ASCERTAIN

WHAT IS A QALY AND HOW IS IT USED IN DECISION-MAKING ON MEDICINES?

AT A GLANCE

QALY stands for 'Quality-Adjusted Life Year'.

It is used to calculate the cost-effectiveness of a new treatment and help decide whether it should be reimbursed.

A QALY is a number that can capture both length of life and the quality of those life years. It also considers comorbidities (having more than one health issue).

1 QALY = one year of life in perfect health

Or

1 QALY= 2 years of life in 50% health

HOW IS IT USED?

The QALY is used together with the cost of the treatment in an indicator called incremental cost-effectiveness ratio (ICER).

Example

Imagine a patient with the disease X taking medicine A. With this medicine they are expected to live 10 years. However, the quality of life during this time is 50% less than what someone in full health would have.

As such, medicine A gives the patient 10 x 0.5 = 5 QALYs.

A new medicine B comes along, which increases life expectancy to 15 years and improves the quality of life to 70% of that of a healthy person.

Therefore, the new medicine B gives the patient 15 x 0.7 = 10.5 QALYs.

As such, the new treatment will provide an additional 5.5 QALYs.

The new treatment B will cost 55,000 EUR more than treatment A. If we divide the additional cost of the treatment by the additional QALYs, we get the ICER. In this example ICER is 10,000 (55,000/5.5). If ICER is under the country's cost-effectiveness threshold (CET), then the treatment B is considered cost-effective.

WHAT IS A COST-EFFECTIVENESS THRESHOLD (CET) AND HOW IS IT USED?

Once the ICER is calculated, **a country needs to decide if the health benefits brought by medicine B are high enough to justify the costs for the health budget**. It is a difficult decision as public health budgets need to cover the entire population of a country and different kinds of patients and diseases. So, most countries have devised **limits or upper bounds for what they can pay for new medicines** depending on the benefits they bring to patients.

The cost-effectiveness threshold (CET) is the limit expressly stated above, which helps guide the reimbursement decisions for new medicines. So, in the **example** above, ICER is 10,000 and if the country cost-effectiveness threshold is 20,000 then the medicine is considered cost-effective, which helps support a recommendation for reimbursement. It depends on country, by whether or not the medicine is ultimately reimbursed can be affected by many other factors, one of which can be the cost-effectiveness.

HOW IS THE COST-EFFECTIVENESS THRESHOLD DETERMINED?

There are various ways to calculate it. As there is **no universal "gold standard"** and each approach has its methodological limitations, different countries use different methods. They include, for **example**:

- **willingness-to-pay** (surveys will ask people how much they would pay for health gains);
- **opportunity costs** (what would be lost by covering the cost of one treatment over another);
- **using GDP** (a country's Gross Domestic Product) per capita number as a reference (threshold can be several times the value of this number)

WHAT MODIFIES THE COST-EFFECTIVENESS THRESHOLD (CET)?

Different countries can adjust the cost-effectiveness threshold up or down, using so-called "modifiers", to prioritise different groups. For **example**, treatments that are addressing very severe diseases, or that extend life for terminal diseases, or address newborns could be more likely to be considered cost-effective. For instance, in Norway and the Netherlands the thresholds are higher for more severe diseases.

WHAT ARE THE PROS AND CONS OF USING QALY IN DECISION-MAKING?

It is important to mention that not all countries use cost-effectiveness analysis together with all the concepts introduced above (QALY, costs, ICER, cost-effectiveness threshold). But **the analysis is increasingly used by countries to make better use of limited health resources**.

For using QALY:

PROs:

- Albeit imperfect, it is a useful tool to compare the value brought by different medicines and treatments and thus assign limited health resources
- Captures both life expectancy and quality of life
- Can identify trade-offs in the healthcare sector

CONs:

- QALY measure might not be sensitive enough to capture changes in health for some diseases, e.g., mental health conditions
- QALY is only related to health, not total well-being
- Patients and citizens might value health in a different way than governments (can view well-being broadly as part of health)
- Some might disagree with putting a quality of life weight on a health state

REFERENCES

Read more about our findings in the publications below.

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