Delfini Pearls
Key Points About Quality Adjusted Life Years (QALYs)

Goal of **cost-utility analyses** is to determine the **cost per QALY**. **Quality of Life (QOL) ranges from 0 (dead) to 1 (full health).**

Examples

Time	X Quality (Utility)	= QALY
1 year of life	Perfect Health Utility=1	1
0.5 years of life	Perfect Health Utility=1	0.5
1year of life	Bedridden Utility =0.5	0.5

The **incremental cost-effectiveness ratio (ICER)** is an equation.

- ICER is the ratio of the change in costs to incremental benefits of a therapeutic intervention or treatment

- The equation for ICER is—
  $$ICER = (C1 – C2) / (E1 – E2)$$

- C1 and E1 are the cost and effect in the intervention or treatment group
- C2 and E2 are the cost and effect in the control care group
- Costs are usually described in monetary units while benefits/effect in health status is measured in terms of QALYs gained or lost

Modeling to Obtain Cost of QALYs Save and Cost of ICER Per QALY

- QALYs are frequently derived using **decision analytical models** which incorporate efficacy and safety data from clinical trials and **utilities**.
- **Utilities** are values that represent the strength of an individual's preferences for specific health-related outcomes and are used to represent the strength of an individual's preferences for specific health-related outcomes.
- **Measuring health utilities** involves two main steps: **defining a set of health states** of interest, and **valuing those health states.**
- Utilities are weighted between 0 and 1 frequently using:
    - **Time-trade-off (TTO):** Respondents are asked to choose between remaining in a state of ill health for a period of time, or being restored to perfect health but having a shorter life expectancy.
    - **Standard Gamble** (SG): Respondents are asked to choose between remaining in a state of ill health for a period of time, or choosing a medical intervention which has a chance of either restoring them to perfect health, or killing them.
    - **Visual Analogue Scale** (VAS): Respondents are asked to rate a state of ill health on a scale from 0 to 100, with 0 representing death and 100 representing perfect health. This method has the advantage of being the easiest to ask, but is the most subjective.
- **Health or treatment states** are frequently developed based on literature review, interviews with patients or focus groups of clinical experts.
- **Time in treatment states** is frequently based on published evidence.

Problems with Economic Modeling Using QALYs: Cost numbers depend upon what is included in the model; is your situation similar?

- Validity of studies used for outcomes
    - Distortion size of efficacy outcomes (amount of benefit)
    - Frequency of adverse events
    - Ratcheting down from efficacy to effectiveness
- Determining mathematical value of utilities
    - Preferences and ratings likely to vary person-to-person