

<b>PREVALENCE OF INSECT-BORNE DISEASES IN CHILDREN AGED 0-14 YEARS</b>	
<b>GENERAL CONSIDERATIONS</b>	
<i>Issues</i>	Insect-borne diseases
<i>Type of indicator</i>	Health outcome
<i>Rationale</i>	<p>Insect-borne diseases are a major source of both illness and death amongst children, especially in the developing world. These diseases take many different forms, are transmitted by a wide range of different insects (e.g. mosquitoes, flies) and are associated with a wide range of different environments (though most show a close affinity for water). Young children are especially at risk, because of their poorly developed immunity or defence mechanisms.</p> <p>This indicator is intended to show the impact of insect-borne diseases on children.</p>
<i>Issues in indicator design</i>	<p>This indicator can be designed in many different ways, at different levels of specificity. A major issue is the definition of 'insect-borne diseases'. Common insect-borne diseases include malaria, yellow fever, dengue fever, river blindness (onchocerciasis), filariasis and sleeping sickness. Many of the most important insect-borne diseases are water-related, in that the insect vectors concerned breed or pass part of their lifecycle in or close to water. Insect-borne diseases have thus been exacerbated in many cases by inappropriate water-engineering (e.g. irrigation) or poor management of water resources and wastes (e.g. poor sanitation). Some insect-borne diseases are also animal-related (e.g. Lyme's disease), in that the insect vectors are associated with specific animal hosts. In these cases, land use and land cover are important factors in their distribution and prevalence. The activity of many insect vectors is dependent on climate, so marked variations may occur geographically, and from year to year, in response to climatic fluctuations. For general, global comparisons, the overall mortality rate amongst children from all forms of insect-borne diseases has some value. For more local application, however, it is usually more appropriate to define the indicator in terms of specific diseases of particular concern.</p> <p>Since infection by insect-borne diseases is often life-long if not treated, the proposed age range for this indicator is 0-14 years. For some applications, however, it may be restricted to a narrower age range (e.g. 0-4 years).</p>
<b>SPECIFICATION</b>	
<i>Definition</i>	Numbers of children aged 0-14 years infected with insect-borne diseases.
<i>Terms and concepts</i>	<p><b><i>Insect-borne diseases:</i></b> vector-borne diseases for which insects act as a primary agent of transmission; these include malaria, dengue, yellow fever, onchocerciasis, leishmaniasis and trypanosomiasis.</p> <p><b><i>Total number of children aged 0-14 years:</i></b> total resident population of children aged 0-14 years at the time of survey.</p>
<i>Data needs</i>	<p>Numbers of children aged 0-14 years diagnosed with insect-borne diseases at the time of survey.</p> <p>Total number of children aged 0-14 years.</p>

<i>Data sources, availability and quality</i>	<p>Data on the numbers of children infected with insect-borne diseases may be obtained from a range of sources, including routine health surveillance systems, special surveys and sentinel disease monitoring systems. In many countries, at least for some insect-borne diseases, these systems are relatively well-established and data are collated and integrated at the international level. In more remote areas, however, monitoring and reporting may be less reliable – and all data are subject to considerable uncertainties (e.g. due to under-reporting, misdiagnosis or incomplete data collation at the regional or national level). Data may also not always be collected and reported by age.</p> <p>Data on the total number of children aged 0-14 years can usually be obtained from national censuses and should be reliable. Estimates for inter-censal years (or where census data are not available) may be made using population models or from births and deaths data.</p>
<i>Level of spatial aggregation</i>	Health district
<i>Averaging period</i>	Annual
<i>Computation</i>	<p>The indicator can be computed as a simple mortality rate:</p> $1000 * (Mibd / Ctot)$ <p>where: <i>Mibd</i> is the number of reported cases of insect-borne diseases of children aged 0-14 years within the survey period;</p> <p><i>Ctot</i> is the total population of aged 0-14 years.</p>
<i>Units of measurement</i>	Number per thousand
<i>Worked example</i>	<p>Assume that during one year 3 940 cases of insect-borne diseases of children aged 0-14 years due to insect-borne diseases are reported in an area containing 40 530 children aged 0-14 years. In this case, the value of the indicator is:</p> $1\ 000 * (3\ 940 / 40\ 530) = 96.5 \text{ per thousand}$
<i>Interpretation</i>	<p>In general terms, this indicator provides a direct measure of the health effects on children of insect-borne diseases: an increase in the prevalence rate may be interpreted as evidence of an increase in the health impacts, a reduction the reverse. Like all morbidity indicators, however, it is likely to be subject to considerable uncertainties in the data. For these reasons, minor variations or differences in the indicator should be interpreted with caution, and great care is needed when comparing different areas with different health surveillance systems.</p> <p>When expressed as a general indicator of morbidity for all insect-borne diseases, it also has limited interpretability: differences in prevalence rates may clearly be due to many different types of vector and disease. For most applications, therefore, the indicator should be applied to a defined set of diseases or vectors.</p> <p>Many insect-borne diseases also show natural periodicity (related, for example, to seasonal or inter-annual fluctuations in the vector population). Short-term trends, therefore, need to be interpreted with caution, and care is needed in inferring effects of intervention strategies over short periods.</p>

<i>Variations and alternatives</i>	<p>The main variations on this indicator relate to the definition of insect-borne diseases. As noted, it may be applied at a more or less specific level, though for most applications it is more appropriate to specify the indicator closely in terms of a single disease or insect vector. The indicator can also be applied to different ages of children (e.g. 0-1 years, 0-4 years), depending on the population of concern, and the demographic incidence of the disease. Where an assessment is required of the wider health burden on children, the indicator can be expressed in terms of DALYs (in association with mortality data).</p>
<i>Examples</i>	<p>WHO <i>Catalogue of health indicators</i></p> <ul style="list-style-type: none"> <li>• <b>Incidence rate of severe malaria</b></li> </ul>
<i>Useful references</i>	<p>WHO 1994 <i>Information systems for the evaluation of malaria control programmes, a practical guide</i>. AFRO/CTD/MAL/ 94.3. Brazzaville: World Health Organization Regional Office for Africa.</p> <p>WHO 1996 <i>Catalogue of health indicators: a selection of health indicators recommended by WHO programmes</i>. Geneva: World Health Organization (under revision).</p>