

# **The Cochrane Reviewers' Handbook Glossary**

Version 4.1.5

Updated December 2003

### **Absolute risk reduction**

See risk difference.

### **Additive model**

A model in which the combined effect of several factors is the sum of the effects produced by each of the factors. For example, if one factor multiplies risk by  $a$  and a second factor by  $b$ , the combined effect of the two factors is  $a + b$ . See also multiplicative model.

### **Administrator (of a Collaborative Review Group)**

See Coordinator

### **Adminors**

The name of an e-mail discussion list for coordinators of Collaborative Review Groups, and the name of a sub-directory for this group of people on the UK FTP Server.

### **Allocation concealment**

See concealment of allocation.

### **Applicability (synonyms: external validity, generalisability, relevance, transferability)**

The degree to which the results of an observation, study or review hold true in other settings.

### **Attrition bias**

Systematic differences between comparison groups in withdrawals or exclusions of participants from the results of a study. For example, patients may drop out of a study because of side effects of the intervention. Excluding these patients from the analysis could result in an overestimate of the effectiveness of the intervention.

### **Bayesian approach**

An approach that can be used in single studies or meta-analysis which incorporates a prior probability distribution based on subjective opinion and objective evidence, such as the results of previous research. Bayesian analysis uses Bayes' theorem to update the prior distribution in light of the results of a study, producing a posterior distribution. Statistical inferences (point estimates, confidence intervals, etc.) are probability based on this posterior distribution. The posterior distribution also acts as the prior distribution for the next study. This approach has many attractive features, but is controversial because it depends on opinions, and frequently they will vary considerably.

### **Bayes' theorem**

A probability theorem used to obtain the probability of a condition in a group of people with some characteristic (e.g. exposed to an intervention of interest, or with a specified result on a diagnostic test) on the basis of the overall rate of that condition (the prior probability) and the likelihood of that characteristic in people with and without the condition.

### **Bias**

Asystematic error or deviation in results or inferences. In studies of the effects of healthcare bias can arise from systematic differences in the groups that are compared (selection bias), the care that is provided, or exposure to other factors apart from the intervention of interest (performance bias), withdrawals or exclusions of people

entered into the study (attrition bias) or how outcomes are assessed (detection bias). Bias does not necessarily carry an imputation of prejudice, such as the investigators' desire for particular results. This differs from conventional use of the word in which bias refers to a partisan point of view. Many varieties of bias have been described (Sackett 1979). See also methodological quality, validity.

**Blinding (synonym: masking)**

Keeping secret group assignment (e.g. to treatment or control) from the study participants or investigators. Blinding is used to protect against the possibility that knowledge of assignment may affect patient response to treatment, provider behaviours (performance bias) or outcome assessment (detection bias). Blinding is not always practical (e.g. when comparing surgery to drug treatment). The importance of blinding depends on how objective the outcome measure is; blinding is more important for less objective outcome measures such as pain or quality of life. See also single blind, double blind and triple blind.

**Breslow-Day test**

A statistical test for the homogeneity of odds ratios.

**Case series**

An uncontrolled observational study involving an intervention and outcome for more than one person.

**Case study (synonyms: anecdote, case history, single case report)**

An uncontrolled observational study involving an intervention and outcome for a single person (or other unit).

**Case-control study (synonyms: case referent study, retrospective study)**

A study that starts with identification of people with the disease or outcome of interest (cases) and a suitable control group without the disease or outcome. The relationship of an attribute (intervention, exposure or risk factor) to the outcome of interest is examined by comparing the frequency or level of the attribute in the cases and controls. For example, to determine whether thalidomide caused birth defects a group of children with birth defects (cases) could be compared to a group of children without birth defects (controls). The groups would then be compared with respect to the proportion exposed to thalidomide through their mothers taking the tablets. Case-control studies are sometimes described as being retrospective as they are always performed looking back in time.

**CCTR**

See Cochrane Controlled Trials Register.

**CD-ROM (Compact Disc - Read Only Memory)**

A computer storage medium. A CD-ROM can contain a database of information (e.g. MEDLINE, or the Cochrane Controlled Trials Register) that may be searched either on a personal computer or a computer linked to a network.

**CDSR**

See Cochrane Database of Systematic Reviews.

## **CENTRAL**

The Cochrane Collaboration's register of studies which may be relevant for inclusion in Cochrane Reviews. Its development is guided by the CENTRAL/CCTR Advisory Group and the first full version was made available on issue 4 of The Cochrane Library in October 1997. CENTRAL aims to include all relevant reports that have been identified through the work of the Cochrane Collaboration, through the transfer of this information to the New England Cochrane Center, Providence office. See also Cochrane Controlled Trials Register.

## **Chi-square test**

Any statistical test based on comparison of a test statistic to a chi-square distribution. The Mantel-Haenszel test is a well known chi-square test.

## **CI**

See Confidence interval

## **CINAHL (Cumulative Index of Nursing and Allied Health Literature)**

Electronic database covering the major journals in nursing and allied health. Years of coverage: 1983 - present.

## **CL**

See Cochrane Library

## **Client Manager**

Client Manager is a DOS-based software package (written for the Cochrane Collaboration) that enables the creation of a database for storing names and contact information. Client Manager is used by some Collaborative Review Groups, Cochrane Centres and other entities within the Collaboration to keep up-to-date contact information on people. See also HIREx.

## **Clinical guideline**

A systematically developed statement for practitioners and patients about appropriate health care for specific clinical circumstances.

## **Clinical trial (synonyms: therapeutic trial, intervention study)**

A trial that tests out a drug or other intervention to assess its effectiveness and safety. This general term encompasses randomised controlled trials and controlled clinical trials.

## **Cochrane Centres**

An entity in the Cochrane Collaboration with responsibility for helping to co-ordinate and support the Collaboration. Responsibilities include: maintaining a directory of people contributing to the Cochrane Collaboration; helping to establish Collaborative Review Groups; organising workshops, seminars and annual colloquia to support and guide the development of the Cochrane Collaboration. Each Centre is responsible for providing support within a specified geographic area. Details of Centre responsibilities and a list of the Centre responsible for any given country are available in the Cochrane Library.

## **Cochrane Collaboration**

An international organisation that aims to help people make well informed decisions about health by preparing, maintaining and ensuring the accessibility of systematic reviews of the benefits and risks of healthcare interventions.

### **Cochrane Consumer Network**

A registered entity in the Cochrane Collaboration responsible for co-ordinating and facilitating consumer involvement in the Collaboration.

### **Cochrane Controlled Trials Register (CCTR)**

A database of references to controlled trials in health care. Cochrane groups and other organisations have been invited to contribute their specialised registers, and these registers, together with references to clinical trials identified on MEDLINE and other sources, form the CENTRAL register of studies. Records from CENTRAL, following quality control to try to ensure that only reports of definite randomised controlled trials or controlled clinical trials are included, make up The Cochrane Controlled Trials Register (CCTR).

### **Cochrane Database of Systematic Reviews (CDSR)**

The major product of the Cochrane Collaboration. It brings together all the currently available Cochrane Reviews and is updated quarterly. Collaborative Review Groups submit modules of edited reviews to the Parent Database for inclusion in the CDSR. See Cochrane Library.

### **Cochrane Library (CLIB)**

A collection of databases, published on CD-ROM and the Internet and updated quarterly, containing the Cochrane Database of Systematic Reviews, the Cochrane Controlled Trials Register, the Database of Abstracts of Reviews of Effectiveness, the Cochrane Review Methodology Database, and information about the Cochrane Collaboration.

### **Cochrane Methodology Register (Formally the Cochrane Review Methodology Database [CRMD])**

A bibliography (with abstracts) of articles and books about methodological issues relevant to summarising evidence of the effects of healthcare. It is published in the Cochrane Library.

### **Cochrane Review**

A Cochrane Review is a systematic, up-to-date summary of reliable evidence of the benefits and risks of healthcare. Cochrane Reviews are intended to help people make practical decisions. For a review to be called a "Cochrane Review" it must be in the Parent Database maintained by the Cochrane Collaboration. The Parent Database is composed of modules of reviews submitted by Collaborative Review Groups (CRGs) registered with the Cochrane Collaboration. The reviews contributed to one of the modules making up the Parent Database are refereed by the editorial team of the CRG, as described in the CRG module. Reviewers adhere to guidelines published in the Cochrane Reviewers' Handbook. The specific methods used in a Cochrane Review are described in the text of the Review. Cochrane Reviews are prepared using Review Manager software, also known as RevMan, provided by the Collaboration and adhere to a structured format that is described in the Handbook.

### **Cochrane Reviewers' Handbook**

Guidelines for preparing and maintaining Cochrane Reviews. Information about the Cochrane Collaboration that was previously contained in Sections I to V of the Handbook is now maintained and published in the Cochrane Manual on the Cochrane Library and can be downloaded from the Australasian, Canadian and UK FTP servers

## **Cochrane Review Methodology Database (CRMD)**

See Cochrane Methodology Register.

## **Cohort study (synonyms: follow-up, incidence, longitudinal, prospective study)**

An observational study in which a defined group of people (the cohort) is followed over time. The outcomes of people in subsets of this cohort are compared, to examine for example people who were exposed or not exposed (or exposed at different levels) to a particular intervention or other factor of interest. A cohort can be assembled in the present and followed into the future (this would be a prospective study or a "concurrent cohort study"), or the cohort could be identified from past records and followed from the time of those records to the present (this would be a retrospective study or a "historical cohort study"). Because random allocation is not used, matching or statistical adjustment at the analysis stage must be used to minimise the influence of factors other than the intervention or factor of interest.

## **Cointervention**

In a randomised controlled trial, the application of additional diagnostic or therapeutic procedures to members of either or both the experimental and the control groups.

## **Collaborative Review Group (CRG)**

The primary working entity (organisational unit) of the Cochrane Collaboration. CRGs are made up of individuals sharing an interest in a particular healthcare problem or type of problem. The main purpose of a CRG is to prepare and maintain systematic reviews of the effects of health care within the scope of the Group. Members participate in the Group not only by preparing Cochrane Reviews but also by hand-searching journals or other activities that help the Group to fulfil its aim. Each CRG is co-ordinated by an editorial team, responsible for regularly updating and submitting to the Parent Database an edited module of Reviews and information about the Group.

## **Collaborative Trialists' Group**

Investigators who conducted similar randomised controlled trials independently and agree to contribute individual patient data from their trials to a meta-analysis.

## **Concealment of allocation**

The process used to prevent foreknowledge of group assignment in a randomised controlled trial, which should be seen as distinct from blinding. The allocation process should be impervious to any influence by the individual making the allocation by having the randomisation process administered by someone who is not responsible for recruiting participants; for example, a hospital pharmacy, or a central office. Using methods of assignment such as date of birth and case record numbers (see quasi random allocation) are open to manipulation. Adequate methods of allocation concealment include: centralized randomisation schemes; randomisation schemes controlled by a pharmacy; numbered or coded containers in which capsules from identical-looking, numbered bottles are administered sequentially; on-site computer systems, where allocations are in a locked unreadable file; and sequentially numbered opaque, sealed envelopes.

## **Conference abstracts**

Short summaries of presentations at conferences. May be published as proceedings.

### **Confidence interval (CI)**

The range within which the "true" value (e.g. size of effect of an intervention) is expected to lie with a given degree of certainty (e.g. 95% or 99%). Note: Confidence intervals represent the probability of random errors, but not systematic errors (bias).

### **Conflict of interest declaration [or Competing interests declaration]**

A statement by a contributor to a report or review of personal financial or other interests that could have influenced the findings or their interpretation.

### **Confounding**

A situation in which a measure of the effect of an intervention or exposure is distorted because of the association of exposure with other factor(s) that influence the outcome under investigation.

### **Consumer (healthcare consumer)**

Someone who uses, is affected by, or who is entitled or compelled to use a health related service.

### **Consumer advocate or representative**

Consumer who is actively involved with other consumers and able to represent the perspectives and concerns of that broader group of people. A consumer advocate or representative should be linked with other consumers, accountable to them, and should not have a conflict of interest in that role.

### **Contamination**

In clinical trials, the inadvertent application of the intervention being evaluated to people in the control group or inadvertent failure to apply the intervention to people assigned to the intervention group.

### **Context**

The conditions and circumstances that are relevant to the application of an intervention, for example the setting [in hospital, at home, in the air], the time [working day, holiday, night-time], type of practice [primary, secondary, tertiary care; private practice, insurance practice, charity], whether routine or emergency.

### **Contingency table**

A tabular cross-classification of data such that subcategories of one characteristic are indicated horizontally (in rows) and subcategories of another characteristic are indicated vertically (in columns). Tests of association between the characteristics can be readily applied. The simplest contingency table is the fourfold, or 2x2 table, which is used in clinical trials to compare dichotomous outcomes, such as death, for an intervention and control group or two intervention groups.

### **Continuous data**

Data with a potentially infinite number of possible values along a continuum. Height, weight and blood pressure are examples of continuous variables.

### **Control**

1. In clinical trials comparing two or more interventions, a control is a person in the comparison group that receives a placebo, no intervention, usual care or another form of care.
2. In case-control studies a control is a person in the comparison group without the disease or outcome of interest.

3. In statistics control means to adjust for or take into account extraneous influences or observations.
4. Control can also mean programs aimed at reducing or eliminating the disease when applied to communicable (infectious) diseases.

### **Controlled clinical trial**

Refers to a study that compares one or more intervention groups to one or more comparison (control) groups. Whilst not all controlled studies are randomised, all randomised trials are controlled.

### **Co-ordinating editor (of a Collaborative Review Group)**

A member of the editorial team located at the editorial base who is responsible for editing reviews and, supported by other members (particularly the coordinator) for fostering the smooth running of the Group and assuring the quality of the Group's module.

### **Cost-benefit analysis**

An economic analysis that converts effects into the same monetary terms as the costs and compares them.

### **Cost-effectiveness analysis**

An economic analysis that converts effects into health terms and describes the costs for some additional health gain (e.g. cost per additional stroke prevented).

### **Cost-utility analysis**

An economic analysis that converts effects into personal preferences (or utilities) and describes how much it costs for some additional quality gain (e.g. cost per additional quality-adjusted life-year).

### **CRG**

See Collaborative Review Group.

### **CRMD**

See Cochrane Methodology Register

### **Critical appraisal**

The process of assessing and interpreting evidence by systematically considering its validity, results and relevance.

### **Cross-sectional study (synonym: prevalence study)**

A study that examines the relationship between diseases (or other health related characteristics) and other variables of interest as they exist in a defined population at one particular time. The temporal sequence of cause and effect cannot necessarily be determined in a cross-sectional study.

### **Cross-over trial**

A type of clinical trial comparing two or more interventions in which the participants, upon completion of the course of one treatment are switched to another. For example, for a comparison of treatments A and B, half the participants are randomly allocated to receive them in the order A, B and half to receive them in the order B, A. A problem with this design is that the effects of the first treatment may carry over into the period when the second is given.

## **Cumulative meta-analysis**

In cumulative meta-analysis studies are added one at a time in a specified order (e.g. according to date of publication or quality) and the results are summarised as each new study is added. In a graph of a cumulative meta-analysis each horizontal line represents the summary of the results as each study is added, rather than the results of a single study.

## **Current Contents**

Electronic database that provides access to the tables of contents and bibliographic data from current issues of the world's leading scholarly research journals in the sciences, social sciences, arts and humanities. Over 6,600 journals covered.

## **DARE**

See Database of Abstracts of Reviews of Effectiveness.

## **Database**

A collection of organised information, usually held on a computer. In some ways a database is similar to a filing system, but with important advantages: the information can be revised and kept up to date easily, and the computer can retrieve information from it very quickly. Electronic databases such as MEDLINE, EMBASE and the CDSR can be distributed on disk, CD-ROM or via the Internet.

## **Database of Abstracts of Reviews of Effectiveness (DARE)**

A collection of structured abstracts and bibliographic references of systematic reviews of the effects of healthcare. See the Cochrane Library.

## **Decision analysis**

A technique used under conditions of uncertainty for systematically representing and examining all the relevant information for a decision and the uncertainty around that information. The available choices are plotted on a decision tree. At each branch, or decision node, the probabilities of each outcome that can be predicted are estimated. The relative worth or preferences of decision-makers for the various possible outcomes for a decision can also be estimated and incorporated into a decision analysis.

## **Degrees of freedom**

The number of independent comparisons that can be made between the members of a sample. It refers to the number of independent contributions to a sampling distribution (such as chi-square distribution). In a contingency table it is one less than the number of row categories multiplied by one less than the number of column categories; e.g. a 2 x 2 table comparing two groups for a dichotomous outcome, such as death, has one degree of freedom.

## **Detection bias (synonym: ascertainment bias)**

Systematic differences between comparison groups in how outcomes are ascertained, diagnosed or verified.

## **Dichotomous data (synonym: binary data)**

Observations with two possible categories such as dead/alive, smoker/non-smoker, present/not present.

## **Double blind (synonym: double masked)**

Neither the participants in a trial nor the investigators (outcome assessors) are aware of which intervention the participants are given. The purpose of blinding the

participants (recipients and providers of care) is to prevent performance bias. The purpose of blinding the investigators (outcome assessors, who might also be the care providers) is to protect against detection bias. See also blinding, single blind, triple blind, concealment of allocation.

### **E-mail (electronic mail)**

Allows users on the Internet and other networks (both local and global) to communicate electronically by sending messages to individuals, or groups of individuals. E-mail is, for most people, cheaper and faster than other communication channels such as fax and standard mail.

### **Economic analysis (synonym: economic evaluation)**

Comparison of the relationship between costs and outcomes of alternative health care interventions. See cost-benefit analysis, cost-effectiveness analysis and cost-utility analysis.

### **Editor (of a Collaborative Review Group)**

A member of the editorial team, often not located at the editorial base, who not only prepares and maintains one or more systematic reviews as a member of a CRG, but also has responsibilities to support the co-ordinating editor in editing systematic reviews prepared by others, and in fostering the smooth running of the Group.

### **Editorial base**

Collaborative Review Groups have an editorial base where the co-ordinating editor, the coordinator, secretarial support, and the Group's trials register are located, and to which reviewers are encouraged to come to work on their reviews.

### **Editorial process**

The process by which each individual CRG decides on the criteria for editing and including reviews in its edited module for inclusion in the Cochrane Database of Systematic Reviews. Protocols are reviewed both by the editors (internal review) and by external peer reviewers. See also referee process.

### **Editorial team (of a Collaborative Review Group)**

Normally consists of a Co-ordinating editor, Review Group Co-ordinator, several editors, a secretary, and in some cases a dedicated Trials Search Co-ordinator.

### **Effect size**

1. A generic term for the estimate of effect for a study.
2. A dimensionless measure of effect that is typically used for continuous data when different scales (e.g. for measuring pain) are used to measure an outcome and is usually defined as the difference in means between the intervention and control groups divided by the standard deviation of the control or both groups. See standardised mean difference.

### **Effectiveness**

The extent to which a specific intervention, when used under ordinary circumstances, does what it is intended to do. Clinical trials that assess effectiveness are sometimes called management trials. See also intention-to-treat.

### **Efficacy**

The extent to which an intervention produces a beneficial result under ideal conditions. Clinical trials that assess efficacy are sometimes called explanatory trials and are restricted to participants who fully co-operate.

### **EMBASE (Excerpta Medica database)**

A European-based electronic database of pharmacological and biomedical literature covering 3,500 journals from 110 countries. Years of coverage - 1974 to present.

### **Empirical**

Empirical results are based on experience (or observation) rather than on reasoning alone.

### **Entities**

The term used for registered groups in the Cochrane Collaboration (Collaborative Review Groups, Centres, Fields, Methods Groups and the Cochrane Consumer Network).

### **Epidemiology**

The study of the distribution and determinants of health-related states or events in specified populations.

### **Estimate of effect (synonym: treatment effect)**

In studies of the effects of healthcare, the observed relationship between an intervention and an outcome expressed as, for example, a number needed to treat, odds ratio, risk difference, relative risk, standardised mean difference, or weighted mean difference.

### **Event rate**

The proportion of participants in a group in whom an event is observed. Thus, if out of 100 patients the event (e.g. a stroke) is observed in 32, the event rate is 0.32.

### **Expected date (of a Cochrane Review)**

The time by which a user of CDSR can expect to have access to a completed review. It appears on the title page of a protocol in CDSR, and is the time by which the review is expected to have been completed and to have gone through the editorial process of the CRG responsible for the module in which the review is found and be available in CDSR.

### **External peer reviewer (of a Cochrane Review)**

A person with relevant content, methodological or user expertise who critically examines reviews in her/his area of expertise.

### **External validity (synonyms: external validity, generalisability, relevance, transferability)**

The degree to which the results of an observation hold true in other settings. See also validity .

### **Extramural**

Outside (the walls or boundaries of) a place or institution. Refers to "external" sources of support (such as funding) as opposed to "internal" (intramural) support.

### **F-test (synonym: variance ratio test)**

A statistical test of the hypothesis that two population variances are the same. The t-test is based on the assumption that this is the case.

### **Factorial design**

Most trials only consider a single factor, where an intervention is compared with one or more alternatives, or a placebo. In a trial using a 2x2 factorial design, participants are allocated to one of four possible combinations. For example in a 2x2 factorial,

RCT of nicotine replacement and counselling, participants would be allocated to: nicotine replacement alone, counselling alone, both, or neither. In this way it is possible to test the independent effect of each intervention on smoking cessation and the combined effect of (interaction between) the two interventions.

### **Fields (Field co-ordination)**

Fields (which can also be called Networks) are Cochrane entities that focus on dimensions of health care other than health problems such as the setting of care (e.g. primary care), the type of consumer (e.g. older people), the type of provider (e.g. nursing), the type of intervention (e.g. complementary medicine) or a broad area of health care (e.g. cancer). Among their tasks, people working in Fields handsearch specialist journals, help to ensure that priorities and perspectives in their field of interest are reflected in the work of Collaborative Review Groups, compile specialist databases, co-ordinate activities with relevant agencies outside the Collaboration, and comment on systematic reviews relating to their particular area.

### **Fixed effect model**

A statistical model that stipulates that the units under analysis (e.g. people in a trial or study in a meta-analysis) are the ones of interest, and thus constitute the entire population of units. Only within-study variation is taken to influence the uncertainty of results (as reflected in the confidence interval) of a meta-analysis using a fixed effect model. Variation between the estimates of effect from each study (heterogeneity) does not effect the confidence interval in a fixed effect model. See random effects model.

### **Follow-up**

The ascertainment of outcomes of an intervention at one or more stated times after the intervention has ended.

### **Fourfold table (synonym: 2x2 table)**

A contingency table with two rows and two columns used in clinical trials to compare dichotomous outcomes, such as death, for an intervention and control group or two intervention groups.

### **FTP (File Transfer Protocol) Server**

Enables users to open a connection to a host computer and log in (often anonymously, by using 'anonymous' as the user's name). Once logged in, files can be transferred between the host computer and the remote computer (the computer to which the host has been connected).

### **Funnel plot**

A graphical display of sample size plotted against effect size that can be used to investigate publication bias.

### **Generalisability (synonyms: applicability, external validity, relevance, transferability)**

Generalisability is the degree to which the results of a study or systematic review can be extrapolated to other circumstances, in particular to routine health care situations.

### **Gold standard**

The method, procedure or measurement that is widely accepted as being the best available against which new interventions should be compared. It is particularly important in studies of the accuracy of diagnostic tests. For example, handsearching

is sometimes used as the gold standard for identifying trials against which electronic searches of databases such as MEDLINE are compared.

## **Handbook**

See Cochrane Reviewers' Handbook

## **Handsearching**

Handsearching within the Cochrane Collaboration refers to the planned searching of a journal page by page (i.e. by hand), including editorials, letters, etc., to identify all reports of randomised controlled trials and controlled clinical trials. Normally a person would start by handsearching the current year of a journal, and work backwards until the yield of trials becomes negligible or until volume 1 is reached. Once a trial is found, it is coded appropriately using definitions agreed within the Cochrane Collaboration. All the identified trials, regardless of the topic, are sent to the New England Cochrane Center, Providence office, for inclusion in CENTRAL, and consideration for inclusion in the CCTR, and forwarding to the US National Library of Medicine for re-tagging on MEDLINE. Trials that are within the scope of a Collaborative Review Group or Field go into their specialised register of trials. A handsearching manual is available through the New England Cochrane Center, and should be read before handsearching is commenced. A journal handsearch registration form must be completed for each journal title, and sent to New England to avoid duplication of effort.

## **Heterogeneity**

In systematic reviews heterogeneity refers to variability or differences between studies in the estimates of effects. A distinction is sometimes made between "statistical heterogeneity" (differences in the reported effects), "methodological heterogeneity" (differences in study design) and "clinical heterogeneity" (differences between studies in key characteristics of the participants, interventions or outcome measures). Statistical tests of heterogeneity are used to assess whether the observed variability in study results (effect sizes) is greater than that expected to occur by chance. However, these tests have low statistical power. See also homogeneity.

## **HIREx**

Windows-based database for storing names, addresses and other information. Managed by the German Cochrane Centre for use by Cochrane entities.

## **Historical control**

Person or group for whom data were collected earlier than for the group being studied. Because of changes over time in risks, prognosis, healthcare, etc. there is a large risk of bias (in studies that use historical controls) due to systematic differences between the comparison groups.

## **Homogeneity**

In systematic reviews homogeneity refers to the degree to which the results of studies included in a review are similar. "Clinical homogeneity" means that, in trials included in a review, the participants, interventions and outcome measures are similar or comparable. Studies are considered "statistically homogeneous" if their results vary no more than might be expected by the play of chance. See heterogeneity.

## **Incidence**

The number of new cases of a disease or event in a population during a specific period of time.

## **Index Medicus**

Catalogue of the United States National Library of Medicine (NLM), and a periodical index to the medical literature. Available in printed form, or electronically as MEDLINE.

## **Individual patient data**

In systematic reviews this term refers to the availability of raw data for each study participant in each included trial, as opposed to aggregate data (summary data for the comparison groups in each study). Reviews using individual patient data require collaboration of the investigators who conducted the original trials, who must provide the necessary data.

## **Intention-to-treat**

An intention-to-treat analysis is one in which all the participants in a trial are analysed according to the intervention to which they were allocated, whether they received it or not. Intention-to-treat analyses are favoured in assessments of effectiveness as they mirror the noncompliance and treatment changes that are likely to occur when the intervention is used in practice, and because of the risk of attrition bias when participants are excluded from the analysis.

## **Inter-rater reliability**

The degree of stability exhibited when a measurement is repeated under identical conditions by different raters. Reliability refers to the degree to which the results obtained by a measurement procedure can be replicated. Lack of inter-rater reliability may arise from divergences between observers or instability of the attribute being measured. See also Intra-rater reliability.

## **Internal validity**

See validity.

## **Internet**

Network of millions of computers worldwide. Computers on the Internet use compatible communication standards and share the ability to contact each other and share data. Users of the Internet communicate via electronic mail (e-mail), via Telnet (a process which allows a person to log in to a remote host), and via FTP. See also World Wide Web.

## **Intervention study**

See Clinical trial.

## **Intra-rater reliability**

The degree of stability exhibited when a measurement is repeated under identical conditions by the same rater. Reliability refers to the degree to which the results obtained by a measurement procedure can be replicated. Lack of intra-rater reliability may arise from divergences between instruments of measurement or instability of the attribute being measured. See also Inter-rater reliability.

## **Intramural**

Within (the walls or boundaries of) a community or institution (e.g. a university). Used to distinguish from "external" (extramural) sources of support (such as funding).

## **LILACS (Latin American and Caribbean Health Sciences Literature)**

An electronic database based on a regional database of medical and science literature. It is compiled by the Latin American and Caribbean Center for Health Science Information, a unit of the Pan American Health Organisation.

## **Logistic model**

A statistical model of an individual's risk (probability of disease or some other outcome) as a function of a risk factor or intervention. This model has attractive statistical features and is widely used as a regression model for dichotomous outcomes. In meta-analysis (or meta-regression) the logistic model can be used to explore the relationship between study characteristics and study results.

## **Logistic regression**

Logistic regression is used to investigate the relationship between an event rate or proportion and a set of independent variables. In systematic reviews it can be used to explore the relationship between key characteristics of the included studies and the results (observed effects) for each study.

## **Log-odds ratio**

The (natural) log of the odds ratio. It is used in statistical calculations and in graphical displays of odds ratios in systematic reviews.

## **Mantel-Haenszel test**

A summary chi-square test for stratified data and used when collecting for confounding. In meta-analyses the Mantel-Haenszel test is used to analyse data stratified (grouped) by study.

## **Masking**

See blinding.

## **Mean (synonyms: arithmetic mean, average)**

The average value, calculated by adding all the observations and dividing by the number of observations.

## **MEDLINE (MEDlars onLINE)**

An electronic database produced by the United States National Library of Medicine. It indexes millions of articles in selected (about 3,700) journals. It is available through most medical libraries, and can be accessed on CD-ROM, the Internet and by other means. Years of coverage - 1966 to present.

## **Meerkat**

An Access-based database system (written for the Cochrane Collaboration) that can be used to manage a Register of trials.

## **MeSH headings (Medical Subject Headings)**

Terms used by the United States National Library of Medicine to index articles in Index Medicus and MEDLINE. Designed to reduce problems that arise from, for example, differences in British and American spelling. The MeSH system has a tree structure in which broad subject terms branch into a series of progressively narrower subject terms.

## **Meta-analysis**

The use of statistical techniques in a systematic review to integrate the results of included studies. Sometimes used as a synonym for systematic reviews, where the review includes meta-analysis.

## **Meta-regression**

Multivariate meta-analytic techniques, such as logistic regression, used to explore the relationship between study characteristics (e.g. allocation concealment, baseline risk, timing of the intervention) and study results (the magnitude of effect observed in each study) in a systematic review.

## **MetaView**

Software incorporated in RevMan and CDSR that does statistical analyses and prepares tabular and graphical displays of the results of the studies included in a review.

## **Methodological quality (synonyms: validity, internal validity)**

The extent to which the design and conduct of a study are likely to have prevented systematic errors (bias). Variation in quality can explain variation in the results of studies included in a systematic review. More rigorously designed (better 'quality') trials are more likely to yield results that are closer to the 'truth'. See also external validity, validity.

## **Methods Group (MG) (Formerly known as Methods Working Group [MWG])**

An entity in the Cochrane Collaboration made up of individuals who are interested in the judgements that lead to selection, appraisal, synthesis, interpretation and dissemination of health care information, such as statistical methods and informatics. Each MG is responsible for preparing and maintaining a module that is published in the Cochrane Library and includes a description of the group's scope and activities.

## **Minimisation**

A method of allocation used to provide comparison groups that are closely similar for several variables. It can be done with or without a component of randomisation. It is best performed centrally with the aid of a computer program to ensure allocation concealment.

## **ModMan (Module Manager)**

Software developed by the Cochrane Collaboration to allow Collaborative Review Groups to assemble and manage their edited protocols and reviews. ModMan also contains information about the Collaborative Review Group. ModMan is used by Collaborative Review Group coordinators to edit and update modules that are sent electronically, at quarterly intervals, to the Parent Database for inclusion in the CDSR. A variation of the ModMan Software is also used by other Cochrane entities to prepare modules for CDSR.

## **Module**

Edited protocols and reviews, and information about a Collaborative Review Group are referred to as the Group's module. This module is transferred electronically using ModMan to the Parent Database at quarterly intervals, for inclusion in the CDSR. Other Cochrane entities also produce modules for inclusion in the Parent Database and CDSR.

### **Multiplicative model**

A model in which the joint effect of two or more factors is the product of their effects. For example, if one factor multiplies risk by  $a$  and a second factor by  $b$ , the combined effect of the two factors is  $a \times b$ . See also additive mode.

### **N of 1 randomised trial**

A randomised trial in an individual. N of 1 trials can be used in medical practice to determine the optimum treatment for an individual patient. There are many ways of conducting N of 1 randomised trials, one approach is:

1. A clinician and patient agree to test an intervention (the "experimental therapy") for its ability to improve or control the symptoms, signs, or other manifestations (the "treatment targets") of the patient's health problem.
2. The patient then undergoes "pairs" of treatment "periods" organized so that one period of each pair applies the experimental therapy and the other period applies an alternative intervention or placebo. The order of these two periods within each pair is randomized by a coin toss or other method that ensures that patient is equally likely to receive the experimental or control intervention during any period.
3. Whenever possible, both the clinician and the patient are blind to which intervention the patient is receiving.
4. The clinician monitors the treatment targets, often through a patient diary, to document the effect of the intervention currently being applied.
5. Pairs of treatment periods are replicated until the clinician and patient are convinced that the experimental therapy is effective, is harmful, or has no effect on the treatment targets. This usually requires 3 pairs.

### **Negative study**

A term often used to refer to a study that does not have "statistically significant" (positive) results indicating a beneficial effect of the intervention being studied. The term can generate confusion because it refers to both statistical significance and the direction of effect. Studies often have multiple outcomes, the criteria for classifying studies as "negative" are not always clear and, in the case of studies of risk or undesirable effects, "negative" studies are ones that do not show a harmful effect.

### **Networks**

See Fields.

### **Null hypothesis**

The statistical hypothesis that one variable (e.g. whether or not a study participant was allocated to receive an intervention) has no association with another variable or set of variables (e.g. whether or not a study participant died), or that two or more population distributions do not differ from one another. In simplest terms, the null hypothesis states that the results observed in a study are no different from what might have occurred as a result of the play of chance.

### **Number needed to treat (NNT)**

The number of patients who need to be treated to prevent one bad outcome. It is the inverse of the risk difference.

### **Observational study (synonym: non-experimental study)**

A study in which nature is allowed to take its course. Changes or differences in one characteristic (e.g. whether or not people received the intervention of interest) are studied in relation to changes or differences in other(s) (e.g. whether or not they died),

without action by the investigator. There is a greater risk of selection bias than in experimental studies (randomised controlled trials).

### **Odds ratio (OR)**

The ratio of the odds of an event in the experimental (intervention) group to the odds of an event in the control group. Odds are the ratio of the number of people in a group with an event to the number without an event. Thus, if a group of 100 people had an event rate of 0.20, 20 people had the event and 80 did not, and the odds would be 20/80 or 0.25. An odds ratio of one indicates no difference between comparison groups. For undesirable outcomes an OR that is less than one indicates that the intervention was effective in reducing the risk of that outcome. When the event rate is small, odds ratios are very similar to relative risks.

### **Open clinical trial**

There are at least three possible meanings for this term:

1. A clinical trial in which the investigator and participant are aware which intervention is being used for which participant (ie not double blind). Random allocation may or may not be used in such trials.
2. A clinical trial in which the investigator decides which intervention is to be used (non-random allocation). This is sometimes called an open label design (but some trials which are said to be "open label", are randomised).
3. A clinical trial which uses an open sequential design.

### **Open label design**

A study design in which the investigator is aware which intervention is being given to which participant (ie not double blind). Some studies with an open label design are randomised trials, but some do not include a comparison group and, therefore, cannot be randomised. See also open clinical trial.

### **Ordinal data**

Data that are classified into more than two categories where there is a natural order to the categories; for example, non-smokers, ex-smokers, light smokers and heavy smokers. Ordinal data are often reduced to two categories to simplify analysis and presentation, which may result in a considerable loss of information.

### **Outcomes**

Components of patients' clinical and functional status after an intervention has been applied.

### **Paired design**

A study in which participants or groups of participants are matched (e.g. based on prognostic factors) and one member of each pair is allocated to the experimental (intervention) group and the other to the control group.

### **Parallel group trial (synonym: independent group design)**

A trial that compares two groups of people, one of which receives the intervention of interest and one of which is a control group. Some parallel trials have more than two comparison groups and some compare different interventions without including a non-intervention control group.

### **Parent Database**

The compilation of modules prepared by Collaborative Review Groups and other Cochrane entities published on the Cochrane Library.

## **Peer review**

A refereeing process whose aim is to check the quality and importance of reports of research. An article submitted for publication in a peer reviewed journal is reviewed by other experts in the area. See also external peer reviewer (of a Cochrane Review).

## **Performance bias**

Systematic differences in care provided apart from the intervention being evaluated. For example, if patients know they are in the control group they may be more likely to use other forms of care, patients who know they are in the experimental (intervention) group may experience placebo effects, and care providers may treat patients differently according to what group they are in. Blinding of study participants (both the recipients and providers of care) is used to protect against performance bias.

## **Peto method**

A way of combining odds ratios that has become widely used in meta-analysis. The calculations are straightforward and understandable, but this method produces biased results in some circumstances. It is a fixed effect model.

## **Peto odds ratio**

An approximation to the exact odds ratios which are used when doing a meta-analysis using the Peto method. In some circumstances the Peto odds ratio can differ substantially from the exact odds ratio.

## **Phase I studies**

The first stage in testing a new drug in humans. Usually performed on healthy volunteers without a comparison group.

## **Phase II studies**

Second stage in testing a new drug in humans. These are sometimes randomised controlled trials.

## **Phase III studies**

Studies that are a full-scale evaluation of treatment. After a drug has been shown to be reasonably effective, it is essential to compare it to the current standard treatments for the same condition. Phase III studies are often randomised controlled trials.

## **Phase IV studies**

Studies that are concerned with post-marketing surveillance. They are often promotional exercises aimed at bringing a new drug to the attention of a large number of clinicians, and may be of limited scientific value.

## **Placebo**

An inactive substance or procedure administered to a patient, usually to compare its effects with those of a real drug or other intervention, but sometimes for the psychological benefit to the patient through a belief that s/he is receiving treatment. Placebos are used in clinical trials to blind people to their treatment allocation. Placebos should be indistinguishable from the active intervention to ensure adequate blinding.

## **Placebo effect**

A favourable response to an intervention, regardless of whether it is the real thing or a placebo, attributable to the expectation of an effect, i.e. the power of suggestion. The effects of many healthcare interventions are attributable to a combination of both placebo and "active" (non-placebo) effects.

### **Point estimate**

The results (e.g. mean, weighted difference, odds ratio, relative risk or risk difference) obtained in a sample (a study or a meta-analysis) which are used as the best estimate of what is true for the relevant population from which the sample is taken. A confidence interval is a measure of the uncertainty (due to the play of chance) associated with that estimate.

### **Positive study**

A term used to refer to a study with results indicating a beneficial effect of the intervention being studied. The term can generate confusion because it can refer to both statistical significance and the direction of effect, studies often have multiple outcomes, the criteria for classifying studies as negative or positive are not always clear and, in the case of studies of risk or undesirable effects, "positive" studies are ones that show a harmful effect.

### **Precision**

1. A measure of the likelihood of random errors in the results of a study, meta-analysis or measurement. Confidence intervals around the estimate of effect from each study are a measure of precision, and the weight given to the results of each study in a meta-analysis (typically the inverse of the variance of the estimate of effect) is a measure of precision (i.e. the degree to which a study influences the overall estimate of effect in a meta-analysis is determined by the precision of its estimate of effect).
2. The proportion of relevant citations located using a specific search strategy, i.e. the number of relevant studies meeting the inclusion criteria for a trials register or a review) divided by the total number of citations retrieved.

### **Prevalence**

The number of existing cases of a particular disease or condition in a given population at a designated time.

### **Prevalence study**

See cross-sectional study.

### **Primary study (synonyms: included study, original study)**

"Original research" in which data are first collected. The term primary research is sometimes used to distinguish it from "secondary research" (reanalysis of previously collected data), meta-analysis, and other ways of combining studies (such as economic analysis and decision analysis). However, because systematic reviews can provide answers not possible from individual studies they can also be considered to be primary research.

### **Probability distribution**

The function that gives the probabilities that a variable equals each of a sequence of possible values. Examples include the binomial, chi square, normal and Poisson distributions.

### **ProCite**

A software package designed to manage bibliographic references. Needs to be used in conjunction with Biblio-links to download records from electronic databases such as MEDLINE. Examples of other similar packages are Papyrus and Reference Manager.

### **Proportional hazards model (synonym: Cox model)**

A statistical model in survival analysis that asserts that the effect of the study factors (e.g. the intervention of interest) on the hazard rate (the risk of occurrence of an event, such as death, at a point in time) in the study population is multiplicative and does not change over time.

### **Prospective study**

In evaluations of the effects of healthcare interventions, a study in which people are divided into groups that are exposed or not exposed to the intervention(s) of interest before the outcomes have occurred. Randomised controlled trials are always prospective studies and case control studies never are. Concurrent cohort studies are prospective studies, whereas historical cohort studies are not (see cohort study), although in epidemiology a prospective study is sometimes used as a synonym for cohort study. See retrospective study.

### **Protocol**

The plan or set of steps to be followed in a study. A protocol for a systematic review should describe the rationale for the review; the objectives; and the methods that will be used to locate, select and critically appraise studies, and to collect and analyse data from the included studies.

### **Publication bias**

A bias in the published literature where the publication of research depends on the nature and direction of the study results. Studies in which an intervention is not found to be effective are sometimes not published. Because of this, systematic reviews that fail to include unpublished studies may overestimate the true effect of an intervention.

### **P-value**

The probability (ranging from zero to one) that the results observed in a study (or results more extreme) could have occurred by chance. In a meta-analysis the P-value for the overall effect assesses the overall statistical significance of the difference between the intervention groups, whilst the P-value for the heterogeneity statistic assesses the statistical significance of differences between the effects observed in each study.

### **Quality**

See methodological quality.

### **Quality score**

A value assigned to represent the validity of a study either for a specific criterion, such as allocation concealment, or overall. Quality scores can use letters (A, B, C) or numbers. An advantage of using letters is that the order of best to worst may be more obvious than for numbers.

### **Quasi-random allocation**

A method of allocating participants to different forms of care that is not truly random; for example, allocation by date of birth, day of the week, medical record number, month of the year, or the order in which participants are included in the study (e.g. alternation).

### **Quasi-randomised trial**

A trial using a quasi-random method of allocating participants to different forms of care. There is a greater risk of selection bias in quasi-random trials where allocation

is not adequately concealed compared with randomised controlled trials with adequate allocation concealment.

## **Random**

Governed by chance. See randomisation.

## **Random allocation**

A method that uses the play of chance to assign participants to comparison groups in a trial, e.g. by using a random numbers table or a computer-generated random sequence. Random allocation implies that each individual or unit being entered into a trial has the same chance of receiving each of the possible interventions. It also implies that the probability that an individual will receive a particular intervention is independent of the probability that any other individual will receive the same intervention. See also concealment of allocation, quasi-random allocation, randomisation.

## **Random effects model**

A statistical model sometimes used in meta-analysis in which both within-study sampling error (variance) and between-studies variation are included in the assessment of the uncertainty (confidence interval) of the results of a meta-analysis. See fixed effect model . If there is significant heterogeneity among the results of the included studies, random effects models will give wider confidence intervals than fixed effect models.

## **Random error (synonym: sampling error)**

Error due to the play of chance. Confidence intervals and P-values represent the probability of random errors, but not systematic errors (bias).

## **Random permuted blocks**

A method of randomisation that ensures that, at any point in a trial, roughly equal numbers of participants have been allocated to all the comparison groups. Permuted blocks are often used in combination with stratified randomisation.

## **Random selection (synonym: random sampling)**

A method of obtaining a representative, unbiased group of people from a larger population. Random selection that is not related to the allocation of participants to comparison groups is frequently used in cross-sectional and cohort studies. It is rarely used in randomised controlled trials. However, in older trial reports, the term is occasionally used instead of random allocation or randomisation.

## **Randomisation (spelled randomization in US English)**

Method used to generate a random allocation sequence, such as using tables of random numbers or computer-generated random sequences. The method of randomisation should be distinguished from concealment of allocation because of the risk of selection bias despite the use of randomisation, if there is not adequate allocation concealment. For instance, a list of random numbers may be used to randomise participants, but if the list is open to the individuals responsible for recruiting and allocating participants, those individuals can influence the allocation process, either knowingly or unknowingly.

## **Randomisation blinding**

See concealment of allocation.

## **Randomised controlled trial (RCT) (Synonym: randomised clinical trial)**

An experiment in which investigators randomly allocate eligible people into intervention groups to receive or not to receive one or more interventions that are being compared. The results are assessed by comparing outcomes in the treatment and control groups. NOTE: when using randomised controlled trial as a search term (publication type) in MEDLINE, the US spelling (randomized) must be used.

### **RCT**

See randomised controlled trial.

### **Referee**

See referee process.

### **Referee process**

System by which a review goes out to editors and external parties with content, methodological or user expertise. These people are sometimes called external peer reviewers or referees. See also editorial process.

### **Reference Manager**

A software package designed to manage bibliographic references. Sometimes confusingly referred to as RefMan (see RevMan). Examples of other similar packages are Papyrus and ProCite.

### **Register of trials**

See trials register.

### **Regression model**

A mathematical representation of the relationship of a dependent variable (outcome) to a combination of explanatory variables (sometimes called predictor variables or covariates).

### **Relative Risk (RR) (synonym: risk ratio)**

The ratio of risk in the intervention group to the risk in the control group. The risk (proportion, probability or rate) is the ratio of people with an event in a group to the total in the group. A relative risk of one indicates no difference between comparison groups. For undesirable outcomes an RR that is less than one indicates that the intervention was effective in reducing the risk of that outcome.

### **Reliability**

Refers to the degree to which results obtained by a measurement procedure can be replicated. Lack of reliability can arise from divergences between observers or measurement instruments, or instability in the attribute being measured.

### **Retrospective study**

A study in which the outcomes have occurred to the participants before the study commenced. Case control studies are always retrospective, cohort studies sometimes are, randomised controlled trials never are. See prospective study.

### **Review**

1. A systematic review.
2. A review article in the medical literature which summarises a number of different studies and may draw conclusions about a particular intervention. Review articles are often not systematic. Review articles are also sometimes called overviews.

3. To referee a paper. See referee, referee process, external peer reviewer.

### **Reviewer**

Somebody responsible for preparing and, in the case of Cochrane Reviews, keeping up-to-date a systematic review. The term “reviewer” is also sometimes used to refer to an external peer reviewer, or referee.

### **Review Group Coordinator (RGC) of a Collaborative Review Group (Previously known as Administrator)**

The key person in managing and supporting a Collaborative Review Group (CRG) on a day to day basis. Most CRGs have a full-time coordinator working from an editorial base. Responsibilities of a coordinator include: co-ordinating the activities of the CRG; fostering liaison and communication between editors and reviewers; setting up and maintaining a trials register; producing newsletters; providing reviewers with the relevant software (RevMan), manuals and support to do their reviews; transferring reviews to the Parent Database via the Module Manager software, for inclusion in the Cochrane Database of Systematic Reviews. Coordinators come from a variety of backgrounds, and whilst some also prepare Cochrane Reviews in addition to their work as coordinator, many do not.

### **Review Manager (RevMan)**

Software developed for the Cochrane Collaboration to assist reviewers in preparing Cochrane Reviews. Reviewers enter their protocols and reviews into RevMan, from which they can be imported into ModMan by a Collaborative Review Group coordinator for inclusion in the Parent Database and CDSR as part of the Group's edited module.

### **Review protocol**

See protocol.

### **RGC**

See Review Group Coordinator

### **Risk difference (RD) (synonym: absolute risk reduction)**

The absolute difference in the event rate between two comparison groups. A risk difference of zero indicates no difference between comparison groups. A RD that is less than zero indicates that the intervention was effective in reducing the risk of that outcome.

### **Risk factor**

An aspect of a person's condition, lifestyle or environment that increases the probability of occurrence of a disease. For example, cigarette smoking is a risk factor for lung cancer.

### **Run-in period**

A period before a trial is commenced when no treatment is given. The data from this stage of a trial are only occasionally of value but can serve a valuable role in screening out ineligible or non-compliant participants, in ensuring that participants are in a stable condition, and in providing baseline observations. A run-in period is sometimes called a washout period if treatments that participants were using before entering the trial are discontinued.

### **Sampling error**

See random error.

## **Search strategy**

1. The methods used by a Collaborative Review Group (CRG) to identify trials within the Group's scope. This includes handsearching relevant journals, searching electronic databases, contacting drug companies, other forms of personal contact and checking reference lists. CRGs must describe their search strategy in detail in the Group's module. Reviewers can refer to the Group's search strategy when preparing a Cochrane Review, and if necessary supplement this with a description of their own additional searches.
2. The methods used by a reviewer to locate relevant studies, including the use of a CRG's trials register.
3. The combination of terms used to identify studies in an electronic database such as MEDLINE.

## **Selection bias**

1. In assessments of the validity of studies of healthcare interventions, selection bias refers to systematic differences between comparison groups in prognosis or responsiveness to treatment. Random allocation with adequate concealment of allocation protects against selection bias. Other means of selecting who receives the intervention of interest, particularly leaving it up to the providers and recipients of care, are more prone to bias because decisions about care can be related to prognosis and responsiveness to treatment.
2. Selection bias is sometimes used to describe a systematic error in reviews due to how studies are selected for inclusion. Publication bias is an example of this type of selection bias.
3. Selection bias, confusingly, is also sometimes used to describe a systematic difference in characteristics between those who are selected for study and those who are not. This affects the generalisability (external validity) of a study but not its (internal) validity.

## **Sensitivity analysis**

An analysis used to determine how sensitive the results of a study or systematic review are to changes in how it was done. Sensitivity analyses are used to assess how robust the results are to uncertain decisions or assumptions about the data and the methods that were used.

## **Sequential trial**

A trial in which the data are analysed after each participant's results become available, and the trial continues until a clear benefit is seen in one of the comparison groups, or it is unlikely that any difference will emerge. The main advantage of sequential trials is that they will be shorter than fixed length trials when there is a large difference in the effectiveness of the interventions being compared. Their use is restricted to conditions where the outcome of interest is known relatively quickly.

## **Single blind (synonym: single masked)**

The investigator is aware of the treatment/intervention the participant is getting, but the participant is unaware. See also blinding, double blind, triple blind.

## **SMD**

See Standardised mean difference

## **Specialised register**

See Register of trials.

### **Standardised mean difference**

The difference between two means divided by an estimate of the within-group standard deviation. When an outcome (such as pain) is measured in a variety of ways across studies (using different scales) it may not be possible directly to compare or combine study results in a systematic review. By expressing the effects as a standardised value the results can be combined since they have no units. Standardised mean differences are sometimes referred to as a d index.

### **Statistical power**

The probability that the null hypothesis will be rejected if it is indeed false. In studies of the effectiveness of healthcare interventions, power is a measure of the certainty of avoiding a false negative conclusion that an intervention is not effective when in truth it is effective. The power of a study is determined by how large it is (the number of participants), the number of events (e.g. strokes) or the degree of variation in a continuous outcome (such as weight), how small an effect one believes is important (i.e. the smallest difference in outcomes between the intervention and the control groups that is considered to be important), and how certain one wants to be of avoiding a false positive conclusion (i.e. the cut-off that is used for statistical significance).

### **Statistical significance**

An estimate of the probability of an association (effect) as large or larger than what is observed in a study occurring by chance, usually expressed as a P-value. For example, a P-value of 0.049 for a risk difference of 10% means that there is less than a one in 20 (0.05) chance of an association that is as large or larger having occurred by chance and it could be said that the results are "statistically significant" at  $P = 0.05$ ). The cut-off for statistical significance is usually taken at 0.05, but sometimes at 0.01 or 0.10. These cut-offs are arbitrary and have no specific importance. Although it is often done, it is inappropriate to interpret the results of a study differently according to whether the P-value is, say, 0.055 or 0.045 (which are quite similar values, not diametrically opposed ones).

### **Stratified randomisation**

In any randomised trial it is desirable that the comparison groups should be as similar as possible as regards participant characteristics that might influence the response to the intervention. Stratified randomisation is used to ensure that equal numbers of participants with a characteristic thought to affect prognosis or response to the intervention will be allocated to each comparison group. For example, in a trial of women with breast cancer, it may be important to have similar numbers of pre-menopausal and post-menopausal women in each comparison group. Stratified randomisation could be used to allocate equal numbers of pre- and post-menopausal women to each treatment group. Stratified randomisation is performed either by performing separate randomisation (often using random permuted blocks) for each strata, or by using minimisation.

### **Study validity**

See validity.

### **Surrogate endpoints (synonym: intermediary outcomes; surrogate outcomes)**

Outcome measures that are not of direct practical importance but are believed to reflect outcomes that are important; for example, blood pressure is not directly

important to patients but it is often used as an outcome in clinical trials because it is a risk factor for stroke and heart attacks. Surrogate endpoints are often physiological or biochemical markers that can be relatively quickly and easily measured, and that are taken as being predictive of important clinical outcomes. They are often used when observation of clinical outcomes requires long follow-up.

### **Systematic error**

See bias.

### **Systematic review (synonym: systematic overview)**

A review of a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyse and summarise the results of the included studies. See also Cochrane Review.

### **t-distribution, t-test (synonym: Student t-test)**

The t-distribution is the distribution of a quotient of independent random variables, the numerator of which is a standardised normal random variable and the denominator of which is the positive square root of the quotient of a chi-square distributed random variable and its number of degrees of freedom. The t-test uses the t-distribution to test whether two means differ significantly or to test linear regression or correlation coefficients.

### **Test of association**

See statistical significance.

### **Therapeutic trial**

See clinical trial.

### **Trend**

Used loosely to refer to an association or possible effect that is not statistically significant.

A consistent movement across ordered categories, e.g. a change in the effect observed in studies grouped according to, for instance, intensity of treatment.

### **Trials register**

In the Cochrane Collaboration, this is a database of bibliographic references to randomised controlled trials and controlled clinical trials relevant to a Collaborative Review Group or Field, that is maintained at the editorial base. Software such as ProCite, Reference Manager or is used to manage the database. Once a relevant report of a trial is identified, it is photocopied, coded and entered onto the register. Wherever possible, relevant trial reports are downloaded directly into the register from an electronic database such as MEDLINE. Information about unpublished and ongoing trials is also included in trials registers.

### **Trials Registers Development Group (TRDG)**

The Trials Registers Development Group (TRDG) was established as a core function group of the Cochrane Collaboration in 1996. It's primary responsibility is to support Collaborative Review Groups with the conduct of Cochrane reviews, in particular with regard to their Specialised Register of Trials. It has begun to do this through the development of the CENTRAL register of studies. The TRDG subsumed the former possible Trials Register Methods Group and it is anticipated that the TRDG will take on functions of such a group.

### **Triple blind (synonym: triple masked)**

An expression that is sometimes used to indicate that knowledge of which study participants are in which comparison group is kept secret from the statistician doing the analysis as well as from the study participants and investigators (outcome assessors). See also blinding, single blind, double blind.

### **Unit of allocation**

The unit that is assigned to the alternative interventions being investigated in a trial. Most commonly, the unit will be an individual person but, in some trials, people will be assigned in groups to one or other of the interventions. This is done to avoid contamination or for convenience and the units might be, for example, hospitals or communities. In other trials, different parts of a person (such as the left or right eye) might be assigned to receive different interventions. See unit of analysis error.

### **Unit of analysis error**

In some studies people are allocated in groups instead of individually (e.g. by practice, by hospital or by community). Often when this is done the unit of allocation is different from the unit of analysis, i.e. people are allocated by groups and analysed as though they had been allocated individually. This is sometimes called a unit of analysis error. Effectively, using individuals as the unit of analysis when groups of people are allocated increases the power of the studies by increasing the degrees of freedom. This can result in overly narrow confidence intervals and false positive conclusions that the intervention had an effect when in truth there is greater uncertainty than what is reflected by the P-value. In the context of a review, it can result in studies having narrower confidence intervals and receiving more weight than is appropriate.

### **Users of reviews**

Patients or healthcare professionals or policy makers using a review to make practical decisions about healthcare, and researchers conducting or considering further research.

### **Utility**

In economic and decision analysis, the desirability of an outcome, usually expressed as being between zero and one (e.g. death typically has a utility value of zero and a full healthy life has a value of one).

### **Validity (synonym: internal validity)**

Validity is the degree to which a result (of a measurement or study) is likely to be true and free of bias (systematic errors). Validity has several other meanings, usually accompanied by a qualifying word or phrase; for example, in the context of measurement, expressions such as "construct validity", "content validity" and "criterion validity" are used. The expression "internal validity" is sometimes used to distinguish validity (the extent to which the observed effects are true for the people in a study) from external validity or generalisability (the extent to which the effects observed in a study truly reflect what can be expected in a target population beyond the people included in the study). See also methodological quality, random error.

### **Variable**

Any quantity that varies. A factor that can have different values.

## **Variance**

A measure of the variation shown by a set of observations, defined by the sum of the squares of deviations from the mean, divided by the number of degrees of freedom in the set of observations.

## **Venn diagram**

A pictorial presentation of the extent to which two or more quantities or concepts are mutually inclusive and mutually exclusive.

## **Weighted least squares regression (in meta-analysis)**

A meta-regression technique for estimating the parameters of a multiple regression model, wherein each study's contribution to the sum of products of the measured variables (study characteristics) is weighted by the precision of that study's estimate of effect.

## **Washout period**

The stage in a cross-over trial when treatment is withdrawn before the second treatment is given. Washout periods are usually necessary because of the possibility that the intervention administered first can affect the outcome variable for some time after treatment ceases. A run-in period before a trial starts is sometimes called a washout period if treatments that participants were using before entering the trial are discontinued.

## **Weighted mean difference (in meta-analysis)**

A method of meta-analysis used to combine measures on continuous scales (such as weight), where the mean, standard deviation and sample size in each group are known. The weight given to each study (e.g. how much influence each study has on the overall results of the meta-analysis) is determined by the precision of its estimate of effect and, in the statistical software in RevMan and CDSR, is equal to the inverse of the variance. This method assumes that all of the trials have measured the outcome on the same scale. See also standardised mean difference.

## **WMD**

See weighted mean difference

## **World Wide Web (WWW)**

A part of the Internet with a graphical interface. "Web pages" or "home pages" are HyperText Markup Language (HTML) documents on the WWW. Hypertext allows users to jump from one place in a document to another, from one document to another, and from one computer on the WWW to another. A connection through a cable or over the telephone and a Web browser (software program), such as Netscape, are needed to access and view WWW documents. The main Collaboration home page is at <http://www.cochrane.org>.

## **Glossary acknowledgements**

This glossary was originally compiled by Ruth Jepson (Menstrual Disorders and Subfertility Group) and Jini Hetherington (Collaboration Secretariat) with help from Hilda Bastian (Consumer Network), Liz Chalker (Acute Respiratory Infections Group), Iain Chalmers (UK Cochrane Centre), Jon Deeks (Centre for Statistics in Medicine, Oxford, UK), Cindy Farquhar (Menstrual Disorders and Subfertility Group), Monica Fischer (Nordic Cochrane Centre), Gerry Fowkes (Peripheral Vascular Diseases Group), Helen Handoll (Musculoskeletal Injuries Group), Emma Harvey (Cochrane Collaboration on Effective Professional Practice), Carol Lefebvre (UK Cochrane Centre), Reive Robb (Infectious Diseases Group), Rochelle Seifas (Schizophrenia Group), Bev Shea (Musculoskeletal Group), and Mark Starr (Update Software); and initial secretarial support from Hazel Dunn (Peripheral Vascular Diseases Group).

The glossary has also made use of the following publications:

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## **Suggestions for improvement**

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## **Corrections and changes to the Glossary**

The following changes and corrections have been made to the December 2003 version of the Glossary:

**The following terms in the Glossary have been updated:**

- World wide web

The following changes and corrections have been made to the March 2001 version of the Glossary:

**The following terms have been added to the Glossary:**

- Inter-rater reliability
- Intra-rater reliability
- N of 1 randomised trial.

The following changes and corrections have been made to the February 2000 version of the Glossary:

**The following terms in the Glossary have been updated:**

- Bayesian approach
- Case study
- CENTRAL
- Cochrane Database of Systematic Reviews
- Cochrane Library
- Cochrane Review
- Cochrane Reviewers' Handbook
- Cochrane Review Methodology Database (CRMD)
- Cohort study
- Confounding
- Coordinator
- CRMD
- Economic analysis
- Editorial team
- Expected date (of a Cochrane Review)
- Funnel plot
- Handsearching
- Meta-analysis
- Methodological quality
- Methods Group (MG)
- Minimisation
- Negative study
- Observational study
- Parent Database
- Peer review
- Phase II studies
- Primary study
- P-value
- Quality score
- Random selection
- Randomised controlled trial (RCT)
- Referee process
- Relative Risk (RR)
- Risk difference (RD)
- Run-in period

- Sequential trial
- Trials register
- Unit of allocation
- World Wide Web

**The following terms have been added to the Glossary:**

- Cochrane Methodology Register
- Meerkat
- Review Group Coordinator
- RGC
- SMD
- WMD