

# EQ-5D and SF-6D: Strength and weakness in theory & parctice

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*NORCE*

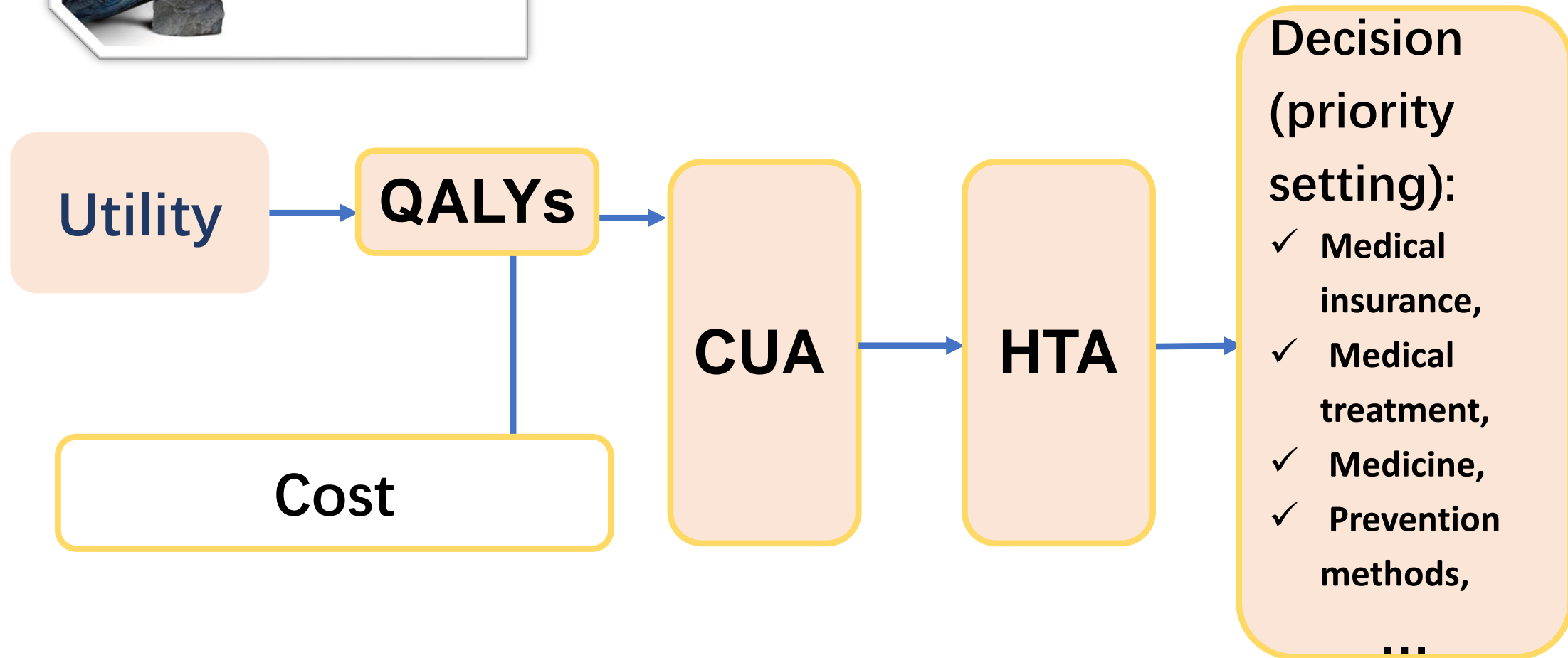
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# Generic preference-based measures (GPBM) - Why?



## Economic evaluation:

- ❖ Comparative analysis of 2+ interventions in terms of both **costs** AND **benefits**



# GPBMs – What do they measure?

What

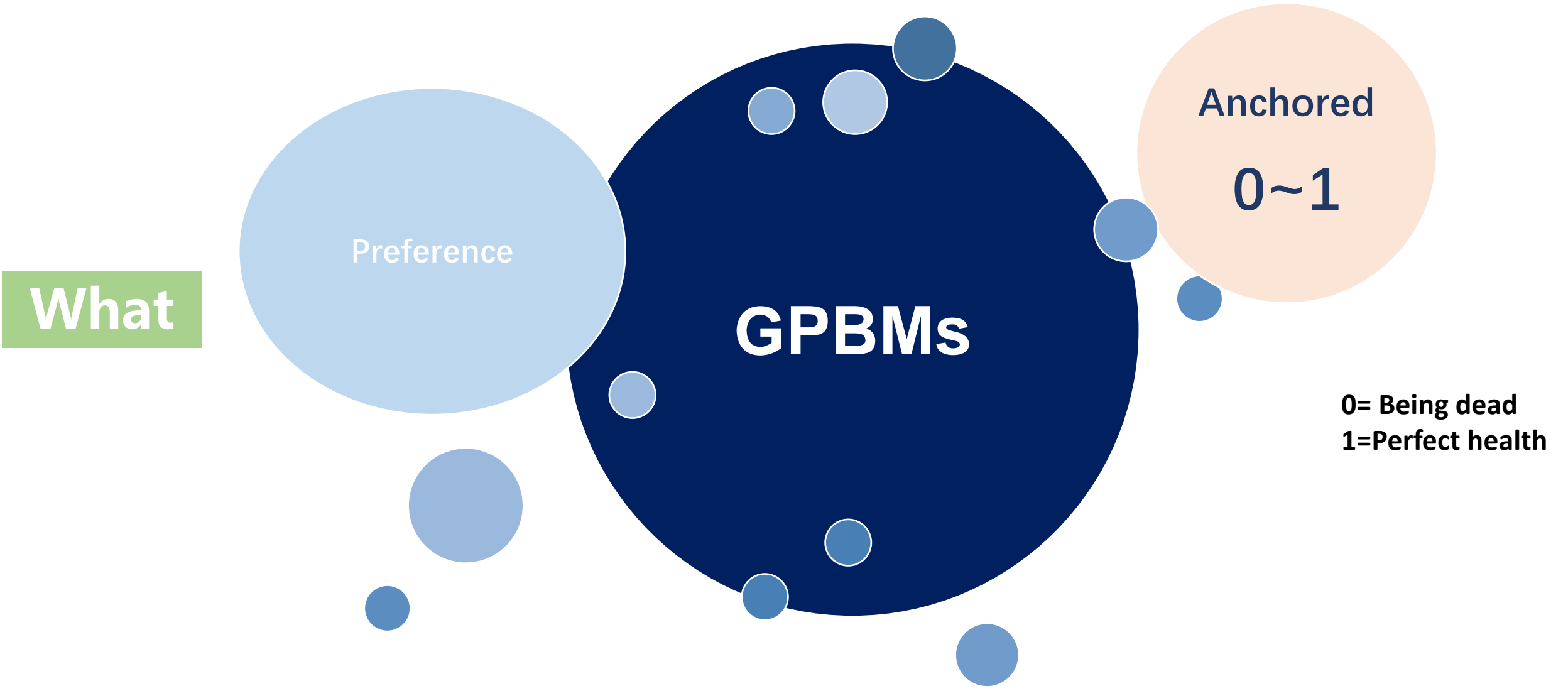
Preference

GPBMs

Anchored

0~1

0= Being dead  
1=Perfect health



# GPBMs – How do we measure them? (Valuation techniques)

How



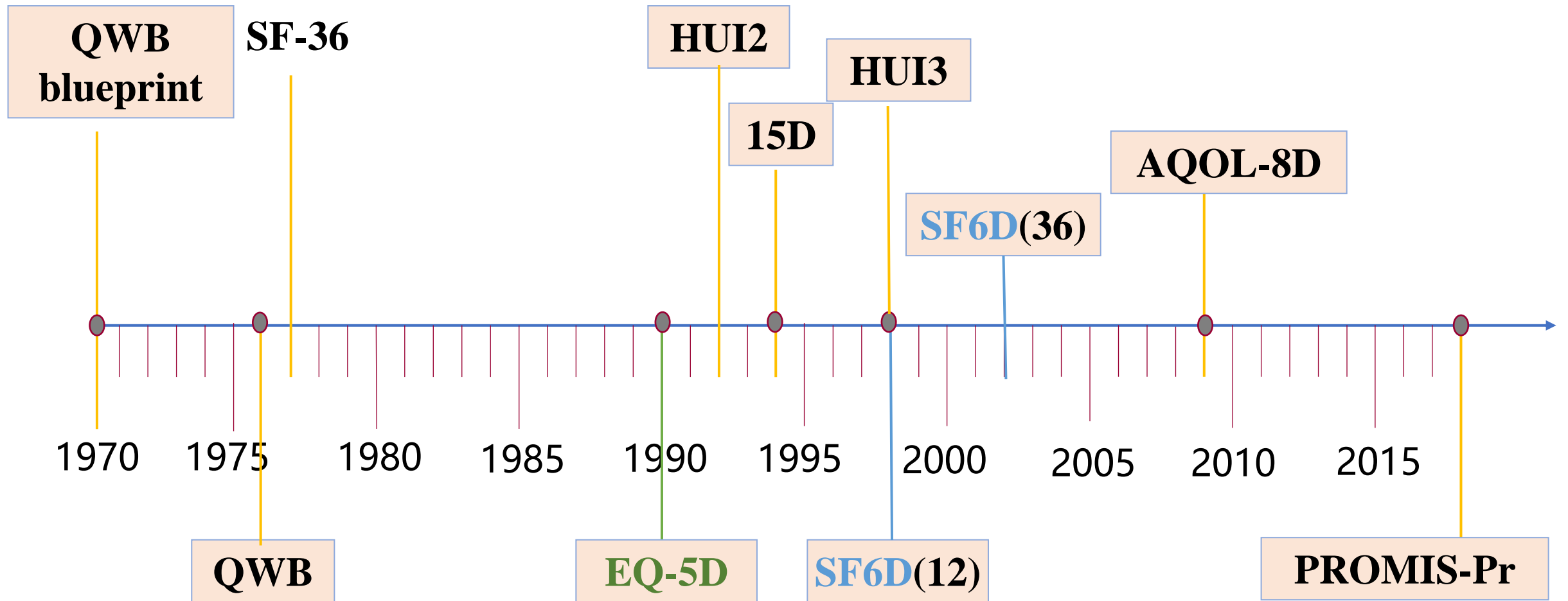
**Direct  
measurement**

- TTO
- SG
- DCE

**Indirect  
measurement**

- GPBMs
- Mapping/Crosswalk

# GPBMs - History



*SF-36 is generic but not preference-based. Its questionnaire is used to develop SF-6D*

# EQ-5D & SF-6D: Properties

## 1. Generic – *as apposed to disease-specific*

- For use across diseases/conditions
  - Can compare HRQoL between ‘the lame & the blind’

## 2. Preference-based index – *in contrast to sum-score*

- Different dimensions are weighted differently, based on people’s preferences
- Final outcome measure – *as opposed to proxy outcome (e.g.,  $\Delta BP$ )*
  - Measures improvement in the ‘utility’ (ca. HRQoL)

## EQ-5D & SF-6D: Use and application

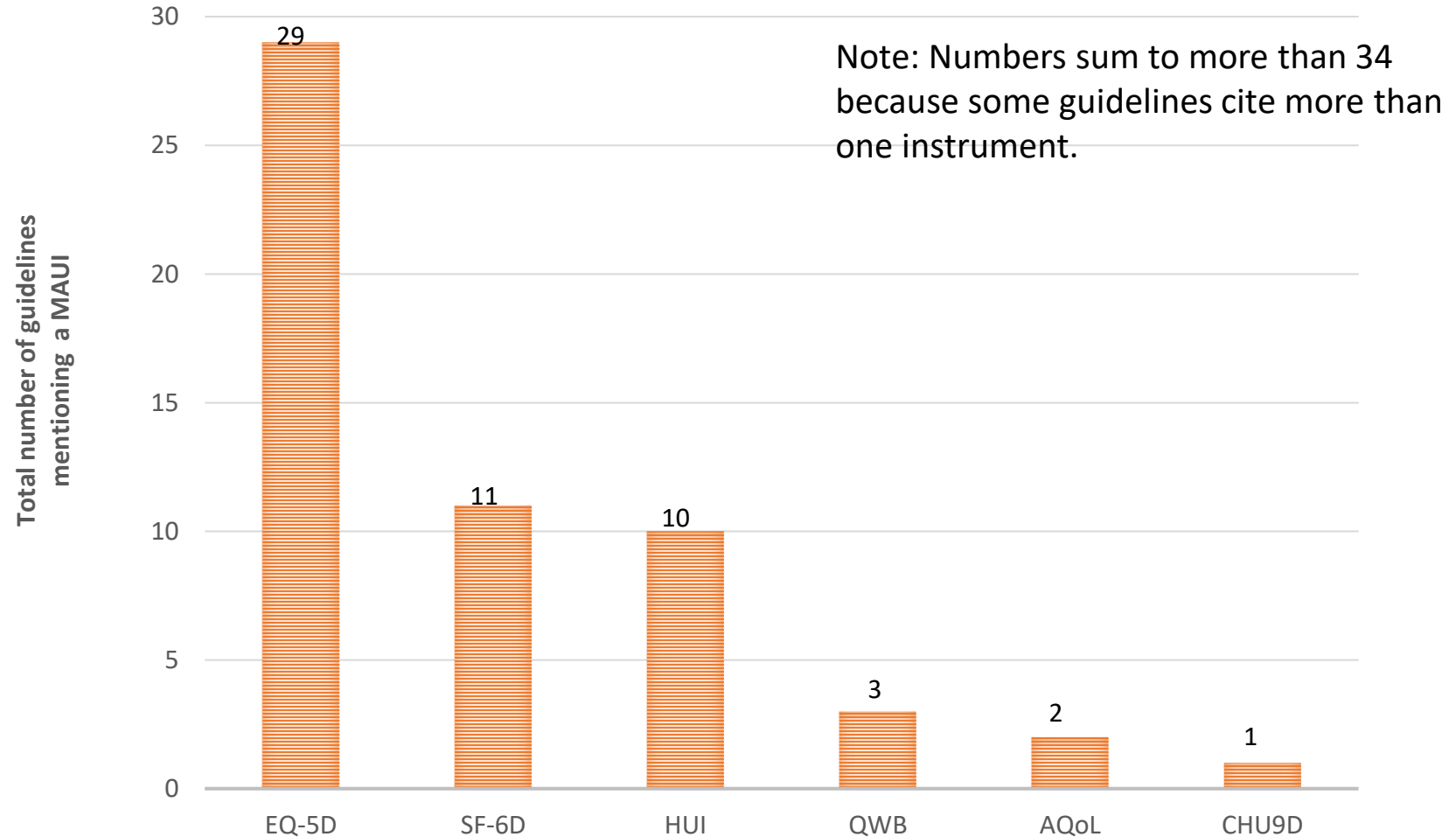
- EQ-5D is the most widely used GPBM
  - Over 70% CUA (2005 & 2010),
  - Over 17,000 studies registered (2015)
- SF-6D is the next most applied GPBM

	N = 124
EQ-5D	87
SF-6D	13
HUI	6
15D	5
QWB	2
More than one instrument	11

Wisløff et al (2014): Estimating QALY gains in applied studies: A review of cost utility analyses published in 2010, *PharmacoEconomics*

# Recommended or cited as acceptable instruments in national PE\* guidelines

National PE Guidelines included in review, n=34



REF. Which multi-attribute utility instruments are recommended for use in cost-utility analysis? A review of national health technology assessment (HTA) guidelines, Kennedy-Martin et al., 2020

\* Guidelines officially recognized or required by national health care decision-making bodies for pricing, reimbursement or market access



# PE\* guidelines recommended use of a specific Instrument

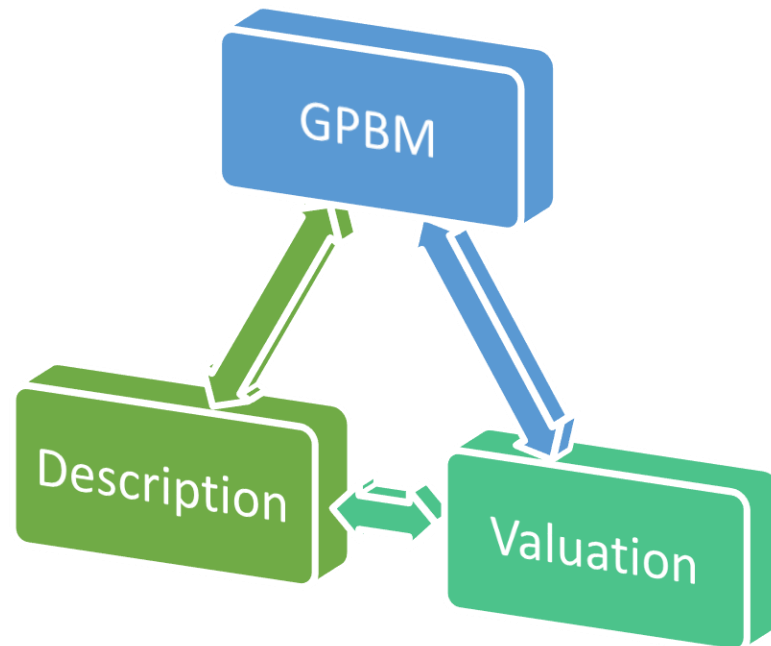
- 15 guidelines recommended specific instrument
- EQ-5D was recommended in all 15 guidelines
  - *Belgium, Bulgaria, Chile, Columbia, Czech Rep., France\*2, UK, Netherlands, New Zealand, Norway, Poland, Portugal, Scotland, Thailand.*

Guideline country	Year	Recommended MAUI/HSU	Guideline country	Year	Recommended MAUI
Belgium	2012	EQ-5D	The Netherlands	2016	EQ-5D-5L
Bulgaria	2018	EQ-5D-3L; EQ-5D-5L	New Zealand	2015	EQ-5D
Chile	2013	EQ-5D	Norway	2018	EQ-5D-3L; EQ-5D-5L
Columbia	2014	EQ-5D-3L	Poland	2016	EQ-5D-3L; EQ-5D-5L
Croatia	2011	EQ-5D	Portugal	2019	EQ-5D-5L
Czech Republic	2017	EQ-5D	Scotland	2019	EQ-5D
England	2013 2018	EQ-5D-3L; EQ-5D-5L†	Thailand	2014	EQ-5D-3L
France	2012	EQ-5D; HUI			

\*Guidelines officially recognized or required by national health care decision-making bodies for pricing, reimbursement or market access

# Generic preference-based measures (GPBM)

- Two stages in the development of GPBM



# Descriptive system – pros & cons

- EQ-5D has 5-dimensions (MO, SC, UA, PD, AD) → *3125 health states*
  - Each with 5 severity levels
- SF-6D has 6-dimensions (PF, RF, SF, Pain, MH, VT) → *18 000*
  - Each with 4-6 response levels
  - It is derived from SF-36 or SF-12
- Both have strong emphasis on physical function
- Weaker on psycho-social dimensions
- Both are relatively concise

# Valuation of health states

- EQ-5D: Extensive research activities to develop value sets that reflect the preferences of the individual countries (44+ published or ongoing including Norway)
  - <https://euroqol.org/>
- Very few for SF-6D (China, Japan, Portugal, Brazil, Spain, Australia, Singapore)
- EQ-5D uses TTO or cTTO, while SF-6D SG
- Both are anchored on 0-1 scale: 0-being dead & 1-full health

# EQ-5D-5L

- 5 dimensjoner
- 5 nivå

## **GANGE**

- Jeg har ingen problemer med å gå omkring
- Jeg har litt problemer med å gå omkring
- Jeg har middels store problemer med å gå omkring
- Jeg har store problemer med å gå omkring
- Jeg er ute av stand til å gå omkring

## **PERSONLIG STELL**

- Jeg har ingen problemer med å vaske meg eller kle meg
- Jeg har litt problemer med å vaske meg eller kle meg
- Jeg har middels store problemer med å vaske meg eller kle meg
- Jeg har store problemer med å vaske meg eller kle meg
- Jeg er ute av stand til å vaske meg eller kle meg

## **VANLIGE GJØREMÅL** (f.eks. arbeid, studier, husarbeid, familie- eller fritidsaktiviteter)

- Jeg har ingen problemer med å utføre mine vanlige gjøremål
- Jeg har litt problemer med å utføre mine vanlige gjøremål
- Jeg har middels store problemer med å utføre mine vanlige gjøremål
- Jeg har store problemer med å utføre mine vanlige gjøremål
- Jeg er ute av stand til å utføre mine vanlige gjøremål

## **SMERTER/UBEHAG**

- Jeg har verken smerter eller ubehag
- Jeg har litt smerter eller ubehag
- Jeg har middels sterke smerter eller ubehag
- Jeg har sterke smerter eller ubehag
- Jeg har svært sterke smerter eller ubehag

## **ANGST/DEPRESJON**

- Jeg er verken engstelig eller deprimert
- Jeg er litt engstelig eller deprimert
- Jeg er middels engstelig eller deprimert
- Jeg er svært engstelig eller deprimert
- Jeg er ekstremt engstelig eller deprimert

**MOBILITY**

- I have no problems in walking about
- I have slight problems in walking about
- I have moderate problems in walking about
- I have severe problems in walking about
- I am unable to walk about

**SELF-CARE**

- I have no problems washing or dressing myself
- I have slight problems washing or dressing myself
- I have moderate problems washing or dressing myself
- I have severe problems washing or dressing myself
- I am unable to wash or dress myself

**USUAL ACTIVITIES** (*e.g. work, study, housework, family or leisure activities*)

- I have no problems doing my usual activities
- I have slight problems doing my usual activities
- I have moderate problems doing my usual activities
- I have severe problems doing my usual activities
- I am unable to do my usual activities

**PAIN / DISCOMFORT**

- I have no pain or discomfort
- I have slight pain or discomfort
- I have moderate pain or discomfort
- I have severe pain or discomfort
- I have extreme pain or discomfort

**ANXIETY / DEPRESSION**

- I am not anxious or depressed
- I am slightly anxious or depressed
- I am moderately anxious or depressed
- I am severely anxious or depressed
- I am extremely anxious or depressed

**PHYSICAL FUNCTIONING**

Limited in vigorous activities **not at all**  
 Limited in vigorous activities **a little**  
 Limited in moderate activities **a little**  
 Limited in moderate activities **a lot**  
 Limited in bathing and dressing **a lot**

**ROLE FUNCTIONING**

Accomplish less than you would like **none of the time**  
 Accomplish less than you would like **a little of the time**  
 Accomplish less than you would like **some of the time**  
 Accomplish less than you would like **most of the time**  
 Accomplish less than you would like **all of the time**

**SOCIAL FUNCTIONING**

Social activities are limited **none of the time**  
 Social activities are limited **a little of the time**  
 Social activities are limited **some of the time**  
 Social activities are limited **most of the time**  
 Social activities are limited **all of the time**

**PAIN**

**No** pain  
**Very mild** pain  
**Mild** pain  
**Moderate** pain  
**Severe** pain  
**Very severe** pain

**MENTAL HEALTH**

Depressed or very nervous **none of the time**  
 Depressed or very nervous **a little of the time**  
 Depressed or very nervous **some of the time**  
 Depressed or very nervous **most of the time**  
 Depressed or very nervous **all of the time**

**ENERGY**

Worn out **none of the time**  
 Worn out **a little of the time**  
 Worn out **some of the time**  
 Worn out **most of the time**  
 Worn out **all of the time**

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# Strength and weakness

	EQ-5D	SF-6D
<b>Strength</b>		
Clear structure/simplicity	+++	+?
Application	+++++	++
Preference-based weighting	+++++	+
<b>Weakness/missing</b>		
Mental health	---	--
Psycho-social health	---	--



# Most important consideration for choosing a generic instrument in a quality register

1. 'User-friendly' = concise and easy to understand
2. Contains relevant health dimensions

In practice the two properties are in conflict with each other;

- a concise instrument lacks all relevant dimensions
  - **Responsiveness** issue (not conclusive)
- A comprehensive instrument
  - **practicality** issue (cost of administration in terms of time)
  - **Comprehension** problems (respondents may focus on one dimension during elicitation)

# Conclusion and way forward

- QALY-measure the benefit of treatment/intervention:  $QoL * LE$
  - EQ-5D & SF-6D measure  $Q$  in QALY, focusing on physical health
    - Both misses important *non-health benefits*
  - Wider health system involves health care, social care & public health
  - This urges the need for new broader instrument
    1. Wellbeing QALY:  $w=f(c,h)$  ... (*Richard Cookson et al., 2020*)
    2. EQ-HWB (EQ Health and Wellbeing instrument): E-QALY (*in progress*)
      - Measure of broader aspects of health and wellbeing
- \*Both facilitate use in the economic evaluation of cross-sectoral policies (including health and social care)

*Thanks*

