



# Infant mortality from respiratory diseases

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## Annual mortality rate due to respiratory diseases in children older than one month and under one year of age

This summary gives an overview of mortality in early childhood due to respiratory diseases in countries of the WHO European Region and changes over time.

### KEY MESSAGE

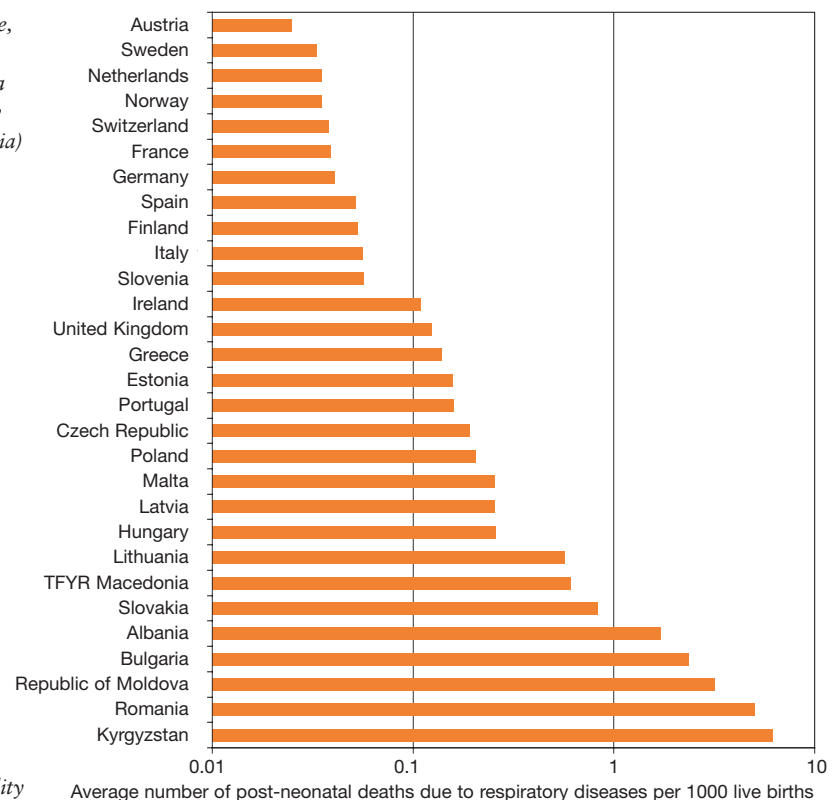
☹ There are considerable variations in infant mortality due to respiratory diseases, with a gradual increase from western to eastern European countries. The average level is relatively low. Data for 1997–2002 reveal a decline in the post-neonatal mortality rates for nearly all countries.

### RATIONALE

The indicator gives an indirect assessment of the adverse impact on health of environmental factors in a vulnerable age group. The post-neonatal respiratory mortality rate depends on many different factors, including indoor and outdoor air pollution.

**Fig. 1. Post-neonatal mortality rate due to respiratory diseases in the WHO European Region, 2001**

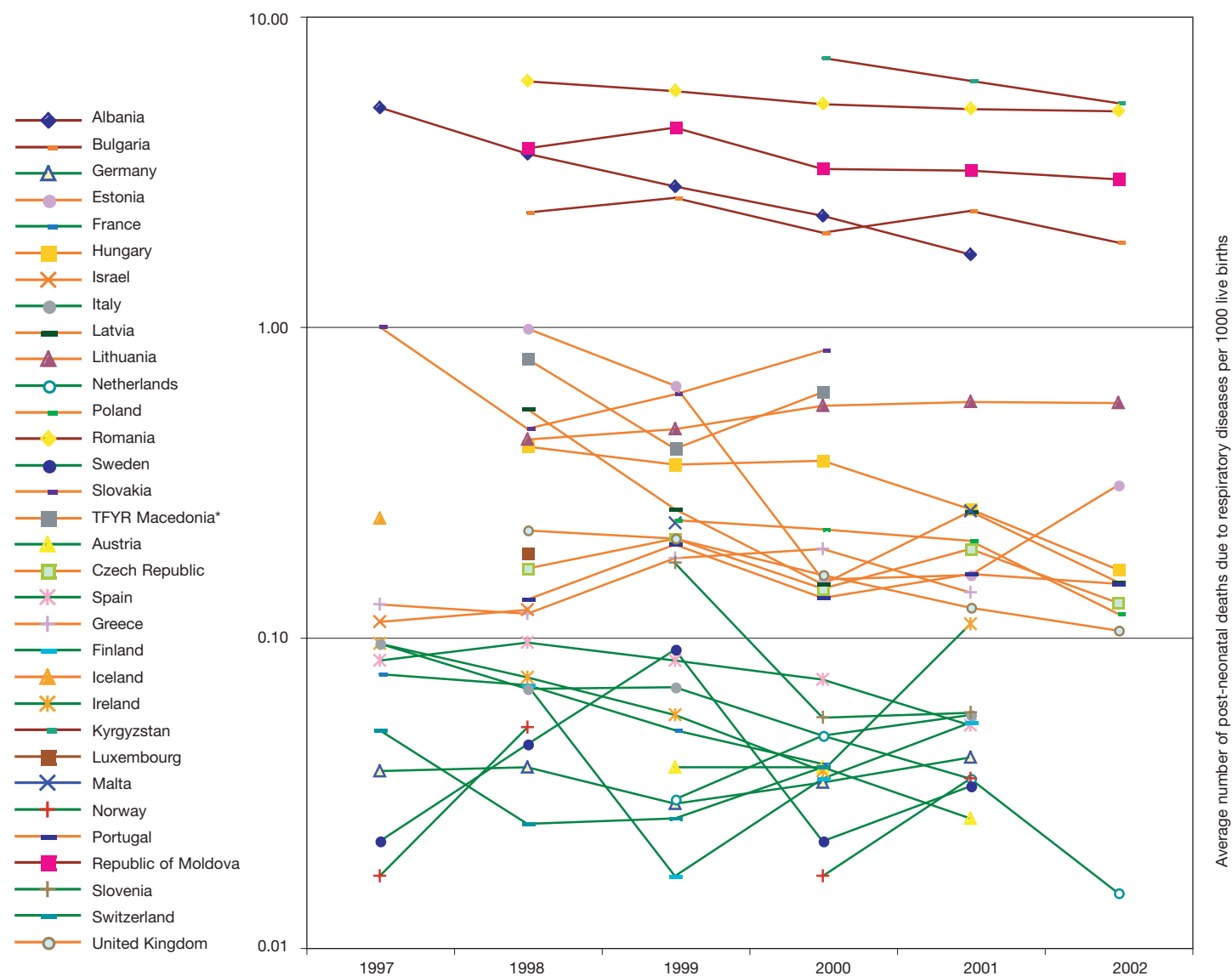
*Note. Data for France, Slovakia, Switzerland and TFYR Macedonia (The former Yugoslav Republic of Macedonia) are for 2000.*



Source: WHO mortality database (1).

Average number of post-neonatal deaths due to respiratory diseases per 1000 live births

Fig. 2. Changes in post-neonatal mortality rate due to respiratory diseases in the WHO European Region, 1997-2002



\*TFYR Macedonia = The former Yugoslav Republic of Macedonia  
 Source: WHO mortality database (1).

## PRESENTATION OF DATA

Figure 1 presents the infant mortality rate due to respiratory diseases for the last available year for a majority of countries. Data are available in the WHO mortality database (1) for 29 Member States of the Region, although for some countries, the latest available data are for 2000 (France, Slovakia, Switzerland and The former Yugoslav Republic of Macedonia). The average for all countries is 0.8. The average of number post-neonatal deaths due to respiratory diseases is presented in a logarithmic scale.

Figure 2 shows changes in the post-neonatal mortality rate due to respiratory diseases in the Region from 1997 to 2002. The average num-

ber of post-neonatal deaths due to respiratory diseases is presented in a logarithmic scale.

## HEALTH – ENVIRONMENT CONTEXT

Respiratory illness is the most common cause of childhood morbidity in industrialized countries, although serious morbidity is low in the 15 developed countries of the European Union (EU) (2). In developing and emerging economies, acute lower respiratory infections (ALRIs), particularly pneumonia, are common causes of death and serious morbidity in young children and infants. Causative infec-

tive agents differ between developed and developing regions of Europe: bacterial infections are common in developing countries while viral infections cause most ALRIs in developed countries. In temperate European countries there is a marked variation with the seasons in ALRIs, with a significant rise in incidence in the winter months falling to relatively low levels in the summer.

Studies have found that there is a positive association between the level of air pollutants and mortality in children due to respiratory causes. Consequently, an increase in infant respiratory mortality rates may indicate higher indoor or outdoor air pollution levels, and conversely, decreasing mortality may indicate improved air quality (3). However, caution should be exercised in such interpretations.

Further to this, the association between infant respiratory mortality and ambient air pollution is not simple. Many forms of respiratory illness occur, and there are numerous causes, including outdoor air pollution, pollutants and allergens, in the home (such as the use of solid fuel for cooking and heating, tobacco smoke and dust) as well as infectious agents (4). Diet, lifestyle, the environment and social factors may also be important, possibly having a synergistic effect. Countries with a high infant respiratory mortality rate should generally be able to reduce total infant mortality significantly by implementing policies that address the causes of respiratory illness.

## POLICY RELEVANCE AND CONTEXT

In 2004, the Fourth Ministerial Conference on Environment and Health adopted the Children's Health and Environment Action Plan for Europe (CEHAPE), which includes four regional priority goals to reduce the burden of environment-related diseases in children. One of the goals (RPG III) aims at preventing and reducing respiratory diseases due to outdoor and indoor air pollution, thereby contributing to a reduction in the frequency of asthmatic attacks, and ensuring that children can live in an environment with clean air (5).

The following EU directives aim to achieve the ultimate goal of European clean air policy, which is to achieve levels of air quality that do not give rise to significant negative effects on or risks to human health and the environment.

- The Air Quality Framework Directive 96/62/EC (6) on the assessment and management of ambient air quality sets the quality standards for particulate matter, NO<sub>2</sub>, SO<sub>2</sub> and O<sub>3</sub> (updated with Directive 2002/3/EC), as well as common methods and criteria for assessment and management of pollutant levels.
- Council Directive 1999/30/EC (7) relates to the limit values for particulate matter, NO<sub>2</sub> and NO<sub>x</sub>, SO<sub>2</sub> and lead in ambient air.
- Directive 2000/69/EC (8) relates to the limit values for benzene and CO in ambient air.
- Directive 2002/3/EC relates to ambient air O<sub>3</sub> (9).

In addition, the Sixth Community Environment Action Programme called for the devel-

opment of a thematic strategy on air pollution with the objective of attaining "levels of air quality that do not give rise to significant negative impacts on and risks to human health and the environment" (10). This strategy, prepared by the Clean Air for Europe programme, was adopted in September 2005. It established interim health-related objectives for air quality in the EU and recommended that current legislation be modernized, focused on the most serious pollutants and aim to integrate environmental concerns into other policies and programmes (11).

WHO published its first Air quality guidelines for Europe in 1987, with a second edition in 2000 (12). After partial updating in 2006, the fully revised WHO air quality guidelines have now been published (13). According to WHO's assessment of the burden of disease, globally more than 2 million premature deaths each year can be attributed to the combined effects of indoor air pollution from the use of solid fuel (approximately 1.5 million deaths) and urban outdoor air pollution (approximately 800 000 deaths) (4).

## ASSESSMENT

On average, 13.6% of post-neonatal mortality in Europe is due to respiratory diseases, with an attributable mortality rate of 0.8 per 1 000 live births. This average, however, masks wide variations ranging from 0.025 per 1 000 live births in Austria to 6.2 per 1 000 live births in Kyrgyzstan. In general, rates are considerably higher in eastern than western Europe.

A fall in infant respiratory mortality has been evident in recent years in many countries with high rates, such as Albania, Kyrgyzstan, Republic of Moldova and Romania. Even so, rates in those countries remain considerably higher than in the rest of the Europe. Mortality data from 2001 show that respiratory diseases contributed substantially to the overall post-neonatal infant mortality rate in Romania (54.56%), Kyrgyzstan (53.01%), Republic of Moldova (41.28%) and Bulgaria (35.62%). A major cause of the high infant mortality rates seen in eastern Europe is the relatively worse economic and environmental situation in those countries, which could be why a greater proportion of acute respiratory infections are severe.

Countries in western Europe show very low infant mortality rates from respiratory dis-

eases, most probably because of high economic and social development and more effective environmental protection policies. The existing, although very low, infant mortality from respiratory diseases is more likely to be associated with increasing antimicrobial resistance, the emergence of novel pathogens or the lack of effective antiviral medications. In general, however, respiratory illness is detected early and treatment instituted rapidly.

## DATA UNDERLYING THE INDICATOR

### Data source

WHO mortality database (1).

### Description of data

Annual number of deaths of children aged 28–364 days due to respiratory diseases and number of live births.

### Method of calculating the indicator

The number of deaths per 1 000 live births is calculated by dividing the annual number of deaths of children aged 28–364 days due to respiratory diseases by the number of live births and multiplying the result by 1 000.

### Geographical coverage

Twenty-nine countries in the European Region, most of them members of the EU.

### Period of coverage

1997–2001.

### Frequency of update

Annual.

### Data quality

Data are based on national statistics. The constitutional mandate of each Member State is to establish and maintain statistical services and provide information in the field of health.

This fact sheet presents the latest available data for 1997–2001. As these data are relatively old, new efforts are needed to monitor and reveal the current trends of such a dynamic indicator. Data for a number of countries (e.g. Belgium, Denmark and Monaco) are older than 1996. At the same time, geographical coverage should be improved to include data from all 52 Member States of the WHO European Region. Many countries have not reported their data to the WHO mortality database for each year in the time series, or have reported only one of the two parameters needed for calculating the indicator.

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## Further information

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