Sources of evidence
Evidence is summarized where possible from systematic reviews of primary research. The main source of evidence has been from the Cochrane Collaboration, which provides highly structured systematic reviews, with evidence included or excluded based on explicit quality-related criteria, and often using meta-analyses to increase the power of the findings of numerous studies. These systematic reviews are globally respected as among the most rigorous searches for published and unpublished randomized controlled trials, and for their analysis of the findings. High quality systematic reviews are now being produced more widely by organizations and researchers outside the Cochrane Collaboration, and First Consult will search for these systematic reviews using Medline and Embase databases.

In the absence of such aggregated trial data, where appropriate, there may be inclusion of individual research papers retrieved from Medline and Embase in order to identify the highest quality evidence for specific medical therapies in situations where it might be relevant to point-of-care decisions. It may be especially important to evaluate new studies published after the systematic reviews, and to integrate that new evidence within the context of existing reviews.

Evidence-based guidelines are identified primarily in two main ways:
- Using the National Guideline Clearinghouse, which is a comprehensive database of evidence-based clinical practice guidelines and related documents produced by the Agency for Healthcare Research and Quality, which was originally created in partnership with the American Medical Association and the American Association of Health Plans (formerly America's Health Insurance Plans).
- Accessing them directly from the websites of relevant learned societies, professional associations and government organizations, principally from the U.S. but with some from the UK, Europe and worldwide.

Evaluation of evidence
Strength of Recommendation Taxonomy (SORT)
Once First Consult identifies the most relevant and current evidence, it is evaluated using a rating system derived from the Strength of Recommendation Taxonomy (SORT) classification system. This system is endorsed by the American Academy of Family Physicians. In this rating system, in order to indicate the strength of the supporting evidence, each summary evidence statement is accorded a level 1, 2, or 3:

Level 1
- Cochrane Reviews of good-quality randomized controlled trials (RCTs) with consistent findings, in which adequate data are found for analysis
- Other high quality systematic reviews or meta-analyses of good quality studies with consistent findings in which adequate data are found for analysis
- Good-quality RCTs or prospective cohort studies with adequate follow-up
Level 2
- Other systematic reviews or meta-analyses not included in Level 1, in which either the review itself or the underlying studies are not of high quality or the included studies are inconsistent
- Other studies not included in Level 1. These may be RCTs or cohort studies of lower quality or weaker observational study designs

Level 3
- Evidence-based consensus statements and expert guidelines, or extrapolations from sources such as usual practice, case reports or case series

First Consult Evidence Glossary

Absolute risk reduction (ARR)/absolute risk increase (ARI)
The reduction/increase in the event rate between control group (control event rate, CER) and treated group (experimental event rate, EER): ARR/ARI = CER - EER.

Blinding
A process used in trials in which the subjects, investigators, and/or assessors remain ignorant concerning the treatments that subjects are receiving. In single-blind trials, only subjects are blinded to their treatment; in double-blind trials both subjects and assessors are blind to the allocations. Occasionally, even higher levels of blinding are found.

Case-control study
A study that identifies individuals who have a disease or outcome of interest (cases) and a suitable control group without the disease or outcome, and examines the relationship of an intervention, exposure, or risk factor to the outcome of interest and how it differs between the 2 groups. Results are usually presented as odds ratios.

Clinical cohort study
A study that identifies and follows 2 groups of people (cohorts), one of which was exposed to a factor of interest and 1 which was not, and follows the cohorts for the outcome of interest.

Confidence interval (CI)
The CI provides an estimate of the uncertainty in measurement. It generates a range of possible values consistent with the data, within pre-defined statistical limits. Those limits are usually set at 95%.

Crossover study
A study in which 2 or more treatments are applied sequentially to the same subject. Each subject therefore acts as his or her own control.
**Cross-sectional study**
An observational study that measures diseases (or other characteristics) and other variables of interest as they exist in a defined population at a particular time, or over a short period. It can be used for assessing prevalence of a condition in the population, but any associations must be interpreted with caution.

**Double-blind study**
Studies in which investigators and subjects are unaware of which intervention was received until codes are broken at the end of the trial.

**Event rate**
The proportion of patients in a group in whom an event is observed. Thus, if out of 100 patients the event is observed in 28, the event rate is 0.28, or 28%.

**Evidence-based medicine (EBM)**

**Experimental event rate (EER)**
The rate at which events occur in an experimental group, expressed as a percentage (eg, 50%) or as a proportion (0.5).

**False negative**
A test result in which the test is negative (eg, a pregnancy test finds no evidence of pregnancy), but the event is actually there (the woman is pregnant).

**False positive**
A test result in which the test is positive (eg, a positive pregnancy test), but the event is not actually there (the woman is not pregnant).

**Incidence**
The proportion of new cases of a particular disease or condition in a population during a specified time interval.

**Intention-to-treat analysis**
A method of analysis for randomized trials in which all patients randomly assigned to 1 of the treatments are analyzed together, regardless of whether or not they completed or received that treatment.

**Mean**
The sum of all observations divided by the number of observations.
Meta-analysis
A statistical technique that summarizes the results of several studies that addressed the same hypothesis in the same way. Larger studies and studies with less random variation can be given greater weight.

Null hypothesis
The null hypothesis proposes that the intervention of interest has no impact on the outcomes being evaluated, or that there is no relationship between what is being measured.
Number needed to treat (NNT)
The number of patients who need to be treated to prevent one bad outcome; it is the reciprocal of the change in absolute risk brought about by an intervention, or absolute risk reduction: NNT = 1/ARR.

Odds
Odds are a way to describe the chance of an event, the ratio of events to non-events, for example, if the occurrence of a disease is 20% in a population, it does not occur in 80%, then its odds are 0.2/0.8 = 0.25.

Odds ratio
The ratio of the odds of exposure in one group of people to that in another, typically the group with the disease or outcome of interest (case) compared to the control. The odds ratio is commonly used to measure outcomes of case-control studies.

p-value
"Probability" level, or likelihood that the difference observed between 2 interventions could have arisen by chance if the null hypothesis is true; the usual p-value is arbitrarily set at <0.05 (or <5/100, or <5%).

Placebo
A fake or inactive intervention received by participants allocated to the control group in a clinical trial.

Placebo-controlled trial
A trial in which an active intervention is tested against placebo.

Prevalence
A measure of the proportion of people in a population who have a particular disease or condition at a point in time or over some period of time.

Probability
A measure that quantifies the uncertainty associated with an event. Thus, if an event A cannot happen, the probability of A, p(A), is 0. If an event occurs with certainty, the probability p(A) is 1. Otherwise the values of p(A) are between 0 and 1.
**Prospective study**
A study in which people are divided into groups by current exposure or level of exposure to the intervention of interest (before the outcomes have occurred), followed over time, and the outcomes recorded. Randomized controlled trials are always prospective studies and case-control studies never are.

**Quality of life**
A descriptive term that refers to an individual's emotional, social and physical well-being, and his or her ability to function in the ordinary tasks of living.

**Randomized controlled trial (RCT)**
A trial in which participants are randomly assigned into 2 (or more) groups and prospectively assessed. At the minimum, they are assigned into an intervention group or an alternative treatment group (which may be placebo).

**Range**
Measure of dispersion. Difference between highest and lowest values.

**Retrospective study**
A study looking back in time, so the outcomes have occurred to the participants before the study commences. Case-control studies are always retrospective, cohort studies can be, and randomized controlled trials never are.

**Risk and relative risk**
The risk is the number of subjects who experience the outcome of interest divided by the total number of subjects. Relative risk is the ratio of the risk measured in the experimental (intervention) group to the risk measured in the control group.

**Risk factor**
An aspect of a person's condition, lifestyle or environment that increases the probability of the occurrence of a disease.

**Significance**
Statistical significance can be defined many ways. A common measure of statistical significance uses p-values to estimate the probability that the observed difference could have occurred by chance if the null hypothesis is true. Significance is commonly set at p-values less than 0.05.

**Standard deviation**
Measure of dispersion. The square root of the variance.

**Systematic review**
A critical analysis of all the relevant research related to a clearly formulated question that used systematic and explicit methods to identify, select, and evaluate those studies and to extract and synthesize the findings. It may or may not include statistical meta-analysis.
**Uncontrolled study**
Any study that does not have a control group consisting of patients assigned to an alternative treatment and followed up over the same time period as those in the intervention group.

**Variance**
Measure of dispersion. The average squared deviation of values from their mean.