Patient Glossary

This glossary has been developed to provide patients and their carers with simple definitions of technical terms that are often used in ACE's health technology assessments.

A

Acute
A medical condition that comes on suddenly and lasts for a limited time.

Acute care
Healthcare given to a patient in hospital, usually for a brief but severe episode of illness, trauma, or during recovery from surgery.

Adverse effect
An undesired effect that is harmful or unwanted, caused by a drug, treatment, or intervention. See also *Side effect*.

Adverse event
Any unintended event associated with the use of a drug, treatment, or intervention regardless of whether it has caused the event.

Analysis
The process of looking for patterns in information to identify cause and effect or answer specific questions, such as whether a treatment works. There are two types of analysis.
Quantitative analysis looks for patterns in the form of numbers.
Qualitative analysis looks for patterns of meaning, feeling or beliefs.

Appraisal
A formal assessment of the quality of research evidence and its relevance to the topic under evaluation.

B

Best available evidence
The strongest, best-quality research evidence available on the topic being investigated.

Biological medicine
Biological medicines, also known as *biologics*, are made from living sources (such as humans, animals, and bacteria). They are used to treat cancer, diabetes, auto-immune diseases, and other conditions.

Biosimilar or biosimilar product
A biosimilar is a biological medicine that is very similar to the first biological medicine approved for use (also known as a reference biologic) in terms of biological activity, safety, and efficacy. Biosimilars become available once the patent on the reference biologic expires. They are used to treat the same conditions and are taken in the same way as the reference biologics.

Budget impact analysis
A budget impact analysis (BIA) is used to assess how much it will cost the government to fund a health technology for a particular group of patients over a specific period of time. Unlike cost-effectiveness analyses which assess the value for money of a health technology, BIA assesses whether a health technology is affordable. ACE conducts BIA to inform funding recommendations made by MOH advisory committees.

C

Cancer Drug List (CDL)
A list of cancer treatments that are eligible for claims under MediShield Life and MediSave.

Carer
An informal caregiver (non-healthcare professional) who looks after family members, partners, or friends in need of help because they are ill, frail or have a disability.

Chronic
A condition that persists for a long time or constantly reoccurs.

Clinical expert
Someone with specialised medical education or substantial experience in treating a condition(s) who provides ACE with advice on current local clinical standards, treatment practices and guidelines.

Clinical importance or significance
A benefit from treatment that is important to patients and healthcare professionals. Examples include prolonging life expectancy, a reduction in symptoms, less pain or improved breathing.

Clinical trial
A study to determine whether a treatment is safe and effective. It is conducted in a group of patients, usually after laboratory testing and studies in healthy volunteers have been completed.

Comorbidity
Another disease or condition that a person has in addition to the disease or condition being treated or studied.

Company-led submission
An evidence submission supplied by a company about their drug or other health technology that is used to inform funding deliberations by MOH advisory committees. The submission includes evidence about how well the treatment works and its value for money.

Comparator
A comparator is an alternative intervention used to treat a health condition. The typical comparator used for a health technology assessment (HTA) is standard care, which is the health technology currently used in Singapore to treat the health condition.

Conflict of interest
An interest that might conflict, or be perceived to conflict, with a person's duties and responsibilities while contributing to ACE's work. Clinical experts, patient experts, and committee members are required to declare any potential interests so that the information they provide to ACE can be assessed in a transparent manner.

Consumer
A person who uses a healthcare resource. All patients are consumers, but not all consumers are patients.

Contraindication
Anything (including a symptom or medical condition) that is a reason for a person to not receive a particular treatment or procedure because it may be harmful. For example, having a bleeding disorder is a contraindication for taking aspirin because aspirin may cause excess bleeding.

Co-payment
The amount that a patient pays for a medicine after subsidies have been applied.

Cost-effectiveness
How well a technology works in relation to how much it costs. Also known as *value for money*.

Cost-minimisation analysis (CMA)
One of the tools used to carry out an economic evaluation. Cost-minimisation analysis compares the costs of different interventions that provide the same benefits. If they are equally effective, only the costs are compared, and the cheapest intervention will provide the best value for money.

Cost saving
An amount of money that is saved or not spent.

Cost-utility analysis (CUA)
One of the tools used to carry out an economic evaluation. The benefits of an intervention are assessed in terms of quality and duration of life and are expressed as quality-adjusted life years (QALYs).

D

Data
Information collected through research, including written information, numbers, sounds and pictures.

Diagnosis
The process of identifying a disease or condition using tests, or by studying the symptoms.

Digital health
The use of information and communication technologies in medicine and other health professions to manage health conditions and health risks, and to promote wellness. It includes wearable devices, mobile health, telehealth, electronic health records, electronic prescriptions, and access to trusted data.

Drug
A product or preparation that is used to treat, prevent, or cure a medical condition. This term is often interchangeable with *medicine, medication,* or *pharmaceutical*.

E

Economic evaluation
An economic evaluation is used to assess the cost effectiveness of health technologies. This is done by comparing the costs and benefits of a new technology with the existing standard of care to determine if it is worth funding. Economic evaluations are used to inform and support funding decisions; they are not supposed to replace the clinical judgement of healthcare professionals.

There are several types of economic evaluation (see *cost-minimisation analysis* and *cost-utility analysis*). They use similar methods to define and evaluate costs but differ in the way they estimate the benefits of the intervention.

Economic modelling
Health economic modelling is a tool used to compare the costs and benefits of new and existing health technologies. It is a key component of the health technology assessment (HTA) process and supports decision-makers allocate limited healthcare resources to achieve the best possible outcomes for patients.

Effectiveness
How well a test, treatment, or procedure works in real-world conditions.

Efficacy
The benefit of a test, treatment or procedure achieved under controlled conditions, such as in a clinical trial.

Emerging health technology
A drug, device or procedure that is not commonly used yet. An example is a drug that is still being tested in clinical trials and does not have regulatory approval for use yet.

Epidemiology
The study of the diseases that exist in a population, and the risk factors that help or prevent their spread.

Evaluation report
A review of clinical and economic evidence about how well health technologies work and how much value for money they provide. ACE's evaluation reports inform funding recommendations made by MOH advisory committees. They are written by the ACE technical team with inputs from local clinical and patient experts, and health technology companies.

Evidence-based medicine
The use of scientific and medical research evidence to guide decisions in healthcare. The evidence is used by doctors and other healthcare professionals to inform decisions on diagnosis, management, and treatment of patients under their care.

Expert group
A group of people (such as doctors or patients) who are experts about a particular medical condition and provide advice to ensure that ACE's evaluations are accurate, reflect local clinical practice, and are relevant to patients.

F

Focus group
A small group of people brought together to talk about a specific topic. It is a good way to find out how people feel or think about an issue, or to come up with possible solutions to problems.

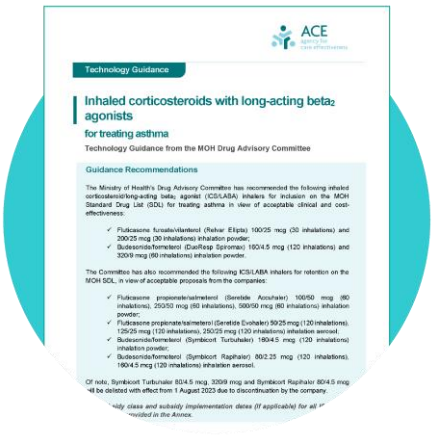
G

Gene therapy
Gene therapy is used to correct genetic problems to treat or cure a disease or condition. When a gene mutation (a permanent change in the DNA sequence) causes a protein to be missing or faulty, gene therapy may be able to restore the normal function of that protein.

Generic drug
A drug created to be the same as a brand-name drug in dosage form, safety, strength, route of administration, quality, performance characteristics, and intended use. Generic drugs become available once the patent of the brand-name drug expires.

Gold standard
A method, procedure or measurement that is widely accepted as being the best available to test for or treat a disease. Also known as *reference standard*.

Grandfathering
Continuing to provide funding for a patient who was already receiving a subsidised health technology before recommendations were made for it to no longer be funded. Patients are usually grandfathered until they have completed their course of treatment.


ACE

Technology Guidance

Inhaled corticosteroids with long-acting beta$_2$ agonists for treating asthma

Technology Guidance from the MOH Drug Advisory Committee

Guidance Recommendations

The Ministry of Health's Drug Advisory Committee has recommended the following inhaled corticosteroid/long-acting beta$_2$ agonist (ICS/LABA) inhalers for inclusion on the MOH Standard Drug List (SDL) for treating asthma in view of acceptable clinical and cost-effectiveness:

- ✓ Fluticasone furoate/vilanterol (Relvar Ellipta) 100/25 mcg (30 inhalations) and 200/25 mcg (30 inhalations) inhalation powder;
- ✓ Budesonide/formoterol (DuoResp Spiromax) 160/4.5 mcg (120 inhalations) and 320/9 mcg (60 inhalations) inhalation powder.

The Committee has also recommended the following ICS/LABA inhalers for retention on the MOH SDL, in view of acceptable proposals from the companies:

- ✓ Fluticasone propionate/salmeterol (Seretide Accuhaler) 100/50 mcg (60 inhalations), 250/50 mcg (60 inhalations), 500/50 mcg (60 inhalations) inhalation powder;
- ✓ Fluticasone propionate/salmeterol (Seretide Evohaler) 50/25 mcg (120 inhalations), 125/25 mcg (120 inhalations), 250/25 mcg (120 inhalations) inhalation aerosol;
- ✓ Budesonide/formoterol (Symbicort Turbuhaler) 160/4.5 mcg (120 inhalations) inhalation powder;
- ✓ Budesonide/formoterol (Symbicort Rapihaler) 80/2.25 mcg (120 inhalations), 160/4.5 mcg (120 inhalations) inhalation aerosol.

Of note, Symbicort Turbuhaler 80/4.5 mcg, 320/9 mcg and Symbicort Rapihaler 80/4.5 mcg will be delisted with effect from 1 August 2023 due to discontinuation by the company.

...dy class and subsidy implementation dates (if applicable) for all ... provided in the Annex.

Guidance

A document which outlines funding recommendations for a health technology made by MOH's advisory committees. The document also includes a summary of the rationale for the funding recommendation, and the key clinical and economic evidence which informed the committee's deliberations.

H

Health-related quality of life

A measure of the effects of a condition or disease to see how it affects a person's day-to-day life.

Health Sciences Authority (HSA)

The national regulatory body which assesses the clinical efficacy and safety of health technologies before they are granted approval for use in Singapore.

Health technology

Any form of intervention to improve health, such as drugs, devices, medical equipment, and procedures relating to healthcare and its services, including prevention, diagnosis, and treatment of a condition.

Health technology assessment (HTA)

A scientific research methodology to inform policy and clinical decision-making on the value of new health technologies (such as drugs, devices, and medical services) compared to existing standards of care. It involves a review of clinical and economic information to determine how best to allocate limited healthcare resources to new technologies.

Horizon scanning

A process to track different information sources (such as clinical trial registries, regulatory approvals, and market research reports) to identify health technologies which could be potential topics for HTA in the future. While horizon scanning is most often used to identify new technologies that are not available in Singapore yet, it can also help determine which current technologies may be superseded by newer ones in clinical practice.

I

Incidence

The number of new cases of a disease or condition among a certain group of people during a specific period of time.

Incremental cost-effectiveness ratio (ICER)
The value of new technologies is compared to existing standards of care using the incremental cost-effectiveness ratio (ICER). It is defined by the difference in cost between two possible interventions, divided by the difference in their effect.

Indication
A medical condition or disease that is the reason for starting clinical management.

Informed choice
A choice made by a person who understands the information available about a test or treatment, as well as its risks and benefits.

Intervention
A treatment, surgical procedure, diagnostic test, or psychological therapy.

Intramuscular injection
An injection used to deliver a medication deep into the muscles. This allows the bloodstream to absorb the medication quickly.

Intravenous (IV)
A way of giving a drug or other substance through a needle or tube inserted into a vein. Also known as IV.

L

Literature review
A summary of published information (from books, journal articles etc.) on a particular topic.

M

Means testing
A method used to calculate the subsidies that a patient will receive for healthcare based on their household income and other factors, to ensure that lower-income households receive more than higher-income households.

Medical device
All products, except medicines, used in healthcare to diagnose, prevent, monitor, or treat illness or disability. For example, a device might be a pacemaker, knee replacement, X-ray machine or blood pressure monitor.

Medical implant
Medical implants are devices or tissues that are placed inside or on the surface of the body. Many implants are prosthetics, intended to replace missing body parts. Other implants deliver medication, monitor body functions, or provide support to organs and tissues. Some implants are made from skin, bone, or other body tissues. Others are made from metal, plastic, ceramic or other materials. Implants can be placed permanently, or they can be removed once they are no longer needed.

Medical service
A service that provides healthcare or treatment to a patient. People use medical services to diagnose or treat disease or injury; to improve or maintain their health; or even to obtain information about their health status and prognosis. Also known as *health service*.

Medical social worker (MSW)
Medical social workers (MSWs) assist patients transition from the hospital back into the community. They can also provide counselling for patients and caregivers to help them overcome difficulties relating to their condition and treatment; and discuss financial assistance options with eligible patients to help cover their treatment costs and other practical needs arising from their condition.

Medical technology
Medical technologies include all equipment, tools, and devices which are used to diagnose and treat a patient. They can vary from a simple bandage, dental floss, thermometer, catheter or wheelchair to complex MRI scan machines, ultrasound devices and surgical robots.

Medical Technology Subsidy List (MTSL)
A list of medical implants that are subsidised in public healthcare institutions when they are used in line with specific clinical criteria.

Medication Assistance Fund (MAF)
The Medication Assistance Fund (MAF) helps people pay for moderate- to high-cost drugs prescribed in public healthcare institutions that are considered clinically necessary. Drugs listed on the MAF are only subsidised for specific conditions and patients must meet clinical criteria to be eligible for subsidy. Patients receive 40-75% subsidy for drugs listed on the MAF based on means testing.

MediFund
MediFund provides a safety net for patients who face financial difficulties with their remaining bills after receiving government subsidies and drawing on other means of payment including MediShield Life, MediSave, and personal savings.

MediSave
MediSave is a national medical savings scheme that helps people set aside part of their income so that they can pay for hospitalisation, day surgery and certain outpatient expenses, when required. MediSave can be used for someone's own healthcare needs, or to help cover healthcare costs for their dependent family members.

MediShield Life
MediShield Life is a national health insurance plan which helps to pay for large hospital bills, medical implants, and certain expensive outpatient treatments, such as dialysis and cancer drugs. All Singapore citizens and permanent residents are covered under MediShield Life and are required to pay annual premiums.

MOH advisory committee
A committee that makes recommendations to the Ministry of Health (MOH) on whether health technologies (such as drugs, vaccines, and medical devices) should be funded in Singapore. There are two main advisory committees. The MOH Drug Advisory Committee (DAC) makes recommendations on drugs, gene therapies, and vaccines, and the MOH Medical Technology Advisory Committee (MTAC) makes recommendations on devices, diagnostics, and medical services.

O

Opportunity cost
The opportunity cost of investing in an intervention is the value of the benefits generated by other healthcare programmes that are displaced by its introduction. This may be best measured by the health benefits that could have been achieved had the money been spent on the next best alternative healthcare intervention.

Organisational feasibility
An assessment of the potential impact on healthcare institutions (e.g., hospitals) if a health technology is used in clinical practice. This includes determining if existing systems or protocols need to be amended, or additional staff training is required to support the adoption of the health technology.

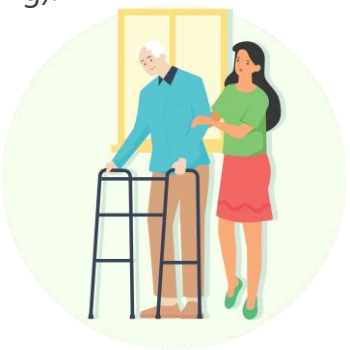
Outcome
An effect produced by, or because of, an intervention (such as a test or treatments). It can be a clinical sign (such as blood pressure level), a disease or condition (such as stroke), a complication or side effect, or another measure of health (such as quality of life). Outcomes may be immediate, short-term, or long-term. Ideally, studies should consider outcomes that are important and meaningful to patients.

Overall survival (OS)
The time from when a patient is randomised to receive a specific intervention in a clinical trial until they die.

P

Palliative care
Care given to maintain or improve the quality of life for a patient who has a progressive disease with little or no chance of cure.

Patient assistance programme (PAP)
A way for pharmaceutical companies to make high-cost drugs more affordable for patients by providing them at a reduced price or for free in certain public hospitals if patients meet specific eligibility criteria (usually based on means testing).



Patient-centred healthcare
Care that is respectful of, and responsive to, individual patient preferences, needs, and values. Patient centeredness is created by engaging, informing, and actively listening to patients at every point in their care journey.

Patient engagement
Active, meaningful, authentic, and collaborative interaction between patients and other stakeholders. At ACE, we recognise the unique experiences, values, and expertise that patients can provide. Our processes enable patients to suggest topics for ACE to evaluate, provide input into ACE's technical evaluations to inform funding decisions, and co-develop educational resources to encourage shared decision-making between patients and their doctors about their healthcare needs.

Patient experience
Information about a patient's personal knowledge living with a disease or condition. It includes perspectives, needs and priorities related to (but not limited to) the symptoms of their condition and its natural history; the impact of the condition on their daily activities and quality of life; their experience with treatments; which health outcomes are most important to them; and their preferences for new treatments.

Patient expert
Someone who shares their lived experience, views, and perspectives about a condition and/or health technology to inform ACE's work.

Phase I, II, III or IV studies
Different phases of clinical trials are run to develop a new treatment. Phase I involves using healthy human volunteers to check the safety of the treatment. In phases II-IV, patients with the condition that the researchers are interested in are given the treatment and the optimal dose is determined. Researchers study these patients to see whether the treatment works, how long the effects last and whether there are any adverse effects.

PICO (population, intervention, comparator, outcome)
A structured approach for developing evaluation questions that divides each question into four components: the population (the population being studied); the intervention (which treatment is being used); the comparator(s) (current alternative treatment options); and the outcomes (measures of how effective the intervention is).

Pivotal trial
A clinical trial or study that is intended to provide the ultimate evidence and data that regulatory authorities use to determine whether to approve a new health technology. Also known as a *registration trial*.

Placebo
A fake (dummy) or inactive treatment given to patients in the control group of a clinical trial. It is indistinguishable from the actual treatment (which is given to patients in the experimental group). The aim is to determine what effect the experimental treatment has had over and above any placebo effect caused because someone has had (or thinks they have had) treatment.

Population
A group of people with a common defined set of characteristics, such as the same medical condition or geographic area of residence. The population for a clinical trial is all the people the test or treatment is designed to help (e.g., adults with diabetes).

Precision medicine
Optimising healthcare (particularly diagnosis and treatment) for patients based on their molecular or genetic traits which are likely to influence their response to a healthcare intervention.

Prevalence
How common a disease or condition is within a population, either at a point in time or over a given period of time (it includes new and existing cases).

Primary care
Healthcare delivered outside hospitals. It includes a range of services provided by doctors, nurses, other healthcare professionals and allied health professionals such as dentists and pharmacists.

Primary outcome
The result(s) of most interest to researchers conducting a clinical trial.

Prognosis
The expected health outcome for a person in the future, taking into account their current condition or symptoms.

Progression-free survival (PFS)
The time from when a patient is randomised to receive a specific intervention in a clinical trial to the date when symptoms get worse (clinical relapse), or the patient dies.

Prophylaxis
Prophylaxis describes procedures and treatments that prevent something from happening. Vaccines and birth control are examples of prophylaxis.

Q

Qualitative research
Qualitative research explores people's beliefs, experiences, attitudes, behaviour, and interactions. It asks questions about how and why. For example, why people want to stop smoking, rather than asking how many people have tried to stop. It generates non-numerical data, such as a person's description of their pain rather than a measure of pain. Qualitative research techniques (such as focus groups and written surveys) may be used to find out the views and experiences of clinicians and patients to help inform ACE's technical evaluations.

Quality-adjusted life year (QALY)
A measure of the state of health of a person or group in which the benefits, in terms of length of life, are adjusted to reflect the quality of life. One quality-adjusted life year (QALY) is equal to 1 year of life in perfect health. QALYs are calculated by estimating the years of life remaining for a patient after they have had an intervention and weighting each year with a quality-of-life score (on a 0 to 1 scale, where 1 represents perfect health).

Quantitative research
Research that generates numerical data or data that can be converted into numbers.

R

Randomised controlled trial (RCT)
A study where similar people are randomly assigned to two (or more) groups to test a specific drug, treatment, or other intervention. One group (the experimental group) has the intervention being tested, the other group (the comparison or control group) has an alternative intervention, a dummy intervention (placebo) or no intervention at all. The groups are followed over time to see how effective the experimental intervention was. Outcomes are measured at specific times and any difference in response between the groups is assessed.

Real world data
Data relating to a patient health status, or the delivery of health care routinely collected from sources such as electronic medical records, medical claims, insurance data, disease registries or patient-generated data.

Real world evidence
Clinical evidence about the use and potential benefits and risks of a health technology derived by analysing real world data. Real world evidence compliments data from clinical trials by generalising the trial findings to the local population.

Reference case
The Reference Case is the set of preferred methods that ACE follows when conducting an economic evaluation. The purpose of the Reference Case is to ensure that all of ACE's evaluations are conducted using consistent methods.

Risk factor
Any aspect of a person's lifestyle, environment or pre-existing health condition that may increase their risk of developing a specific disease or condition.

S

Safety
A measure of the probability of an adverse outcome occurring while using a health technology for a particular condition.

Screening
Detection of a disease, abnormality, or associated risk factor in people that don't have any symptoms. Examples include using Pap smears to screen for cervical cancer, or mammography to detect abnormalities in breast tissue.

Sensitivity analysis
A way to explore uncertainty in the results of comparative studies and economic evaluations. There may be uncertainty because data are missing, estimates are imprecise or there is controversy about the way the results have been obtained. Sensitivity analysis can also be used to see how applicable results are to other settings. The analysis is repeated using different assumptions to examine their effect on the results.

Side effect
An effect of a drug (or intervention) that is additional to the main intended effect. It could be good, bad, or neutral. For example, a side effect of an antidepressant might be drowsiness. That could be a beneficial effect if a person with depression has problems sleeping, but not if they are trying to drive. See also *Adverse effect*.

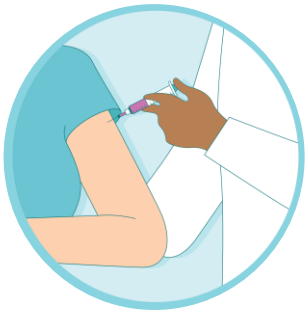
Singapore Medical Device Register (SMDR)
Most medical devices (except for low risk "Class A" medical devices), whether manufactured locally or imported, must be registered with the Health Sciences Authority (HSA), and included on the Singapore Medical Device Register before they can be supplied in Singapore.

Social value judgements
MOH advisory committees make funding recommendations for different health technologies based on the best available evidence. Sometimes the available evidence is not of good quality or can be incomplete, so the committees have to make value judgements. Social value judgements take account of patients' and the public's expectations, preferences, culture, and ethical principles.

Stakeholder
An individual or organisation with an interest in a topic that ACE is evaluating for funding.

Standard (routine) care
A currently accepted and widely used treatment for a disease or condition.

Standard Drug List (SDL)
The Standard Drug List (SDL) contains low- to moderate-cost drugs that are essential for the management of common medical conditions. Drugs on the SDL are subsidised by 50% for all conditions that they are approved to treat. Patients from lower to middle income households may receive a higher subsidy of up to 75%.



Subcutaneous injection
An injection using a needle that delivers a treatment into the tissue layer between the skin and the muscle.

Subgroup analysis
A way to find out if a treatment is more clinically effective or cost effective in one group of people (for example, who are a particular age or have certain symptoms) than another.

Subsidised Vaccine List (SVL)
A list of vaccines recommended in the National Childhood Immunisation Schedule (NCIS) and the National Adult Immunisation Schedule (NAIS) that are subsidised by the government if they are administered in public hospitals, polyclinics, or CHAS GP clinics.

Surrogate outcome
Outcomes that are measured in the short-term that predict longer-term clinical outcomes or prognosis. For example, lowering blood pressure reduces the likelihood of death from stroke.

Systematic review
A review that summarises evidence found on a specific research topic using systematic methods to identify, select and appraise the quality of relevant studies, and to extract, analyse, collate, and report their findings.

U

Unmet need
A condition that is not effectively managed by currently available therapy.

V

Vaccine
A medicine that trains the body's immune system so that it can fight a disease it has not come into contact with before. Vaccines are designed to prevent disease, rather than treat a disease once you have caught it.

Validity
Whether a test or study actually measures what it aims to measure. **Internal validity** shows whether a study or test is appropriate for the question (e.g. whether a study of exercise among gym members measures the amount of exercise people do at the gym, not simply whether people join the gym). **External validity** considers how much the results of a study hold true in non-study situations such as in everyday clinical practice. It may also be referred to as the *generalisability* of study results to non-study populations.

For example, the external validity of a study that took place in Spain may be questioned if the results were applied to people in Singapore.

Value-based pricing (VBP)
A process where ACE negotiates prices with companies to ensure that the prices of health technologies recommended for funding reflect their value.

The Agency for Care Effectiveness (ACE) was established by the Ministry of Health (Singapore) to drive better decision-making in healthcare through health technology assessment (HTA), clinical guidance and education. It publishes guidance on diagnosing, treating, and preventing different medical conditions based on the latest research information available worldwide.

 First published: 17 May 2023.

To find out more about ACE, scan the QR code or visit www.ace-hta.gov.sg.
You can also follow us on social media at: