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Department of Health and Ageing

Glossary

(Version 2.0)

to accompany the
Guidelines for preparing submissions
to the Pharmaceutical Benefits Advisory Committee

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Pharmaceutical Benefits Advisory Committee

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May 1997	1.0	Glossary released
April 2010	2.0	Extensive update to reflect major revision resulting in version 4 of the *Guidelines for preparing submissions to the Pharmaceutical Benefits Advisory Committee.*

Contents

Introduction: Uses and limitations of the Glossary

This glossary should be read in conjunction with the *Guidelines for preparing submissions to the Pharmaceutical Benefits Advisory Committee* and will be incorporated into future editions of these *Guidelines*. It is intended to help those who prepare submissions to PBAC to understand the terminology as it is used by PBAC and its advisors. Many terms in the glossary will not be found in the current edition of the *PBAC Guidelines*, however they have been included to make the glossary a more substantial resource for users of the *PBAC Guidelines*.

Terms are arranged in alphabetical order with cross-referencing to assist readers find related terms. *Italics* are used to identify a term in a definition which is itself defined elsewhere in the glossary.

The starting point for each definition was a review of the standard texts acknowledged in the references. For some terms, a preferred definition has been chosen for its inclusion in the glossary when several definitions could apply (for example, trial, economic evaluation). This is to promote consistency in the use of such terms. For other terms, the standard definition has been customised to reflect its application in the PBS listing process (for example, cost-effective, cost-minimisation analysis). Considerable effort has been expended to ensure that the definitions in the glossary are consistent with their use in the current *PBAC Guidelines*. **Readers of this glossary who are not involved in the PBS listing process should be cautioned that such definitions may not necessarily apply in other contexts.**

The glossary has benefited during its preparation by input of the officers of the Pharmaceutical Evaluation Section, members of the Economics Sub-Committee and consultation with Medicines Australia and its member companies. As is usual with any document prepared with such broad input, it is not possible to achieve complete agreement by all contributors on every detail; nevertheless the updated document should continue to help ensure that all involved in preparing, evaluating and using submissions to PBAC are using a common language.

Glossary

Absolute risk (compare with relative risk)
The observed or calculated *risk* of an event in a defined population over a specified time period.

Absolute risk difference
Over a specified time period, the difference of the *risk* of an *outcome* in the exposed group (eg those provided with *therapy* involving the *proposed drug*) and the *risk* of the *outcome* in the *control group*.

Abstract
A summary of a *study* report, which may be published alone or as an introduction to a full scientific paper.

Accuracy (see also validity)
The extent to which a *measurement*, or an *estimate* based on *measurements*, represents the true *value* of the *variable* being measured.

Acquisition cost
The purchase cost of a product or service to an institution, agency or individual.

ADEC
Australian Drug Evaluation Committee

ADEC resolution
The decision made by the *ADEC* regarding whether or not the *proposed drug* is recommended for approval for sale in Australia.

Admitted patient
A patient who receives hospital services and undergoes a hospital's formal admission process and is thus accepted by a hospital for inpatient care.

Adverse outcome
An adverse event measured in a *trial*/*study* or an adverse event for which no assessment has been made of whether it was caused by a given *therapy* (eg involving the *proposed drug*).

Adverse reaction
An adverse event reported in the approved *product information* of a drug; or an adverse event for which some assessment has been made of whether it was caused by a given *therapy* (eg involving the *proposed drug*).

Allocative efficiency
An allocation of the mix of *resources* for maximal *benefit*, ie such that no change in spending priorities could improve the overall welfare.

Alpha (α)
A symbol used for *type I error* in the context of randomised *trials*.

Analytical plan, focused
A plan for the analysis of a *pre-modelling study* that is focused on achieving its objective and focused in its presentation, including by specifying details of *data* sources, methods, and analyses.

Anatomical Therapeutic Chemical classification
This international classification system categorises all medicines into one of 14 therapeutic groups, each of which is divided into therapeutic uses and further subdivided into chemical *subgroups*.

Applicability/Applied
An assessment of the extent to which *participants* and *circumstances of use* in the *trial* are similar to the proposed population for *therapy* (including the *baseline risk* of *participants* and their *circumstances of use*) and thus the extent to which the results of the *trial* can be applied to the context of the requested *restriction*.

ARTG
Australian Register of Therapeutic Goods

Association (see also causality)
A statistical dependence between two or more events, characteristics or *variables*. An association exists when the *value* of one predicts the *value* of the other(s) more often than could occur by *chance*, but this does not necessarily imply a causal relationship.

ATC classification
Anatomical Therapeutic Chemical classification

Attributable risk or attributable fraction
With a specified *outcome*, exposure *factor* (eg *therapy* involving the *proposed drug*), time period and population, the *rate* of an *outcome* that can be attributed to the *factor* in the population (ie net of background *risk*). The population should be specified as either the exposed or total population.

AU
Australia(n)

Australian Government Department of Health and Ageing
Funds and manages the *PBS*.

Australian Government Department of Veterans Affairs
Funds and manages the *RPBS*.

Base case
The results of an *economic evaluation* using the projected most likely *values* against which the results of *sensitivity analyses* are compared.

Base case analysis
The results of the *economic evaluation* estimating how much it would cost to achieve additional *health outcomes* with the *proposed drug* compared with the *main comparator*, presented as an *incremental cost-effectiveness ratio*, and incorporating the costs associated with altered uses of drugs, medical and other related *health care resources* and all *outcomes* valued in terms of overall quality and length of life.

Baseline
A term used to describe the initial set of *measurements* taken at the beginning of a *study* (after a run-in period, when applicable).

Baseline risk
At the time when a *participant* is enrolled in a *study* or when a patient starts a *therapy*, the *risk* of future events of interest in the absence of the *therapy*.

'Before and after' study (see Appendix 10)
A *quasi-experimental study* in which *participants* are observed before and after a *therapy* (eg involving the *proposed drug*) is introduced.

Benchmark (see frame of reference)

Benefit
An advantage or improvement caused by a *therapy* or the desired *outcome* of using a *therapy*. Also, a drug listed in the Schedule of Pharmaceutical Benefits.

Beta (β)
A symbol used for *type II error* in the context of randomised *trials*.

Bias
Systematic variation; the deviation of results or inferences from the truth, or processes leading to such deviation (whether intended or not); an alternative explanation for an apparent *treatment effect*.

Blind/Blinding
The procedure or process of keeping *participants* and/or those responsible for the care of *participants* and/or observers responsible for measuring the *trial outcomes* ignorant of the intervention group to which the *participants* belong.

Budgetary analysis (see financial analysis)

Budget impact analysis (see financial analysis)

Cardinal data
Ordinal data in which the difference between two equi-distant *estimates* on the ranked scale has the same *value* irrespective of where the *estimates* lie on the scale (eg 0.9-0.8 = 0.2-0.1).

Case-control study (see Appendix 10)
An *observational study* in which the past history of exposure to a suspected *risk factor* (eg *therapy* involving the *proposed drug*) is compared between cases (who

have the *outcome* or disease) and controls (who resemble the cases but do not have the *outcome* or disease).

Case-series with historical controls (see Appendix 10)
A *quasi-experimental study* in which the *outcomes* measured in a group of *participants* with a specified *indication* who are managed with a new *therapy* (eg involving the *proposed drug*) are compared with *outcomes* measured in a similar group of *participants* (usually seen previously in the same setting) who are managed with previous *therapy* (eg involving the *main comparator*).

Catch-up vaccination program
Provides coverage of individuals who could benefit from vaccination at the introduction of a new program, but who are older than the age range specified for efficient delivery of the ongoing *primary vaccination program*.

Categorical data
Data in which the *variables* can only have discrete *values*.

Causality (see also association)
The relating of *factors* to the effects they produce. Hill (a *clinical* epidemiologist) proposed eight criteria (not all essential) of a causal *association* between a *factor* and an *outcome* (see reference 23, page 26).

CBA
cost-benefit analysis

CEA
cost-effectiveness analysis

Chance
Random variation; an explanation of the distribution of *variables*; an alternative explanation for an apparent *treatment effect*.

Charge
The market *price* associated with a product or service; does not necessarily reflect the *economic* or *opportunity cost*.

Chi-square test
A statistical test based on comparison of a test *statistic* to a Chi-square distribution. Often used for detecting whether two or more population distributions differ from one another.

CI
confidence interval

Circumstances of use
A description of the circumstances surrounding the use of a drug in a population which are expected to impact on the drug's overall *effectiveness*.

Class
A group of drugs with the same or similar pharmaceutical mechanism of action. These drugs may or may not have the same basic chemical structure. However, there may be differences between drugs within a class, for example, in side-effect profile.

Clinical
Pertaining to *health outcomes* rather than economic *outcomes*, for example, clinical performance or clinical comparison; of or by clinicians, for example, clinical department, clinical use.

Clinical heterogeneity (see heterogeneity)

Clinically important
The extent to which a *treatment effect* is considered worth having. (The greater the *treatment effec*t, the greater the clinical importance).

Clinical management algorithm
A description of the *circumstances of use* of a *therapy* in the context of the *clinical* condition being managed over time.

CMA
cost-minimisation analysis

Cochran *Q* statistic
A measure of *statistical heterogeneity* in a *meta-analysis.* It is the sum of the squared deviations of each *trial*'s *estimate* from the overall meta-analytical *estimate*, weighting each *trial*'s contribution in the same manner as in the *meta-analysis*.

Cohort expected value analysis (see deterministic analysis)

Cohort study (see Appendix 10)
An *observational study* in which two or more sub-sets of defined populations are identified by the presence of a common *factor* or *factors* (eg non-randomly assigned to *therapy* involving the *proposed drug* or to *therapy* involving the *main comparator*(s)) and then followed in time to investigate the influence of the *factors* on the *probability* of occurrence of an *outcome* or *outcomes*.

Common reference
A drug or *therapy* to which a *proposed drug* and its *main comparator*(s) have been compared in separate comparative randomised *trials*.

Comorbidity
The coexistence of a disease, or more than one disease, in a person in addition to the disease being studied or treated.

Complex restriction
A *restriction* which has several elements which need to be linked in a logical way.

Composite outcome
A prespecified *outcome* of a *trial*, which is recorded as occurring for a *trial participant* when any one of several component *outcomes* of the composite is experienced.

Conditions of use
The conditions that apply when a drug product is listed on the *PBS* for use when prescribed and dispensed under *PBS* arrangements.

Confidence interval
The computed interval with a specified *probability* (by convention, 95%) that the true *value* of a *variable* such as *mean*, proportion, or *rate* is contained within the interval.

Confounding
The distortion of a measure of the effect of an exposure (eg to *therapy* involving the *proposed drug*) on the *risk* of an *outcome* under investigation brought about by the *association* of the exposure with other *factor*(s) that can influence the *outcome*.

Conjoint analysis (see discrete choice experiment)
Survey method of *data* collection and analysis based on the premises that any health state, good or service can be described by its characteristics (or attributes) and that the extent to which an individual *values* the health state, good or service depends on appropriate aggregation of the levels of these characteristics. Conjoint analysis tends to use ranking and rating methods.

Consequence (see outcome)

Conservative
Resistance to change. A behavioural response to *uncertainty* involving harm, costs and *benefits* where the expected *rate* of harm or costs is given a greater weight than the expected *rate* of *benefits*. In practice, this means that where alternative assumptions, *estimates* or *values* are available, the conservative assumption, *estimate* or *value* for a *PBAC* submission is the one which is less favourable to the *proposed drug*.

Contingent valuation
Using survey methods to present *respondents* with scenario-based questions involving descriptions of the health states, goods or services to be *valued* according to the *respondents'* maximum *willingness to pay*.

Continuation criteria
The specific intention of a *restriction* containing continuation criteria is to identify, from all individuals who were eligible to initiate use of the *proposed drug*, those individuals who would be eligible to continue *PBS*-subsidised access to the drug.

Continuous data
Data with a potentially infinite number of possible *values* along a continuum (eg age, height).

Control group
A group of *participants* who are observed but who do not receive *therapy* involving the *proposed drug*. They may receive alternative *therapy*, no *therapy* or placebo. They provide *data* on the streams of *outcomes* (*clinical* and economic) for comparison with the streams of *outcomes* observed for *participants* who take *therapy* involving the *proposed drug*.

Co-payment
A payment made by the user at the time of service as part of the total payment for that service and any associated product.

Correlation (see association)

Cost, economic or opportunity
The *value* of the best alternative use of a *resource* that is foregone as a result of its current use.

Cost, financial
The monetary *value* of providing a *resource* accounted for in the budget of the provider.

Cost analysis
A partial *economic evaluation* that only compares the costs in monetary units of *therapy* involving the *proposed drug* with *therapy* involving its *main comparator*(s).

Cost-benefit analysis (see Subsection D.1)
An *economic evaluation* that compares *therapy* involving the *proposed drug* with *therapy* involving its *main comparator*(s) in which both costs and *benefits* are measured in monetary terms to compute a net monetary gain/loss or *benefit* gain/loss.

Cost-consequences analysis
An *economic evaluation* that compares *therapy* involving the *proposed drug* with *therapy* involving its *main comparator*(s) as an array of all material costs and *outcomes* measured in their *natural units* rather than a single representative *outcome* as presented in a *cost-effectiveness analysis*.

Cost-effective (compare with value for money)
A *proposed drug* is considered cost-effective by *PBAC* if the Committee considers that, for a specified *main indication*, the *incremental benefits* of *therapy* involving the *proposed drug* over *therapy* involving its *main comparator*(s) justify its *incremental costs* and harms.

Cost-effectiveness acceptability curves
A graph that summarises the results of a *cost-effectiveness analysis* by plotting a *range* of possible cost-effectiveness thresholds on the horizontal axis against the *probability* that the *proposed drug* will be cost effective on the vertical axis.

Cost-effectiveness analysis (see Subsection D.1)
An *economic evaluation* that compares *therapy* involving the *proposed drug* with *therapy* involving its *main comparator*(s) having common *clinical outcome*(s) in which costs are measured in monetary terms and *outcomes* are measured in *natural units*.

Cost-efficacy analysis
A *cost-effectiveness analysis* using the most *internally valid data* available (ie from adequate randomised *trials*); if required, a preliminary step to inferring a more *externally valid modelled economic evaluation* incorporating *translations* and assumptions.

Cost-minimisation analysis (see Section D(i))
An *economic evaluation* that finds the least costly alternative *therapy* after the *proposed drug* has been demonstrated to be no worse than its *main comparator*(s) in terms of *effectiveness* and *toxicity*.

Cost-utility analysis (see Subsection D.1)
An *economic evaluation* that compares *therapy* involving the *proposed drug* with *therapy* involving its *main comparator*(s) in which costs are measured in monetary terms and *outcomes* are measured in terms of extension of life and the *utility value* of that extension (eg *QALY*s or *HYE*s).

Cox proportional hazards model
A statistical model in survival analysis asserting that the effect of the *study factors* on the hazard *rate* in the *study* population is multiplicative and does not change over time.

Cross-over (compare with parallel group)
A method of comparing two alternative *therapies* in which the *participants*, upon completion of the course of one *therapy*, are switched to the other *therapy*.

Cross-sectional study
A *study* in which *resource* provision and/or *health status* is measured in a defined population at the same time.

CUA
cost-utility analysis

CV
contingent valuation

Data
Measurements of *variables* of interest.

Decision analysis
A technique that formally identifies the options in a decision-making process, quantifies the probable *outcomes* (and costs) of each, determines the option that best meets the objectives of the decision-maker and assesses the *robustness* of this conclusion.

Decision tree
A graphical representation of the probable *outcomes* following the various decision options in a *decision analysis*.

DerSimonian Laird random effects model (see random effects model)

Deterministic analysis
In a decision analytical model, a *deterministic analysis* will always return the same result for a specified set of *inputs*.

Dichotomous data
Data that are classified into either one of two mutually exclusive *values*, for example, 'yes' and 'no' or 'cured' and 'not cured.'

Differential diagnosis
The process of considering the possible causes of the patient's complaint before making a diagnosis.

Direct costs
The *value* of all *health care resources* that are provided with an intervention or in dealing with *adverse outcomes* or other current and future consequences linked to the intervention. Typical *health care resources* are identified in the *Manual of Resource Items and their Associated Costs* and include drugs, medical services, hospital services, and diagnostic/investigational services.

Direct description of quality of life
The process of obtaining a description of the impact of a particular *health status*, or *health outcome* or *quality of life* from the individual who is experiencing it.

Direct elicitation of utilities
The process of obtaining *utilities* for a particular *health status*, a *health outcome* from *respondents* using a *standard gamble* or *time trade-off* technique.

Direct randomised trial
A *trial* in which *participants* are randomly allocated to groups which receive either *therapy* involving the *proposed drug* or *therapy* involving the *main comparator*.

Discounting
The process by which the streams of future costs and/or *benefits* (beyond 12 months) are converted to equivalent *present values*.

Discount rate
The *rate* used in a *discounting* formula to convert future costs and/or *benefits* into equivalent *present values*.

Discrete choice experiment (see conjoint analysis)
Survey method of *data* collection and analysis based on the premises that any health state, good or service can be described by its characteristics (or attributes) and that the extent to which an individual *values* the health state, good or service depends on

appropriate aggregation of the levels of these characteristics. *Discrete choice experiments* tend to use choice or trade-off decisions.

Dispensed price for maximum quantity
The price of a medicine including margins, mark-ups and pharmacist fees to be applied to a pack of each *PBS* listed drug for the purpose of an *economic evaluation*; it is the price published in the Schedule of Pharmaceutical Benefits as being the price applicable to a drug product when it is dispensed.

DoHA
Australian Government Department of Health and Ageing

Dominance
One *therapy* could be said to dominate over another if its overall *effectiveness* were greater and its overall costs were less.

Double-blind
A *trial* design in which both the *participants* and observers responsible for measuring the *trial outcomes* are kept ignorant of the group to which *participants* are assigned.

Double counting
Counting the same component *variable* more than once when constructing or disaggregating a composite *variable* (*variables* here include *studies*, *outcomes* or costs).

DPMQ
dispensed price for maximum quantity

Drop-out
Arises when a *participant* is lost to *follow-up* in a *study*.

DUSC
Drug Utilization Sub-Committee

DVA
Australian Government Department of Veterans Affairs

Dynamic model (see also static model)
Usually structured as a *decision analysis* model (eg a *Markov model*) in which the *force of infection* depends on the number of infectious individuals in the population at each time point, and this number would be expected to change following immunisation.

Economic analysis or economic appraisal
An umbrella term covering both *economic evaluation* and *financial analysis*.

Economic cost (see cost, economic or opportunity)

Economic evaluation
A comparative analysis of the costs and *outcomes* of *therapy* involving the *proposed drug* and *therapy* involving its *main comparator*(s). An umbrella term covering *CBA, CEA, CMA* and *CUA*. The analysis involves identification, *measurement* and *valuation* of the differences in costs and *outcomes* caused by substituting *therapy* involving the *proposed drug* for *therapy* involving its *main comparator*(s).

Effectiveness
The extent to which a *therapy* produces a *benefit* in a defined population in uncontrolled or routine circumstances.

Effect variation (see heterogeneity)

Efficacy
The extent to which a *therapy* produces a *benefit* in a defined population in controlled or ideal circumstances.

Efficiency (see also allocative efficiency and technical efficiency)
The extent to which the maximum possible *benefit* is achieved out of the available *resources*.

Epidemiology
The *study* of the distribution and determinants of health-related conditions or events in defined populations.

Equity
Recourse to the principles of fairness to inform decision making; for example, from a general policy viewpoint, the *PBS* promotes fairness in its subsidy arrangements by promoting affordable access to *cost-effective* drugs.

Equivalence
Assessed by whether there is sufficient *evidence* to conclude that the *proposed drug* is noninferior compared to its *main comparator*.

Error, random (see chance)

Error, systematic (see bias)

ESC
Economics Sub-Committee

Estimate
The *value* of a quantity which is known, believed or suspected of incorporating some amount of *error*.

Etiologic fraction (see attributable risk)

Evidence
An umbrella term covering *data* and *opinion*.

External validity (see also applicability)
A *trial* has *external validity* if it is free of *confounding* and can produce unbiased inferences regarding a specified target population beyond the *participants* in the *trial*.

Extrapolation/Extrapolated
An assessment of the extent to which the *outcomes* reported within the *trial* continue beyond the duration of *follow-up* of the *trial* and thus the extent to which the results of the *trial* can be extended beyond this duration.

Factor
An event, characteristic or other definable entity (eg *therapy* involving the *proposed drug*) that results in a change in *outcome*.

Final outcome
The ultimate *outcome* of a *therapy* or disease in terms of overall impact on both *quality of life* and life expectancy.

Financial analysis (see also cost, financial)
A procedure for comparing only the *financial costs* and cost offsets of competing options, rather than comparing their *clinical* and *economic costs* and *benefits*. Also called *budgetary analysis*.

Financial cost (see cost, financial)

Financial implications (see financial analysis)

Fixed combination product
A product comprising a fixed combination of active components in either a single dosage form or individual dosage forms in a composite packaging.

Fixed effect model (compare with random effects model)
The model used in *meta-analysis* based on the assumption that all *trials* are estimating the same *treatment effect* and that the difference in effect observed across *trials* is only due to *chance*.

Focused analytical plan (see analytical plan, focused)

Follow-up (see Subsection B.3)
The observation over a period of time of *study*/*trial participants* to measure changes in *outcomes* under investigation.

Force of infection
The *probability* per unit of time that a susceptible person acquires infection.

Forest plot
A graphical display of the results of a *meta-analysis* depicting the *point estimates* and *confidence intervals* for each *trial* with or without the statistically combined overall *point estimate* and its *confidence interval*.

Frame of reference
A basis for examining the consistencies of decision making in terms of maximising *value for money* by comparing the results of *incremental cost-effectiveness ratios* which report comparable *outcomes* in the denominator.

Friction method (see also human capital method)
A method of estimating the production change associated with illness to the economy by measuring only the production lost during the friction period in which organisations restore their initial production level, for example, the time taken to replace a sick worker.

Funnel plot
A graphical display of some measure of *study precision* plotted against effect size that might be used to investigate whether there is a link between *precision* and *treatment effect*.

Generalisability (see applicability)

'Grandfathering' provisions
The provision of *PBS*-subsidy to patients who were receiving *therapy* involving the *proposed drug* before its listing on the *PBS* and for which a *restriction* involving prior authorisation is required by the *PBS*.

Hazard ratio
A measure of effect produced by a *time-to-event* survival analysis. This represents the increased instantaneous *rate* with which one group is likely to experience the *outcome* of interest.

Head-to-head randomised trial (see direct randomised trial)

Health care resource
A *resource* provided as part of the medical management (including *therapy*) of a *medical condition*, disease or disorder, for example, drug, medical service, hospital service, diagnostic and investigational service, community-based service.

Health care resource cost
The monetary *value* of a *resource* provided to deliver health care services as part of the management of the *medical condition*, disease or disorder under *therapy*.

Health care system viewpoint
The viewpoint for an *economic evaluation* which considers material incremental changes in the *provision of health care resources* and all material incremental changes in *health outcomes*.

Health outcome
A change (or lack of change) in *health status* caused by a *therapy* or *factor* when compared with a previously documented *health status* using disease-specific measures, general *quality of life* measures or *utility* measures.

Health-related quality of life
The physical, social, and mental aspects that are relevant and important to the health aspects of an individual's overall wellbeing.

Health status (compare with quality of life)
A measure of the extent to which an individual is able to function physically, emotionally and socially.

Healthy-year equivalent (compare with quality-adjusted life-year)
The hypothetical number of years spent in perfect health that could be considered equivalent to the actual number of years spent in a defined imperfect state of health. It differs from a *quality-adjusted life-year* (*QALY*) because not only is it based on an individual's preference for a specific level of *health status,* but also on the individual's preference for the duration of their life.

Herd immunity
The resistance of a group to invasion and spread of an infectious agent, based on the resistance to infection of a high proportion of individual members of the group.

Heterogeneity
A non-specific term that requires further qualification.

In relation to assessing the comparability of a set of *trials, clinical* heterogeneity refers to the variation in, or diversity of, *participants*, interventions, and *measurements* of *outcomes* across a set of *trials,* or the variation in *internal validity* of those *trials*. That is, *clinical* heterogeneity refers to differences in methods across *trials,* implying that it might not be sensible to combine them in a *meta-analysis.*

Statistical heterogeneity (synonyms: statistical interaction, effect variation) also requires further qualification. It depends on what scale the effect is measured on, because statistical heterogeneity can occur for one scale of *measurement* (eg the *risk difference* on the absolute or additive scale), but not for others (eg the *relative risk* or *odds ratio* on the multiplicative scale).

Statistical heterogeneity on the absolute scale, that is for an additive measure of effect (eg the *risk difference*), is common; the *risk difference* has often been shown to vary by the *baseline* characteristics of patients. Statistical heterogeneity on the multiplicative scale, that is for a *relative* measure of effect (eg the *odds ratio, relative risk*) is less common.

Highly specialised drug
A *PBS*-listed medicine used to treat chronic conditions which, because of their *clinical* use or other specialised features, are restricted to supply through public and private hospitals having access to appropriate specialist facilities. Funding is provided under the *HSD* Program within the *section 100* provisions.

HSD
highly specialised drug

Human capital method (see also friction method)
A method of estimating the *production change* associated with illness based on the sum of the remaining lifetime earnings of each healthy individual of particular ages valued at labour market *rates* (eg average salaries).

HYE
healthy-year equivalent

Hypothetical cohort (see deterministic analysis)

ICER
incremental cost-effectiveness ratio

Immunogenicity outcome
A *surrogate outcome* which measures the impact of a *vaccine* on the immune system of the vaccinated individual.

Implicit price deflator
A *parameter* used to update a unit cost to account for inflation in prices since the unit cost was determined.

Important (see clinically important)

Incidence (compare with prevalence)
The number of new events (eg new cases of a disease) in a defined population within a specified period of time.

Incremental analysis
A measure of how much extra a proposed *therapy* costs to produce an extra unit of *outcome* compared to an available alternative *therapy* (or management without a *therapy*) for a specified *indication*. It is calculated by dividing the difference in the *net costs* for the two alternatives by the difference in their net *outcomes*.

Incremental benefit
The absolute difference between the *benefits* of alternative management strategies of the same *medical condition*, disease or disorder.

Incremental cost
The absolute difference between the costs of alternative management strategies of the same *medical condition*, disease or disorder.

Incremental cost-effectiveness ratio
A comparison of two alternative *therapies* calculated by dividing the *incremental costs* from substituting the *proposed drug* for its *main comparator* by the incremental *health outcomes* from this substitution.

Indication
The *medical condition*, disease or disorder which is the reason for commencing *therapy*.

Indirect comparison
An analysis which indirectly compares the *proposed drug* with its *main comparator* by comparing one set of *trials*, in which *participants* were randomised to receive the *proposed drug* or a *common reference*, with another set of *trials*, in which *participants* were randomised to receive the *main comparator* or the *common reference*.

Input (see also resource)
A *resource* provided as part of managing a *medical condition*, disease or disorder.

Instrument
A tool used to measure a *variable*, including any defined administrative procedures in its use and scoring instructions in its interpretation.

Intangible outcome
Any *outcome* due to *therapy* involving the *proposed drug* which is difficult to measure and *value* (eg as changes in the *provision of resources* or changes in *production*); may include concepts such as suffering and disability which may be implicitly valued by *PBAC* (only if presented as a demonstrated *outcome*) or explicitly valued in a *utility analysis* or in a *willingness-to-pay* analysis.

Intention-to-treat (see Subsection B.3)
A principle of analysis which includes *data* from all *participants* allocated to a specified *therapy* arm as representing that arm irrespective of whether they received or completed the prescribed regimen or whether they were followed for the full duration of the *study*/*trial*. This involves *following-up participants* to contribute *data* and/or predetermining procedures to deal with missing *data*.

Intermediate outcome (see also surrogate outcome)
A *variable* that occurs in a causal pathway from a *therapy* or *factor* to the *final outcome*.

Internal validity (see also external validity, treatment effect)
A *trial* has internal validity if, apart from possible sampling error, the measured difference in *outcomes* can be attributed only to the different *therapies* assigned.

Interval data (see cardinal data)

I^2 statistic
A *variable* used to measure the percentage of the variability in effect estimates across *studies* or *subgroups* that is due to *statistical heterogeneity* rather than *sampling error* (*chance*). A naïve categorisation of *values* for I^2 would not be appropriate for all circumstances, although adjectives of low, moderate, and high have been tentatively assigned to I^2 *values* of 25%, 50% and 75% respectively.

ITT
intention-to-treat

Joint analysis
A joint analysis measures the extent to which a new *therapy* shares rather than substitutes for existing *therapy*, such as the partial cost changes when the new *therapy* is likely to change current patterns of *resource* provision to an incomplete extent.

Kaplan-Meier curve
A graphical display of the results of a nonparametric method of compiling time to event tables. The method combines calculated probabilities of the event occurring with *estimates* to allow for censored observations, which are assumed to occur randomly. The resulting intervals are defined as ending each time an event (death, *withdrawal*) occurs and are therefore unequal.

League table (see frame of reference)

Leakage
Usage of a drug that extends beyond usage of the drug within its *PBS restriction*.

Life-year
An *outcome* measure computed by multiplying the number of affected individuals by the number of years each individual is expected to live.

Likert scale
An ordinal scale of responses to a question or statement ordered in a hierarchical sequence.

Lump (compare with pool)
An inappropriate statistical combination of *data* from several *trials*, for example, taking the simple average of the *means* or of the proportions.

Main comparator (see Subsection A.4)
The *therapy* that prescribers would most replace with the *proposed drug* in practice if the *PBS* subsidises the *proposed drug* as requested.

Main indication (see Subsection A.2)
The *indication* likely to account for the largest proportion of patients treated with the *proposed drug*.

Mapping
In relation to *utility analysis*, a general term to describe approaches to transform generic or disease-specific *quality of life* measures into *utility* weights.

Marginal analysis
An analytical technique that examines the extra costs and *outcomes* caused by producing and providing one extra unit of a *resource*.

Marginal benefit (utility)
The extra *benefit* (*utility*) caused by providing one extra unit of a *resource*.

Marginal cost
The extra cost of producing one extra unit of a *resource*.

Marginal value
The maximum amount that an individual is willing to pay for one extra unit of a *resource* or for the extra *outcome*(s) resulting from its provision.

Market share
The extent of use of a drug in relation to the overall use of all drugs for a market defined by one or more *indication*.

Markov model
An iterative *decision analysis* model that represents the changes in the proportions of individuals who are in different discrete health states based on probabilities of remaining in each state or transiting to another state at the end of each successive time period.

Mask/masking (see blind/blinding)

Matching
In relation to *utility analysis*, a general term to describe approaches to align *utility* weights from one set of *respondents* to a particular *health status* or *health outcome* of interest by showing that the *respondents* are experiencing a similar *health status* or *outcome.*

MAUI
multi-attribute utility instrument

MCID
minimal clinically important difference

Mean
A measure of central tendency. The arithmetic average which is computed by adding all the individual *values* in the group and dividing by the number of *values* in the group.

Measurement
The procedure of applying a standard scale to a *variable* or a set of *values*.

Median
A measure of central tendency. The exact midpoint of a distribution of *data* that is ordered from highest to the lowest *value*.

Medical condition
A state of being which may be suitable for *therapy*.

Medicare Australia
An agency within the Australian Government Department of Human Services which administers *PBS* authorisations and *PBS*/*RPBS* payments.

Meta-analysis (see Subsection B.6)
A statistical combination of results from independent randomised *trials* which can be *pooled*.

Meta-regression
A regression-based technique used in *meta-analysis* of multiple *trials* to explore the relationship between a particular *trial* characteristic and *trial* results.

Minimal clinically important difference
The smallest difference in a score that is considered worthwhile or *important* when considering overall *benefits* and harms to health.

Modelled economic evaluation (see also stepped economic evaluation)
An *economic evaluation* based on *inputs* and *outcomes* obtained from sources other than, or in addition to, one or more *direct randomised trials*.

Modelling
An analytical technique using simulated processes to explain the impact of one or more *factors* on a number of *outcomes*.

Monte Carlo simulation
Computer experiments of complex relationships that simulate and repeatedly evaluate sequences of events in a model using random numbers controlled by one or more specified distribution function.

Multi-attribute utility instrument
An instrument which has the following three elements:

- a descriptive system comprised of a generic health-related *quality-of-life* questionnaire containing a set of items or statements with multiple response categories;
- a scaling technique used to derive preference-based rankings in a sample of the health states covered by the descriptive system; and
- a scoring algorithm which is used to *extrapolate* from this sample to generate *cardinal* weights for all health states covered by the descriptive system.

Multiple comparisons
The simultaneous comparison of more than two sets of results from one *trial*. The statistical analysis should be adjusted to account for the increasing *chance* that a result will have a *P-value* less than 0.05.

Natural history
The course of a *medical condition* from onset (inception) to final resolution.

Natural units
The units by which a *health outcome* is measured and reported (eg *life-years* gained, cases not detected).

Negative predictive value
The *probability* that the condition of interest is false if the result is negative – for example, the *probability* that the disease is absent given a negative test result.

Net benefit
In a *cost-benefit analysis*, the total *benefit* (valued in monetary units) minus the total cost.

Net cost
In an *incremental analysis*, the monetary *value* of any increase in *resource provision* minus any cost offsets, for example, those resulting from an improvement in *outcome*.

NNT
number needed to treat

Nominal data
Data which have been classified into unordered qualitative categories.

Non-admitted patient
A patient who receives hospital services but does not undergo a hospital's formal admission process.

Nonhealth care resource
A *resource* required as result of the *medical condition*, disease or disorder under *therapy* but not provided as part of the medical management of the *medical condition*, disease or disorder, for example, home help, day care, meals on wheels.

Noninferiority (see also equivalence)
The *proposed drug* is no worse (primarily in terms of *effectiveness*) than its *main comparator*.

Noninferiority threshold (see minimal clinically important difference)

Null hypothesis
The hypothesis that a *study* is designed to assess. In a superiority assessment, the null hypothesis is that there is no difference between the compared alternatives. In a *noninferiority* assessment, the null hypothesis is that the difference between the compared alternatives is no worse than the *minimal clinically important difference*.

Number needed to treat
The number of patients with a specified *indication* who must be provided with the specified *therapy* in order to achieve the desired *outcome* or to prevent the *adverse outcome* in one patient in a specified time period. The reciprocal of the *absolute risk* reduction.

Observational study (see Appendix 10)
A nonrandomised *study* that observes the characteristics and *outcomes* over time of *participants* who do and do not take a particular *therapy*. An umbrella term for *cohort* and *case-control studies*.

Observer bias
The systematic difference between the true *value* and that actually observed due to observer *variation*.

Odds ratio (compare with relative risk)
The *ratio* of two odds. Usually the *ratio* of the odds in favour of exposure (eg to *therapy* involving the *proposed drug*) among the cases of the disease or *outcome*(s) of interest to the odds in favour of exposure among those without the disease or *outcome* of interest. In a 'rare' disease, the odds ratio is an approximation of the *relative risk.*

Opinion
The view of one or more individuals which is not based on direct *measurement*.

Opportunity cost (see cost, economic or opportunity)

Ordinal data
Data that are classified into ordered (ie one category is higher or lower than another) qualitative (ie the numerical distance between their possible *values* is undefined or unknown) mutually exclusive categories.

Outcome or output (see also patient-relevant outcome)
An effect produced by or a result of a *therapy* or other *factor*(s) (may include a subsequent change in the *provision of resources* following commencement of a *therapy*).

Parallel group (compare with cross-over)
An experimental design where each group in a comparative *trial* receives only one *therapy* and does not *cross-over* to the other *therapy*.

Parameter
In *epidemiology*, a measurable characteristic of a population. In economics, a constant in a model or formula (eg *health outcomes*, utilities, and *resource provision*).

Parameter uncertainty
Uncertainty about the true numerical *value* of a parameter in a *modelled economic evaluation.*

Participant
A person enrolled in a *study*.

Patient-relevant outcome (see Subsection B.5)
An umbrella term covering any *health outcome* that is perceptible to the patient (the more meaningful to the patient, the greater the patient relevance), any *resource* provided as part of on-going *therapy* of the patient's *medical condition*, disease or disorder, any working time changes or any *intangible outcome*. Common examples of patient-relevant outcomes include: primary *clinical outcomes*, *quality of life* or *utility* measures and economic *outcomes*.

PB11
Pharmaceutical Benefits Form 11: application form for listing a drug on the *PBS*.

PBAC
Pharmaceutical Benefits Advisory Committee

PBPA
Pharmaceutical Benefits Pricing Authority

PBS
Pharmaceutical Benefits Scheme

Perspective
The viewpoint from which an *economic analysis* is conducted (eg society, health care system, government, individual) which defines which costs and *outcomes* will be examined.

PES
Pharmaceutical Evaluation Section

Pharmacovigilance
Coordinated activities encompassing surveillance to identify and evaluate previously unconfirmed undesirable effects of drugs, and measures taken in response to reduce the risk of these effects.

Point estimate
An estimate of the *parameter* of interest.

Pool (compare with lump)
An appropriate statistical combination of *data* from several *trials* for example, using the *random effects model* for *dichotomous data*.

Positive predictive value
The *probability* that the condition of interest is true if the result is positive – for example, the *probability* that the disease is present given a positive test result.

Power
The ability of a randomised *trial* to detect a difference of a prespecified magnitude.

Precision
A measure of the variability or *random variation* in a set of *data*. The inverse of the *variance*.

Predictive value
The post-test *probability* that a condition is present based on the results of a test.

Preference
In economics, an umbrella term covering both *value* and *utility*.

Pre-modelling study
An analysis used to provide *inputs* for a stepped or *modelled economic evaluation*, including by *translating evidence* from the *clinical* evaluation.

Present value
The *value* of a future cost or *benefit* after adjusting for *time preferences* by *discounting*.

Prevalence (compare with incidence)
The number of events (eg cases of a disease) in a defined population at a specified point in time divided by the number of people in that population.

Price
The exchange *value* of a good or service, most commonly expressed as the amount of money an individual or organisation is prepared to pay to buy a unit of that good or service. The price of a drug on the *PBS* illustrates why the purchaser may need to be identified as the following could all apply: dispensed price; list price or price to chemist; price to wholesaler or ex-manufacturer's price. For an *economic evaluation* submitted to *PBAC* the dispensed price is generally used for the *proposed drug* and any other relevant *PBS* drugs.

Price advantage
The increase in *price* of a drug over its *main comparator*(s).

Primary analysis
The analysis of the *primary outcome* which is used in the prespecified *sample size* (or *power*) *calculation*.

Primary outcome
The *outcome* that is prespecified, before the *trial* is conducted and before anyone looks at the *data*, to be the main *outcome* that will be used to assess the comparative *clinical* performance of the *proposed drug* and the *control intervention.* It is the *outcome* which is used in the *primary analysis*.

Primary prevention
Activities aiming to reduce the instances of a disease occurring in a population.

Primary vaccination program
Provides coverage of individuals in the age range specified for most efficient delivery of the *vaccine.*

Prior approval authority required benefit
Pharmaceutical benefits listed in the *PBS* which are restricted and require prior authorisation from *Medicare Australia* or the *DVA*.

Probabilistic sensitivity analysis
A means of representing *parameter* and stochastic *uncertainty* in the results of an *economic evaluation*. In a decision analytic model, *probability distributions* are assigned to the uncertain *parameters* and are repeatedly evaluated (eg using *Monte Carlo simulation*).

Probability
An expression of the degree of certainty that an event will occur, on a scale from zero (certainty that the event will not occur) to one (certainty that the event will occur).

Probability distribution (or probability density function)
A numerical or mathematical representation of the *relative* likelihood of each possible *value* that a *parameter* may have.

Product information
Information approved by the *TGA* relating to the safe and effective use of a therapeutic good, including information regarding the usefulness and limitations of the good.

Production changes
The *value*, *estimated* in monetary units, of the potential working time gained, lost or impaired measured in time units (days, weeks, years etc), which is realised as changes in productive activity and/or changes in productive performance.

Proposed drug
The drug which is the subject of a submission to *PBAC*.

Prospective data
Data collected after the *study* was started.

Provision of resources
A preferred basis of *estimating* costs than the consumption of *resources*.

***P*-value** (see confidence interval, statistically significant)
The *probability* (obtained from a statistical test) that the *null hypothesis* (that there is no *association* between the *factor* and the *outcome*) is incorrectly rejected. The *P-value* obtained from a statistical test corresponds to the *probability* of claiming that there is an *association* when in fact there is none.

Q-TWiST
quality-adjusted time without symptoms and toxicity

QALY
quality-adjusted life-year

Quality-adjusted life-year (see also healthy-year equivalent)
The number of years of life weighted by a *utility value* of the *relative quality of life* experienced.

Quality-adjusted time without symptoms and toxicity
A method of estimating *quality-adjusted life-years* (developed originally in cancer research) which divides life expectancy into: time with *toxicity* from chemotherapy; followed by time free of symptoms of disease or chemotherapy *toxicity*; followed by time with disease symptoms. Each of these time periods is adjusted by the respective *utility* weight.

Quality of life (see also health status)
The extent to which an individual perceives himself or herself able to function physically, psychologically and socially.

Quality use of medicines
The quality use of medicines involves the judicious selection of management options; the appropriate choice of medicines, where a medicine is considered necessary; and the safe and effective use of medicines.

Quasi-experimental study (see Appendix 10)
A nonrandomised *study* in which the investigator lacks full control over the allocation and/or the timing of the *therapy*, but otherwise conducts the *study* as a randomised *trial*. An umbrella term for *'before and after' studies, case-series with historical controls* and comparison of the results of *single-arm studies*.

QUM
quality use of medicines

Random effects model (compare with fixed effect model)
The model used in *meta-analysis* based on the assumption that the *treatment effect* truly differs across *trials* and that the goal is to determine the average of the different effects.

Randomisation
The process by which *participants* are allocated to one of two or more *therapy* groups by *chance* and thus minimise *selection bias*. Other than *chance* variation, the resulting groups are also likely to be similar to one another at the start of the *trial*. Randomisation involves application of a predetermined plan to ensure that *chance* alone determines allocation to *therapy* groups.

Random variation (see chance)

Range
The difference between the largest and the smallest *values* in a distribution.

Rate
An expression of the frequency with which an event occurs in a defined population in a specified period of time. All rates are *ratios*, calculated by dividing the number of events occurring in the specified period by the average number of people studied during that period. A *rate* can vary between zero and infinity, although in practice it usually varies between zero and one.

Regression analysis
Given *data* on a dependent *variable* y and one or more independent *variables* x1, x2, etc., regression analysis involves finding the 'best' mathematical model (within some restricted class of models) to describe y as a function of the x's. The most common form is a linear model; in *epidemiology*, the logistic and proportional hazard models are also common.

Relative
A method of comparison involving the *ratio* of one *variable* to another.

Relative risk (compare with absolute risk difference and odds ratio)
The *ratio* of the *risk* of an *outcome* in the exposed group (eg to *therapy* involving the *proposed drug*) to the *risk* of the *outcome* in the *control group* in a specified time period.

Relative risk reduction
One minus the *relative risk*; can be computed only when *therapy* involving the *proposed drug* is more effective than *therapy* involving its *main comparator*(s).

Reliability
The extent to which the results obtained by a *measurement* procedure or *instrument* can be replicated under identical conditions.

Repatriation Pharmaceutical Benefits Scheme
This scheme subsidises medicines for the treatment of eligible veterans, war widows and widowers and their dependants. Those who are eligible can receive all *PBS* medicines, and other medicines listed separately on the *RPBS*.

Reproducibility (see reliability)

Resource
A *factor* of production, an *input* or a produced good.

Respondent
An individual who provides responses to a questionnaire or survey.

Responsiveness
The ability of an *instrument* to measure differences in health states between individuals and also to measure changes in health states over time experienced by any one individual.

Restricted benefit
Pharmaceutical benefits listed in the *PBS* which can only be prescribed for specific therapeutic uses.

Restricted time-to-event analysis (see truncated time-to-event analysis)

Restriction
The general intention of a restriction is to identify the population of individuals who would be eligible for *PBS*-subsidised use of the *proposed drug*, usually by reference to certain diagnostic criteria of a *medical condition*, disease or disorder.

Retrospective data
Data collected before the *study* was started.

Risk
The *probability* that an event will occur in a population within a stated period of time or by a certain age.

Risk difference (see absolute risk reduction)

Risk-sharing arrangement
An arrangement agreed between the sponsor of a *PBS*-listed drug and the government which adequately monitors identified *risks* (or undesired events such as cost-ineffective use or greater than expected use) and manages them by appropriate mechanisms for sharing the impact of these *risks* between the sponsor and the government should they arise.

Robustness (see also sensitivity analysis)
The extent to which the conclusion of an *economic analysis* is likely to remain unchanged even if *estimates* of key *variables*, assumptions or a model's structure are changed in the analysis to reflect remaining *uncertainties*.

RPBS
Repatriation Pharmaceutical Benefits Scheme

RSA
risk-sharing arrangement

Rule of rescue
Four *factors*, which apply in exceptional circumstances, are particularly influential in favour of listing. When all four *factors* apply concurrently, this is called the 'rule of rescue.'

- No alternative exists in Australia to treat patients with the *medical condition* meeting the criteria of the requested *restriction*.
- The *medical condition* defined by the requested *restriction* is severe, progressive and expected to lead to premature death.
- The *medical condition* defined by the requested *restriction* applies to only a very small number of patients.
- The *proposed drug* provides a worthwhile *clinical* improvement to qualify as rescue from the *medical condition*.

Safety
The inverse of *toxicity*.

Sample size calculation
Relies on a formula which calculates the sample size of a randomised *trial*, based on the *minimal clinically important difference (MCID)*, *power*, and *alpha*.

Scenario analysis
An extended form of multi-way *sensitivity analysis*, involving the simultaneous substitution of *parameter values* and assumptions associated with the *base case* to apply the model to other *circumstances of use*.

Scenario-based valuation
Valuation of one or more health states, each based on a description presented in a scenario format.

SD
standard deviation

Secondary analysis
Other analyses of the *primary outcome*; any analysis of a *secondary outcome*.

Secondary outcome
An *outcome* used to evaluate additional effects of the intervention deemed a priori as being less *important* than the *primary outcome*.

Secondary prevention
Activities aimed to reduce disease progressing.

Section 100
Section 100 of the *National Health Act 1953* empowers the Minister to make special arrangements to ensure that an adequate supply of drugs and medicinal preparations will be available to a specified population.

Selection bias
Error due to systematic differences in characteristics between those who are selected for *study* and those who are not.

Sensitivity analysis (see Subsection D.6)
An analytical process by which the results and conclusions of an *economic analysis* are assessed for *robustness*.

Sensitivity (of a test)
The proportion of individuals classified as positive by the gold (or reference) standard, who are correctly identified by the *study* test (also called the true positive *rate*).

SG
standard gamble

Side effect (see adverse reaction)

Significant (see statistically significant)

Single-arm study
A group of *participants* with a specified *indication* and managed with a specified *therapy* (eg involving the *proposed drug*) are systematically observed to measure *outcomes* of interest. A *quasi-experimental study* can be generated by comparing the results of one or more single-arm studies of *therapy* involving the *proposed drug* with the results of one or more similar *studies* (usually by different investigators in different settings) of *therapy* involving its *main comparator*(s).

Societal viewpoint
The viewpoint for an *economic evaluation* which considers all costs and *consequences* without considering to whom they accrue.

Specificity (of a test)
The proportion of individuals classified as negative by the gold (or reference) standard, who are correctly identified by the *study* test (also called the true negative *rate*).

Standard deviation
A summary *statistic* of how widely dispersed the *values* for a group are around the *mean*.

Standard gamble
A method of eliciting the *utility* for a particular *health status* or *health outcome* where the *respondent* is offered a choice between two alternatives. Alternative 1 is a treatment with two possible *outcomes*: either the *respondent* returns to full health and lives for a fixed number of additional years (probability P) or the *respondents* dies immediately (probability 1-P). Alternative 2 has a certain *outcome* of remaining in the *health status* for the fixed number of additional years. The probability P is varied until the *respondent* is indifferent between the two alternatives.

State transition model
A model involving more than one time period.

Static model (see also dynamic model)
Usually structured as a *decision analysis* model (eg a *Markov model*) in which the *force of infection* is constant over time.

Statistic
A *measurement* of a *variable* of interest which is subject to *random variation*.

Statistical heterogeneity (see heterogeneity)

Statistical interaction (see heterogeneity)

Statistically significant
The *probability* that the *association* between the *factor* and the *outcome* is due to *chance* is less than a specified level (by convention, $P < 0.05$).

Stepped economic evaluation
An *economic evaluation* which is presented in at least three sequential steps, derived from *inputs* and *outcomes translated* from *direct randomised trials* and from other sources.

The first step is a *trial-based economic evaluation* that is derived from the unmodified trial-based *estimate* of *treatment effect* on the incremental *provision of health care resources* and incremental *health outcomes*. Additional steps should be presented if the *trial-based economic evaluation* is not sufficient to provide the *base case*.

Presenting the second step examines the impacts of *applying* the *treatment effects* on *health care resources* and *outcomes* to the intended *PBS* population and the *circumstances of use* identified by the requested *restriction*, using a *modelled economic evaluation*. Presenting the third step examines the additional impact on the modified *economic evaluation* of *extrapolating* the *provision of health care resources* and *health outcomes* to the *time horizon* of the *economic evaluation* and/or any *transformation* of *outcomes*.

This final step generates the *base case* of the *modelled economic evaluation*.

Streamlined authority required benefit
Pharmaceutical benefits listed in the *PBS* which are restricted and require an authority code to be written on the authority prescription.

Study (see also trial)
An investigation of the health and/or economic impact of one or more *therapies* in humans which may or may not involve a *randomisation* step. If a *randomisation* step is involved, the preferred term is *trial*.

Subgroup
A defined set of individuals in a population group or of *participants* in a *study* such as subgroups defined by sex or age categories.

Subgroup analysis
An analysis in which the intervention effect is evaluated in a *subgroup* of a *trial*, including the analysis of its complementary *subgroup*. Subgroup analyses can be prespecified, in which case they are easier to interpret. If not prespecified, they are difficult to interpret because they tend to uncover false positive results.

Supplementary analysis
The results of an *economic evaluation*, including a *cost-benefit analysis*, which takes into account a broader array of *consequences* in terms of costs and *outcomes* than the *base case analysis*.

Surrogate outcome
A *variable* that is suspected, but not necessarily demonstrated to occur on the causal pathway from a *therapy* or *factor* to the *final outcome*.

Survival data (see time-to-event data)

Systematic overview
The systematic, organised, and structured evaluation of a problem of interest using information from all relevant independent randomised *trials*. It includes a qualitative component (assessment of *trial* quality and comparability) and a quantitative component (*meta-analysis*).

Systematic review
Research that summarises the *evidence* on a clearly formulated question according to a predefined protocol. Systematic and explicit methods are used to identify, select

and critically appraise relevant *studies*, and to extract, collate and report their findings. Statistical *meta-analysis* may or may not be used.

Systematic variation (see bias)

Technical efficiency
The production of the greatest amount or quality of *outcome* for any specified level of *resources*.

TGA
Therapeutic Goods Administration

TGA clinical evaluator's report
The report summarising and reviewing the *clinical evidence* (Part 4) of the application to the *TGA* seeking marketing approval for the *proposed drug*.

TGA delegate's overview
The *TGA* delegate's summary of the application to the *TGA* for the *proposed drug*, a proposed action for registration and a request for *ADEC* advice.

Therapy
The management and care of an individual for the purpose of combating (eg preventing, curing, ameliorating) a *medical condition*, disease or disorder; all *resources* provided in this management or care.

Time horizon
A period of time over which costs and *outcomes* are measured in an evaluation.

Time preference
The perceived advantage of receiving a *benefit* earlier and/or incurring a cost or harm later.

Time-to-event data
Data that incorporates a measure of the time lapse before an event occurs, for example, time to relapse, time to death or time to treatment cessation.

Time trade-off
A method of eliciting the *utility* for a particular *health status* or *health outcome* where the *respondent* is offered a choice between two alternatives. Alternative 1 is living for a fixed period of time (t) in a particular *health status*. Alternative 2 is living for a shorter period of time (x) in full health. The duration in full health is altered until the *respondent* is indifferent between the two alternatives.

Tornado diagram
A graphical display of the result of a set of one-way *sensitivity analyses*. The x-axis presents the results of the *economic evaluation* and the y-axis presents each *sensitivity analysis* ranked from the *variable* with the greatest impact on the result of the *economic evaluation* to the *variable* with the least impact.

Toxicity (see also adverse outcome, adverse reaction, safety)
The harm to health caused by a *therapy* (eg involving the *proposed drug*) considering the entire *adverse reaction* profile.

Trace
A graphical display of an event over time, with time reported on the x-axis and a measure of the event on the y-axis.

Transferability (see translation and transportability)

Transformation/Transformed
An assessment of the extent to which the *outcomes* reported in the *trial* relate to and/or predict *outcomes* of greater patient relevance or *outcomes valued* in *utility* terms and thus the extent to which the results of the *trial* can be transformed to be more relevant to the *economic evaluation.*

Transition probability
The *probability* that patients in a particular health state might transfer into another particular health state during the course of a cycle in a *state transition model*.

Translation/Translated
An umbrella term covering *applicability*, *extrapolation* and *transformation*.

Transportability (see also translation)
A *trial*, *study* or model has transportability if it can produce unbiased inferences to another specified *health care system* (eg from overseas to Australia).

Treatment effect (see also internal validity)
A difference in *outcomes* following provision of different *therapies* that remains after excluding *random* and *systematic variation* as alternative explanations.

Treatment effect variation
A measure of the extent to which the effect of a treatment varies across populations (eg across *studies* or *subgroups*). It depends on the effect measure used (see *heterogeneity* also).

Trial (see also study)
An investigation of the health and/or economic impact of one or more therapies in humans which does involve a *randomisation* step.

Trial-based economic evaluation
An *economic evaluation* based only on *inputs* and *outcomes* reported in one or more *direct randomised trials*.

Triangulation
The use of multiple sources of *data* or multiple approaches to determine the consistency or otherwise of the conclusions from those sources or approaches.

Truncated time-to-event analysis
Time-to-event data where the *trial follow-up* is insufficient to record all events.

TTO
time trade-off

Type I error
The *risk* of a false positive result. In a superiority *trial*, the *probability* of detecting a '*significant* difference' when its treatments are really equally *effective*.

Type II error
The *risk* of a false negative result. In a superiority *trial*, the *probability* of not detecting a '*significant* difference' when there is really a difference of a prespecified magnitude.

Uncertainty (see also Table A1.2 in Appendix 1 and footnote to Table B.8.1)
Any reduction of confidence in a conclusion. Statistical uncertainty arises from *chance*, when a *variable* includes a *range* of *estimates* within which the true *value* of the *variable* is likely to be found. Inferential uncertainty arises from *bias* when there are alternative explanations for a measured difference or arises when *translations* are made from an *estimate*. *Clinical* uncertainty arises when the *proposed drug* has both therapeutic advantages and disadvantages over its *main comparator*(s) or arises when the profiles of *effectiveness* and *toxicity* differ across the compared drugs such that there are trade-offs across the comparison. Structural uncertainty arises in a *model* when all the relationships between the various components are not fully demonstrated. Uncertainty also arises when assumptions need to be made in the absence of relevant *data*.

Uncertainty interval
The computed interval with a specified *probability* (by convention, 95%) that the true I^2 *statistic* is contained within the interval.

Unrestricted benefit
Pharmaceutical benefits listed in the *PBS* which have no *restrictions* on their therapeutic uses.

Utility
The numerical *value* assigned by an individual to a preference for, or a desirability of, a specific level of *health status* or a specific *health outcome*. The process of eliciting a utility involves a trade-off between quality and quantity of life. By convention, utility is measured on a cardinal scale with 0 = death and 1 = full health.

Utility analysis
A method of measuring *outcomes* in terms of the preferences individuals express for specific *health states* or *health outcomes*; it provides a common unit that can be used to compare different types of *outcomes* under conditions of *uncertainty*.

Vaccine
A suspension of attenuated or killed micro-organisms administered for the prevention, amelioration, or treatment of infectious diseases.

Validity (trial or study - see also internal validity and external validity)
The extent to which an inference drawn from a *trial*/*study* is justifiable when account is taken of the methods of the *trial*/*study*, the representativeness of the sample investigated and the nature of the population from which the sample is drawn.

Validity (see measurement)
The extent to which a *measurement* measures what it purports to measure.

Valuation
The process of quantifying the desirability of an *outcome* in *utility* or monetary terms or of quantifying the cost of a *resource* or individual's productivity in monetary terms.

Value
In economics, a quantitative measure of the desirability of an *outcome*. This may be measured in monetary terms for example, the maximum amount that an individual is willing to pay for a good or a service; for a defined *benefit*; or to avoid a defined harm. In science, the magnitude of a *measurement*.

Value for money (compare with cost-effective)
A *proposed drug* is considered to represent value for money by *PBAC* if the Committee considers that, for a specified *main indication*, the *incremental benefits* obtained from *therapy* involving the *proposed drug* are valued more highly than the *opportunity costs* of obtaining those *benefits*.

Variable
Any attribute, phenomenon or event that can have different *values*.

Variance (see also precision)
A measure of the variability or *random variation* in a set of *data* computed as the sum of the squares of deviations from the *mean*, divided by the number of degrees of freedom in the set of *data*.

VAS
visual analogue scale

Visual analogue scale
A line on a page, often 10 cm in length, which has clearly defined extreme endpoints and may have other marks along the line, and which is used as a method of measuring the extent of a *participant's* response to a question.

Willingness to pay
The maximum amount of money that an individual is prepared to give up to ensure that a proposed beneficial change occurs. A beneficial change could include an improved *health outcome* or ensuring that *therapy* involving a *proposed drug* is substituted for *therapy* involving its *main comparator*(s) based on valuing the resulting difference(s) in *outcomes*.

Withdrawal
Arises when a *participant* actively chooses to be removed from a *study* (removal of consent).

Within-trial analysis (see trial-based economic evaluation)

WTP
willingness to pay

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