmatized for the first time; unlike virtually any other type of ancient medical care, monastic medicine offered inpatient hospital care under the supervision of trained health care providers, including doctors and nurses.

"The Care of Strangers", "A Once Charitable Enterprise", …

[2] A.T. Crislip: *From Monastery to Hospital – Christian Monasticism & the Transformation of Health Care in Late Antiquity*. Ann Arbor, MI, 2005.

[1] Related to collectively organized systems of health care delivery and financing.

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What are the Objectives of Health Care?[1]

(3) Empirical Ethics

NICE Citizen Council[2]:

- "Cost-utility analysis in the economic evaluation of particular interventions is a necessary, but insufficient, basis for decisions about cost-effectiveness."
- "Nevertheless, … philosophers are generally prepared to accept cost-utility analyses provided they are used to inform, rather than direct, decisions about setting priorities, and that other considerations are available to constrain morally offensive trade-offs."

Public expectations:

- **Fair distribution of health care services:** People think the efficiency with which society distributes health care resources must be balanced with the perceived fairness, or equity, of this distribution.
- **Give priority to severely ill patients** "even when their care is less cost-effective".
- **Avoid discrimination against people with chronic illness or disability.**[3]

Numerous Public Surveys:

- Confirming "solidarity" (e.g., no risk-adjusted premiums) as desired guiding principle[4]

[2]NICE: *Social Value Judgements*, Draft for consultation (April 8, 2005); [3]cf. Peter A. Ubel (2001); [4]75-84% of respondents in population studies.
[1]Related to collectively organized systems of health care delivery and financing.

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Empirical versus Normative Ethics

"Hume's Guillotine"[1]

- **"One cannot deduce an ought from an is."**

  (David Hume, A Treatise of Human Nature)

  - *Though*:

  - "Hume's guillotine" may be overstated:
  - Oughts are powerfully influenced by Ises.

[1]cf. Mark Blaug (1992);
note that much of what has been said about the normative interpretation of "orthodox" welfare economics (claiming to be based on a set of principles most economists agree on) is also relevant to a normative interpretation of "empirical ethics".

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OBJECTIVES OF HEALTH CARE

- Traditional Objectives
- Stated Objectives
- Public Preferences
- Normative Issues

IV

What are the Objectives of Health Care?[1]

(4) Legal Environment

Oregon Health Plan (OHP)

- Explicit ranking based on cost-effectiveness of condition-treatment pairs inconsistent with the **Americans with Disabilities Act**?
- Oregon Health Plan implemented in a **political process** frequently praised for its public participation. In fact, **funding** was achieved in "the traditional way", i.e., by raising revenues directly and by sensible contracts with providers[2].
- ***Overall*, to date there has been little litigation that directly raised or challenged the use of CEA.**

Constitutional Provisions

- Rationing criteria must be status-blind[3].
- "Quality of life hardly acceptable for prioritization."[4]
- Broad agreement among the legal profession that there is a constitutional right for access to "essential" care restoring "normal functioning without stigma"[5].

[2]cf. L. Jacobs et al. (1999); [3]cf. V. Schmidt (1998); [4]J. Taupitz (1999), p. 128 –on methodological grounds (!); [5]cf. I. Ebsen (1997) pp.109, 119ff.

[1]Related to collectively organized systems of health care delivery and financing.

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What are the Objectives of Health Care?[1]

(5) Normative Ethics

- **John C. Harsanyi** (e.g., 1977): A Defence of Utilitarianism
  - "Ethics as a branch of the general theory of rational behaviour"
- **Tom L. Beauchamp and James F. Childress**: (Bio-)Medical Ethics
  - Respect for autonomy; nonmaleficence, beneficence, justice
- **John Rawls** (1971): Notion of Primary Goods (and *basic liberties*)
  - Each person deserves consideration as a person, and this [neglect of a person's autonomy] militates against a distribution-indifferent view.
- **Norman Daniels** (1985): "Just Health Care"
  - A "decent minimum" of health -> "a normal range of opportunities"
- **Amartya Sen** (e.g., 1992): A Capability Perspective
  - Need to distinguish between achievements and capabilities
  - Importance of procedural justice (Sen's example: gender differences)

[1]Related to collectively organized systems of health care delivery and financing.

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Objectives of [collectively organized] health care

What are the Objectives of Health Care?[1]

Two Concepts[2]

Utilitarian Thought	Deontological Thought
Economic Welfare Theory (ordinal utilitarianism) **Extrawelfarism** (cardinal medical utilitarianism)	**Health Care Sector** Professionals and the Public
	Stated (Official) Objectives Policy Makers, Payers, Providers
	Historic Roots of Medicine and Health Care
	Empirical Ethics (Public Preferences)
	Legal Environment
Moral Intuitions (e.g., Bentham, Mill, Harsanyi)	**Moral Intuitions** (e.g., Kant; Rawls, Daniels; Sen)

[2]and a dilemma, resulting from the lack of the one compelling, integrating "grand theory"? – cf. Thomas Nagel: *The Fragmentation of Value* (1979)
[1]Related to collectively organized systems of health care delivery and financing.

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ECONOMIC THEORY

- Welfare Theory
- Extrawelfarism
- Normative Issues

IV

Background

Utilitarian Thought

- **John Stuart Mill (1806-1873):**
  - "What is best brings the greatest good for the greatest number …"
- **Jeremy Bentham (1748-1832):**
  - "The greatest happiness of all those whose interest is in question is the right and proper, and the only right and proper and universally desirable, end of human action."

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Welfare Economics[1]

- **Key Assumptions:**
  - Social welfare is made up from the welfare ("utilities") of each individual member of the society.
  - Individuals are the best judges of their own welfare.
  - If state A is ranked higher than state B for one person, and all other persons rank state A at least as high as B, then A should be ranked higher than B in the social ordering.
  - The three postulates of welfare theory are frequently described as innocuous:
- **Consumer sovereignty**
- **Non-Paternalism**
- **Unanimity**

[1]Given time constraints of this presentation, the following necessarily is an incomplete account of the theoretical frameworks discussed.

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Welfare Economics

U = f (H, W, …)

U (healthy, wealthy, …) > U (sick, poor, …)

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What We Teach Our Students (1)

- **Economic Welfare Theory**
  - "Clearly, the Paretian approach has the **theoretical high ground**, although even the most committed Paretians acknowledge that distributional issues as well as efficiency issues need to be dealt with."[1]
- **Principle: "The No-Loser Constraint"**
  - The Absolute No-Loser Constraint: "Pareto Principle"
  - The **Theory of Cost-Benefit-Analysis**: No-Loser Constraint with hypothetical compensation in terms of goods "Potential Pareto Improvement (Kaldor-Hicks Criterion)"[1]
  - **Practical Cost-Benefit Analysis**: No-Loser Constraint with hypothetical compensation in terms of money "Potential Pareto Improvement (Kaldor-Hicks Criterion)"[2]

[1]M. Drummond et al., *Methods for the Economic Evaluation of Health Care Programmes*, 2nd ed. 1997, p.287. [2]Note that the criterion does not require that the compensation (redistribution) actually takes place. Furthermore, "it sets up a concealed interpersonal comparison of utility on a money basis" (Baumol, 1977).

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What We Teach Our Students (2)

"Political economy has to take as the ***measure of utility*** of an object the maximum sacrifice which each consumer would be willing to make in order to acquire the object

...

the only real utility is that which people are *willing to pay* for."[1]

- **Contemporary Textbooks of Microeconomics:**
  - "The **value** [of a product] to a given consumer is defined as the maximum amount that the consumer would be **willing to pay** for that [product]."[2]

[1]**Jules Dupuit (1844)**

[2]Steven E. Landsburg: *Price Theory and Applications*, 5th ed., Mason, OH: South-Western 2002, p. 238.

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A Normative Interpretation

("What We Teach Our Students", cont'd.)

"Efficiency"

- "The **efficiency criterion** is an example of a consequentialist **normative theory**. … It pronounces that between two policies, we should always prefer the one that yields the higher social gain."[1]
- "A change is a good thing if it would be possible in principle for the winners **to compensate the losers** for their losses and still remain winners. If a policy increases Jack's income by $10, reduces Jill's by $5, and has no other effects, … the policy is a good one … according to the efficiency criterion."[1]
- "The mere fact that it is **possible to create potential Pareto improving redistribution possibilities** is enough to rank one state over another on efficiency grounds."[2]

[1]Steven E. Landsburg: *Price Theory and Application*, 5th ed., Mason, OH: South-Western 2002, pp. 293ff.
[2]Robin Broadway and Neil Bruce, *Welfare Economics*, Oxford: Basil Blackwell 1984, p. 97.
The question arises whether there exist compensation possibilities (in money or else) in the core area of "essential" health care.
This includes, in other words, the issue: is there a meaningful and acceptable "marginal rate of substitution" across the full spectrum of health (care)?

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Application

Cost-Benefit Analysis (CBA)

$$B_i > C_i$$

$$NSB_i > 0$$

$$NSB_i = B_i - C_i$$

$$NSB_i = \sum_{t=1}^{n} \frac{B_i(t) - C_i(t)}{(1+r)^{t-1}}$$

- The primary goal of CBA is to identify projects where NSB > 0.
- For allocation within a fixed budget, projects would be ranked according to their NSB.

NSB, Net Social Benefit; I = 1, …, I, number of possible investments (programs); $B_i(t)$, benefits (in money terms) derived in year t; $C_i(t)$, costs (in money terms) in year *t*; *r*, annual interest rate; *n*, life time of project in years.

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A Critique by Uwe E. Reinhardt (1998), cont'd.

Stylized Example

Market Allocation

- You are the Minister of Health for the independent state of the Moneta Islands, an archipelago in the Pacific Ocean. The islands are threatened by a highly contagious infectious disease, affecting children. The infection is known to be associated with a mortality rate of 40%.
- There are 4,000 children among the population of the island. You can purchase a total of 4,000 doses of a vaccine. Each application of the vaccine, up to the administration of four single doses, results in a mortality reduction by 50% (vaccination can be repeated up to four times).
- **How are you will provide your population with access to the scarce vaccination resources?**

[1]modifiziert nach E.K. Hunt und H.J. Sherman (1974)

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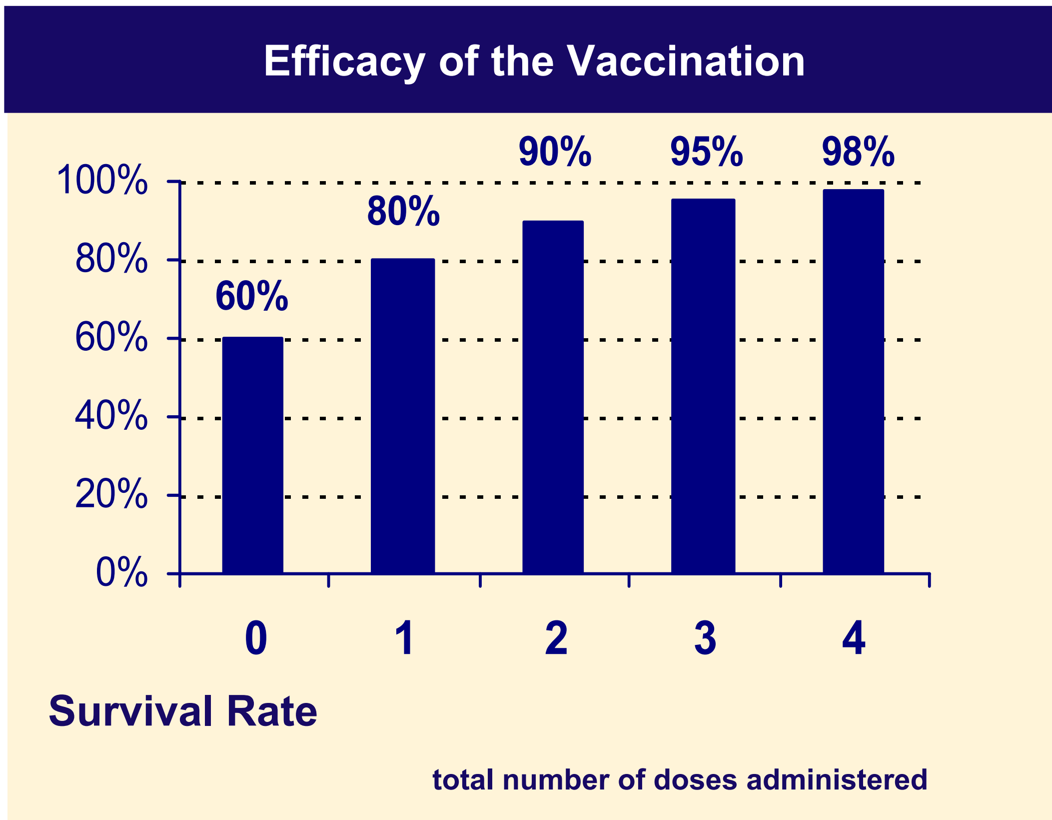
A Critique by Uwe E. Reinhardt (1998), cont'd.



[1]modifiziert nach E.K. Hunt und H.J. Sherman (1974)

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Stylized Example

A Critique by Uwe E. Reinhardt (1998), cont'd.

Allocation

"Market"	
¬ 25% percent of parents are wealthy enough as to afford four doses of the vaccine for each of their children[1]: ¬ 1,000 children with a survival rate of 98%.	

[1]Diese Annahme steht in Einklang mit der Vermögensverteilung in der Bundesrepublik Deutschland. Das Gedankenexperiment illustriert nicht nur das Versagen des Marktes unter gerechtigkeitstheoretischen Prämissen, sondern bietet zugleich ein Beispiel für **utilitaristische Marktkritik**.

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Stylized Example

A Critique by Uwe E. Reinhardt (1998), cont'd.

Allocation

"Market"

- 25% percent of parents are wealthy enough as to afford four doses of the vaccine for each of their children[1]:
- 1,000 children with a survival rate of 98%.
- Result:
  1,000 x 0.98 = 975
  3,000 x 0.60 = 1,800
  Survivors: 2,775

[1]Diese Annahme steht in Einklang mit der Vermögensverteilung in der Bundesrepublik Deutschland. Das Gedankenexperiment illustriert nicht nur das Versagen des Marktes unter gerechtigkeitstheoretischen Prämissen, sondern bietet zugleich ein Beispiel für **utilitaristische Marktkritik**.

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A Critique by Uwe E. Reinhardt (1998), cont'd.

Stylized Example

Allocation

"Market"	"Rationing"
¬ 25% percent of parents are wealthy enough as to afford four doses of the vaccine for each of their children[1]:	¬ Each child will receive one dose only:
¬ 1,000 children with a survival rate of 98%.	¬ 4,000 children with a survival rate of 80 %.
¬ Result: 1,000 x 0.98 = 975 3,000 x 0.60 = 1,800 Survivors: 2,775	

[1]Diese Annahme steht in Einklang mit der Vermögensverteilung in der Bundesrepublik Deutschland. Das Gedankenexperiment illustriert nicht nur das Versagen des Marktes unter gerechtigkeitstheoretischen Prämissen, sondern bietet zugleich ein Beispiel für **utilitaristische Marktkritik**.

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Stylized Example

A Critique by Uwe E. Reinhardt (1998), cont'd.

Allocation

"Market"	"Rationing"
25% percent of parents are wealthy enough as to afford four doses of the vaccine for each of their children[1]:	Each child will receive one dose only:
1,000 children with a survival rate of 98%.	4,000 children with a survival rate of 80 %.
Result: 1,000 x 0.98 = 975 3,000 x 0.60 = 1,800 Survivors: 2,775	Result: 4,000 x 0.80 = 3,200

[1]Diese Annahme steht in Einklang mit der Vermögensverteilung in der Bundesrepublik Deutschland. Das Gedankenexperiment illustriert nicht nur das Versagen des Marktes unter gerechtigkeitstheoretischen Prämissen, sondern bietet zugleich ein Beispiel für **utilitaristische Marktkritik**.

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A Critique by Uwe E. Reinhardt (1998), cont'd.

Stylized Example

Allocation

"Market"	"Rationing"
¬ 25% percent of parents are wealthy enough as to afford four doses of the vaccine for each of their children[1]:	¬ Each child will receive one dose only:
¬ 1,000 children with a survival rate of 98%.	¬ 4,000 children with a survival rate of 80 %..
¬ Result: 1,000 x 0.98 = 975 3,000 x 0.60 = 1,800 Survivors: 2,775	¬ Result: 4,000 x 0.80 = 3,200 **Difference**: 3,200 – 2,775 = 425

[1]Diese Annahme steht in Einklang mit der Vermögensverteilung in der Bundesrepublik Deutschland. Das Gedankenexperiment illustriert nicht nur das Versagen des Marktes unter gerechtigkeitstheoretischen Prämissen, sondern bietet zugleich ein Beispiel für **utilitaristische Marktkritik**.

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Health Care Resource Allocation at Moneta Islands

Some Issues

- **Efficient Allocation?**
  - Willingness to pay (WTP) as the sole measure of value (utility)?
- **Willingness to pay and distribution?**
  - WTP influenced by ability to pay?
- **Can health care foregone be substituted for (by monetary compensation or else)?**
  - Validity of the Kaldor Hicks criterion (potential compensation of losers)?
- **Primary goods or rights?**
  - “Capabilities”?
  - “Normal range of opportunities”

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Efficiency / Pareto Optimality

"A definition is just a definition, but when the *definiendum* is a word already in common use with highly favorable connotations,

it is clear we are really trying to be persuasive; we are implicitly recommending the achievements of optimal states."

Kenneth Arrow (1963) –
Uncertainty and the Welfare Economics of Medical Care, p. 942; cf. Uwe E. Reinhardt (1998)

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HEALTH ECONOMIC THEORY

- Welfare Theory
- Extrawelfarism
- Normative Issues

IV

In particular, two assumptions of economic welfare theory have attracted criticism from a group of health economists ("extra-welfarists")

An Extra-Welfarist Critique[5]

1. **"The monetary measurement [of benefits in cost-benefit analysis] inherently favors the wealthy over the poor."[1]**
   - "Extra-welfarists *and many decision-makers in the real world of health care* are willing to accept an approach that considers outcomes equitably (as CEA using QALYs does), rather than accept an approach in which choices are heavily influenced by ability to pay."[2]
2. **"Extra-welfarists identify 'health' as the principle output of health services."[3]**
   - Then, in effect (*at least in theory*[4]), health is treated as an independent argument in the welfare function. Now, health can no more be substituted by income or consumption.

[1]M.R. Gold et al. (1996), p.26; [2]M.C. Weinstein and W. Manning (1997), p. 127; [3]A.J. Culyer (1989), p. 51; [4]C. Donaldson et al. (2002); [5]Thomas Rice (1998, 2002) has provided a systematic critique of welfare theory as a foundation of health economics.

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The logic of cost-effectiveness

The Conventional Unit of Health Outcomes: QALYs

A simple representation of the "QALY Aggregation Rule"

$$Social_Health_Gain = N \times \sum_{t=1}^{n} \frac{\Delta u_t}{(1+r)^{t-1}}$$

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The logic of cost-effectiveness

QALY League Tables[1]

Ranking Interventions by Their Cost-Effectiveness

Example	Cost/QALY
GP advice to stop smoking	220 £
Antihypertensive treatment to prevent stroke (age 45-64 years)	940 £
Hip replacement	1,180 £
Kidney transplant	4,710 £
Hospital hemodialysis	21,970 £
Neurosurgical intervention for malignant intracranial tumors	107,780 £

[1]Data from: A. Maynard (1991); data for United Kingdom (in 1990 £)

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The logic of cost-effectiveness:
a promise and a premise

"A QALY
is a QALY
is a QALY
–
regardless of
who gains and who
loses it."[1]

"The principal
objective of the
National Health Service
ought to be to
maximize the
aggregate
improvement in the
health status of the
whole community."[2]

"The underlying **premise** of CEA in health problems is that for any given level of resources available, **society** (or the decision-making jurisdiction involved) **wishes to maximize the total aggregate health benefit** conferred."[3]

[2] **Anthony J. Culyer (1997)**

[1] **D. Feeney and G.W. Torrance (1989)**
but there are reasons to suspect that the utility of health states may be influenced by wealth – cf. C. Donaldson et al. (2002)

[3] **M.C. Weinstein and W.B. Stason (1977)**

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Some Cost-Effectiveness Benchmarks

- **No scientific basis**
- **Some international “de facto” benchmarks:**
  - **New Zealand** (PHARMAC): NZ-$ 20,000 / QALY[1]
  - **Australia** (PBAC): AUS-$ 42,000 / LYG to AUS-$ 76,000 / LYG[2]
  - **England and Wales** (NICE): £ 20,000 – £ 30,000 / QALY
  - **United States** (MCOs): US-$ 50,000 – US-$ 100,000 / QALY[3]
  - **Canada** (proposed “grades of recommendation”): CAN-$ 20,000 – CAN-$ 100,000 / QALY[4]

[1]C. Pritchard (2002); QALY: “quality-adjusted life year”; [2]George et al. (2001); LYG: “life year gained”
[3]D.M. Cutler, M. McClellan (2001); [4]A. Laupacis et al. (1992)

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The logic of cost-effectiveness

Utilitarian Thought

- **John Stuart Mill (1806-1873):**
  - "What is best brings the greatest good for the greatest number …"
- **Jeremy Bentham (1748-1832):**
  - "The greatest happiness of all those whose interest is in question is the right and proper, and the only right and proper and universally desirable, end of human action."

- **Medical Utilitarianism:**
  - A variant of act utilitarian thought, **exclusively focusing on health outcomes** (usually *QALYs*)

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Problems with (Act) Utilitarianism

Case 1:

	U_1	U_2	U_3	U_{tot}
A_1	+6	+8	+6	**+20**
A_2	+7	+9	+2	**+18**
A_3	+2	+3	+12	**+17**

Assumptions:

- Utility can be measured and quantified.
- Measured values can be compared meaningfully.

Case 2:

	U_1	U_2	U_3	U_{tot}
A_1	+28	+28	-30	**+26**
A_2	+2	+9	+14	**+25**
A_3	+8	+8	+8	**+24**

Problem:

- Distribution is ignored.
- Act utilitarianism even will defend negative utilities for some.

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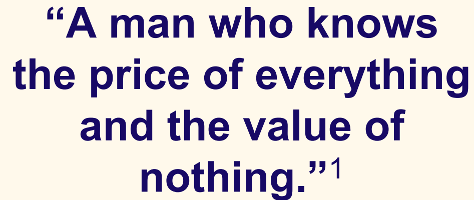
The ethics of resource allocation decisions



[1]Oscar Wilde's definition of **a cynic**; [2]Peter Drucker

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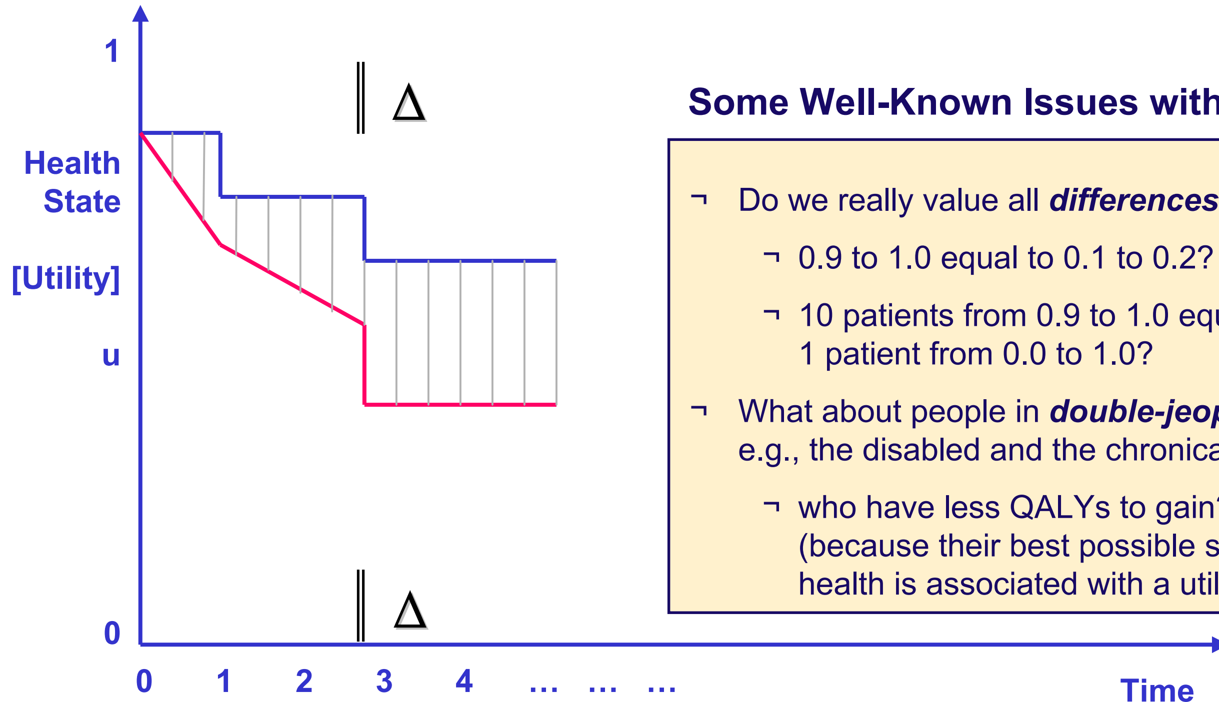
Aggregation of Quality-Adjusted Life Years (QALYs)



Some Well-Known Issues with QALYs

- Do we really value all ***differences*** equally?
  - 0.9 to 1.0 equal to 0.1 to 0.2?
  - 10 patients from 0.9 to 1.0 equal to 1 patient from 0.0 to 1.0?
- What about people in ***double-jeopardy***, e.g., the disabled and the chronically ill,
  - who have less QALYs to gain? (because their best possible state of health is associated with a utility u<1)

The QALY aggregation rule is "descriptively flawed".[1]

[1]cf. P. Dolan et al. (2005), M. Schlander (2005)

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"QALY League Tables" Revisited

Ranking of Interventions by Cost per QALY ICERs

Interventions:	ICERs:
Sildenafil for erectile dysfunction	**< ~ 3,600 £ / QALY**[1]
Methylphenidate for ADHD in children	**< ~ 7,000 £ / QALY**[2]
Riluzole for motor neuron disease	**~ 38,500 £ / QALY**[3] (34,000–43,500 £/QALY[3])
Beta interferon for multiple sclerosis	**~ 120,000 £ / QALY**[4] (69,000–580,000 £/QALY[4])
Laronidase for mucopolysaccharidosis	**> 330,000 £ / QALY**[5]

[1]E.A: Stolk et al. (2000); [2]S. King et al. (2004); [3]G. Ginsberg and S. Lowe (2002), NICE (2001), [4]A. Stewart et al.(2000); [5]NICE (2006)

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Social WTP: Valuation of Quality-Adjusted Life Years (QALYs)

Does Context Matter?

- **Empirical evidence** supports a role of the following[1]:
  - **Severity** of initial health state
    - Level of impairment in addition to improvement (difference)?
  - **Rule of rescue**
    - Identifiable individuals (but is being "visible" morally relevant?)
  - **Potential** for health improvement
    - e.g., the permanently disabled and chronically ill? (who have less QALYs to gain)
  - Patients with **high-cost illnesses**

[1]cf. recent reviews by P. Dolan et al. (2005), J. Richardson and J. McKie (2005), M. Schlander (2005); further considerations include (but are not limited to) age, responsibility for dependants, and number of patients or program size.

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ECONOMIC THEORY

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IV

Some questions to answer before calling for "more consistency" in the implementation of the results of economic evaluations

What are the Objectives of Health Care?[1]

- **More specifically, when and why do we distrust market allocation of health care?**
  - **Market failures** (allocative inefficiency) due to
    - Information asymmetry, moral hazard, …?
    - Externalities?
    - Public goods?
  - **Distributive concerns**
    - Objectives incompatible with market results?
    - A decent minimum of health as a conditional good?
    - Are such social objectives adequately captured by current standards for economic analyses of health technologies?

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An influential proposal for health care priority setting by Norman Daniels and James Sabin

Focus on "Due Process": Accountability for Reasonableness[1]

- **Publicity:**
  - Decisions and their underlying rationales must be publicly accessible.
- **Relevance:**
  - These rationales must rest on evidence, reasons, and principles that plan managers, clinicians, patients, and consumers agree are pertinent to deciding how to meet diverse needs under resource restraints.
- **Revisability and appeals:**
  - A mechanism must allow challenges to limit-setting decisions, help resolve those challenges, and allow revisions in light of further evidence and arguments.
- **Enforcement:**
  - A voluntary or public regulatory process must ensure that decision makers fulfill the first three conditions.

[1]N. Daniels and J.Sabin (1997, 1998ff.)

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