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| **Abbreviated name** | Neonatal mortality rate |
| **Indicator name** | Neonatal mortality rate (per 1000 live births) |
| **Domain** | Health status |
| **Subdomain** | Reproductive, maternal, newborn, child and adolescent health |
| **Associated terms** | Mortality by age and sex |
| **Definition** | Probability that a child born in a specific year or period will die during the first 28 completed days of life if subject to age-specific mortality rates of that period, expressed per 1000 live births.<br><br>Neonatal deaths (deaths among live births during the first 28 completed days of life) may be subdivided into early neonatal deaths, occurring during the first 7 days of life, and late neonatal deaths, occurring after the 7th day but before the 28th completed day of life. |
| **Numerator** | Number of children who died during the first 28 days of life. |
| **Denominator** | Number of live births (years of exposure). |
| **Disaggregation/ additional dimension** | Age in days/weeks, birth weight, place of residence, sex, socioeconomic status |
| **Method of measurement** | Data from civil registration: The number of live births and the number of neonatal deaths are used to calculate age-specific rates. This system provides annual data.<br><br>Data from household surveys: Calculations are based on full birth history, whereby women are asked for the date of birth of each of their children, whether each child is still alive and if not the age at death. |
| **Method of estimation** | To ensure consistency with mortality rates in children younger than 5 years (under-five mortality rate) produced by the UN-IGME and to account for variation in survey-to-survey measurement errors, country data points for the under-five and neonatal mortality rates were rescaled for all years to match the latest time series estimates of the under-five mortality rate produced by UN-IGME. This rescaling assumes that the proportionate measurement error in neonatal and under-five mortality rates is equal for each data point.<br><br>The following multilevel statistical model was then applied to estimate neonatal mortality rates: $\log(\text{neonatal mortality rate}/1000) = \alpha 0 + \beta 1 * \log(\text{under-five mortality rate}/1000) + \beta 2 * ([\log(\text{under-five mortality rate}/1000)]^2)$ with random effects parameters or both level and trend regression parameters, and random effects parameters influenced by the country itself.<br><br>For countries with high-quality civil registration data for neonatal deaths – defined as (i) 100% complete for adults and only civil registration data is used for child mortality, (ii) population greater than 800 000, (iii) and with at least three civil registration data points for the periods 1990—1994, 1995—1999, 2000—2004 and 2005 onwards – we used the same basic equation, but with random effects parameters for both level and trend regression parameters, and random effects parameters influenced by the country itself.<br><br>Predominant type of statistics: adjusted and predicted.<br><br>These neonatal rates are estimates, derived from the estimated UN-IGME neonatal rate infant population for *World population prospects* to calculate the live births; hence they are not necessarily the same as the official national statistics. |
| **Measurement frequency** | Annual if based on registration system; otherwise, less frequent (3—5 years based on surveys) |
| **Monitoring and evaluation framework** | Impact |
| **Preferred data sources** | Civil registration with high coverage |
| **Other possible data sources** | Household surveys, population census |
| **Further information and related links** | Every newborn: an action plan to end preventable deaths. Geneva: World Health Organization; 2014 (http://www.everynewborn.org/Documents/Full-action-plan-EN.pdf, accessed 29 March 2015).<br><br>Framework of actions for the follow-up to the Programme of Action of the International Conference on Population and Development beyond 2014. Report of the Secretary-General. New York (NY): United Nations; 2014 (https://www.unfpa.org/webdav/site/global/shared/documents/ICPD/Framework%20of%20action%20for%20the%20follow-up%20to%20the%20PoA%20of%20the%20ICPD.pdf, accessed 19 August 2014).<br><br>World population prospects. New York (NY): United Nations; 2012 (http://esa.un.org/wpp/, accessed 29 March 2015). |