Glossary of terms for the EBD series

**Attributable fraction**\(^a\)  The portion of the incidence rate of a given outcome in a given population that is identified as due to a given exposure.  
*Consequently, that portion of the incidence rate could be reduced if causative exposure were eliminated.*

**Attributable burden**  Burden of a given disease in a given population that is identified as due to a specific exposure.  
*Consequently, that portion of disease burden in the population that could be reduced if causative exposure were eliminated.*

**Avoidable burden**\(^b\)  The portion of burden of a given disease that could be reduced if levels of exposure to a given risk factor were reduced to an alternative, achievable exposure distribution.

**Confidence interval (and 95% CI)**\(^a\)  The computed interval with a given probability, e.g. the 95%, that the true value of a variable such as a mean, proportion, or rate is contained within the interval.

**Confounding**\(^c\)\(^d\)  Concomitant exposure with the exposure being studied in the population, associated both with the disease and the exposure being studied.  *Confounding can lead to either the observation of apparent differences between study groups when they do not truly exist or, conversely, the observation of no differences when they do exist.*

**Counterfactual exposure**  An alternative exposure distribution used as baseline for estimating the burden of disease caused by the exposure distribution of interest. The disease burden caused by a risk factor is estimated by comparing the burden caused by current and future levels of exposure to the exposure levels that would be expected under some alternative hypothetical scenario.

**Covariate**\(^a\)  A variable that is possibly predictive of the outcome under study. A covariate may be of direct interest to the study or may be a confounding variable of effect modifier.

**Comparative Risk Assessment (CRA)**  A systematic counterfactual approach to estimating health gaps (q.v.) (or changes in health expectancy) causally attributable to a risk factor or a group of risk factors. The underlying approach is the same as the one used in environmental burden of disease assessment.

**Disability adjusted Life Year (DALY)**  An indicator of life expectancy combining mortality and morbidity into one summary measure of population health to account for the number of years lived in less than optimum health. It is a health gap (q.v.) measure developed for calculating the global burden of disease (q.v.).

**Epidemiology**\(^a\)  The study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to control of health problems.
**Environmental tobacco smoke (ETS)** A type of air pollution due to burning of tobacco, especially sidestream smoke. ETS is a confirmed carcinogen.

**Geometric mean** A measure of central tendency. This is calculated by adding the logarithms of the individual values, calculating their arithmetic mean, and converting back by taking the antilogarithm.

**Global burden of disease (GBD)** An estimate of health gaps (q.v.) for a comprehensive set of disease and injury causes, and for major risk factors, in the world populations using all available mortality and health data and methods to ensure internal consistency and comparability of estimates. The WHO Global Burden of Disease 2000 project estimates health gaps using DALYs (q.v.) for 14 subregions of the world for the year 2000 and subsequent years.

**Gross national product (GNP)** The total income produced in a country's economy, including goods and services produced abroad.

**Health-adjusted life expectancy (HALE)** Any of a number of summary measures which use explicit weights to combine health expectancies for a set of discrete health states into a single indicator estimating the expectation of equivalent years of good health. Also referred to as ‘Healthy life expectancy’.

**Healthy life years (HeaLYs)** A health gap (q.v.) measure calculated on the basis of the incidence of pathological processes and the future non-fatal health outcomes and mortality from those processes.

**Health gap** An estimate of the difference between the current population health and a normative goal for population health. It is a summary measure of population health.

**Impact fraction** A generalisation of the attributable fraction that accommodates both hazardous and protective exposures, multiple levels of exposure or incomplete elimination of exposure.

**Life expectancy** Any summary measure of population mortality that estimates the expectation of years of life.

**Meta-analysis** A statistical synthesis of the data from separate but similar, i.e. comparable, studies, leading to a quantitative summary of the pooled results. A frequent application has been the pooling of results from a set of randomized controlled trials, none in itself necessarily powerful enough to demonstrate statistically significant differences, but in aggregate capable of doing so. Meta-analysis has a qualitative component, i.e. application of a predetermined criteria of quality (e.g. completeness of data, absence of biases), and a quantitative component, i.e. integration of the numerical information. The aim is to integrate the findings, pool the data, and identify the overall findings of results. An essential prerequisite is that the studies must stand up to critical appraisal, and various biases.

**Monte Carlo simulation** An analysis of a sequence of events using random numbers to generate possible outcomes in an iterative process. This technique can be used to simulate uncertainty and variability. Each probability distribution is sampled in a manner that
reproduces the distribution’s shape. The distribution of the values calculated for the model outcome therefore reflects the probability of the values that could occur.

**Odds ratio**  The ratio of two odds, an odds being a ratio of probabilities (in this instance, the ratio of the probability of occurrence of an event to the probability of non-occurrence). When considering the following:

<table>
<thead>
<tr>
<th>Disease</th>
<th>Exposed</th>
<th>Unexposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease</td>
<td>$a$</td>
<td>$b$</td>
</tr>
<tr>
<td>No disease</td>
<td>$c$</td>
<td>$d$</td>
</tr>
</tbody>
</table>

The odds ratio is $ad/bc$.

**Perinatal**  Pertaining to a period commencing at 22 completed weeks (154 days) of gestation (the time when the birth weight is normally 500g) and ending seven completed days after birth. (ICD-10)

**Person-time**  A measurement combining persons and time as the denominator in incidence and mortality rates when, for varying periods, individual subjects are at risk of developing disease or dying. It is the sum of periods of time at risk for each of the subjects. *The most widely used measure is person-years. With this approach, each subject contributes only as many years of observation to the population at risk as the period over which that subject has been observed; a subject observed over one year contributes 1 person-year, a subject observed over a 10-year period contributes 10 person-years. This method can be used to measure incidence rate over extended and variable time periods.*

**Probability (random) sample**  A representative subset of a population made of randomly selected individuals. *All individuals have a known chance of selection. They may all have an equal chance of being selected. If a stratified sampling method is used, the rate at which individuals from several subsets are sampled can be varied so as to produce greater representation of some classes than of others.*

**Quality-adjusted life expectancy (QALE)**  A form of HALE (q.v.) based on a question on activity restriction in the Canada Health Survey.

**Relative risk (RR)**  The ratio of risk of disease or death among the exposed to the risk among the unexposed; this usage is synonymous with risk ratio. Alternatively, the ratio of the cumulative incidence rate in the exposed to the cumulative incidence rate in the unexposed, i.e. the rate ratio.

**Standard deviation (SD)**  A statistical measure of dispersion, or variation, in a frequency distribution. *It is the most widely used measure of dispersion. It is equal to the positive square root of the variance. The mean tells where the values for a group are centred. The standard deviation is a summary of how widely dispersed the values are around this centre.*

**Socioeconomic status (SES)**  A description of a person’s position in society, which may be expressed on an ordinal scale (i.e. classification into qualitative categories) using such criteria as income, educational level attained, occupation, value of dwelling place, etc.
**Summary measures of population health**  Indicators that summarize the health of a population into a single number. They combine information about mortality and population health states. They may summarize either average health level or inequality for a population.

**Years lived with disability (YLD)** The component of the DALY (q.v.) that measures the lost years of healthy life through living in states of less than full health.

**Years of Life Lost (YLL)** The component of the DALY (q.v.) that measures the years lost through premature mortality.

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