Neonatal and perinatal mortality

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A short summary of the guideline

In the World Health Organization document "Neonatal and perinatal mortality: country, regional and global estimates 2004" are provided estimates of neonatal and perinatal mortalities for 2004 (WHO, 2007). These indicators have been updated with the new data from the surveys and registers. According to it, only 81 countries have vital registration, 89 countries obtain data from survey. However, 37 countries have no reliable data and no possibilities to estimate. Globally in 2004, 3.7 million of newborns died in the neonatal period and three million infants were stillborn. The highest neonatal mortality was observed in Africa (40/1000 live births). In Latin America and the Caribbean was 13 per 1000 live births. Neonatal deaths in developed countries were 4 deaths/1000 live births and the stillbirth rate was substantially lower (4/1000 total births).
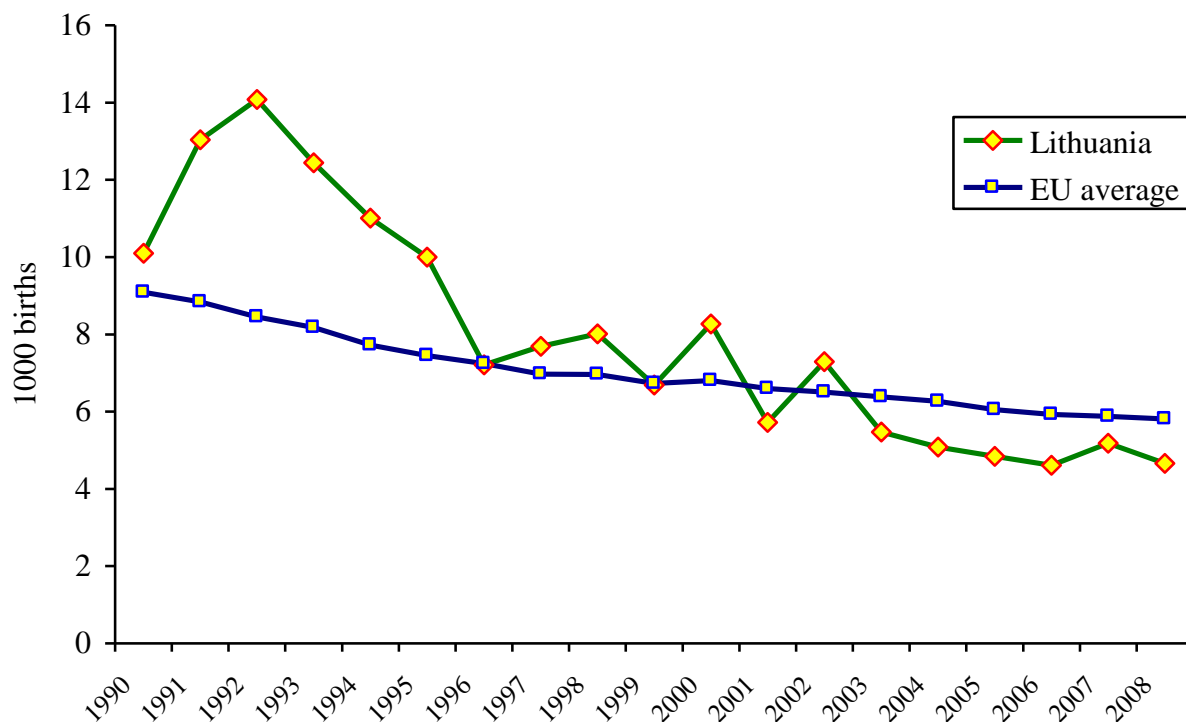
The document states, that current data are still not good enough to present the real situation in perinatal and neonatal mortality. Especially information about stillbirths from developing countries remains incomplete and estimates are less reliable. According to the WHO, neonatal mortality estimates in this case are more reliable. The lack of real information causes, that surveys continue reporting unrealistic low stillbirth rates. In order to solve this problem it is important to organize further research in these areas. This information is very welcome by managers and policy makers. The reliable information will help to understand the real burden of this problem and to address this reproductive health challenge.

Literature search

Perinatal and neonatal mortality is an important indicator of reproductive health and the general health state of the population (Yu 2003). In order to have the objective and reliable data the Medical Birth Register started to function in Lithuania on January 1, 1993. Register database analysis was initiated by Clinic of Neonatology of Vilnius University Children's Hospital. As well as the health of newborn (stillbirths, low birth weight, perinatal mortality), data are also registered on maternal health (diseases, risk factors) and socioeconomic status (education, marital status, place of residence, occupation) (Padaiga & Gaizauskiene 1998). Physicians or midwives routinely collect the information for the register. This causes some discussion regarding the reliability of the data. According to Cnattingus (1990) different types of errors might occur, such as non transfer of information from the patient card to the registry, mistakes in entering data into the computer, errors due to poor design or improper use of forms, or mistakes in the basic health history. Unfortunately, there is still no comprehensive research carried out on registry data validity in Lithuania. However, some efforts are being made to improve its quality. The risk factors related to previous pregnancies, such as place of delivery and major obstetric complications, are not believed to create inaccuracies in reporting. Information regarding clinical events in the current pregnancy might be related to diagnostic capabilities and qualifications of medical staff. It should be noted that data are verified at the Lithuanian Health Information Centre with subsequent cleaning and checking for possible errors (Gaizauskiene 2007). Therefore, it could be concluded that the data in Medical Birth Register are reliable and present the real situation in Lithuania.

According to the register, the perinatal mortality has sharply decreased in Lithuania in the past 20 years (Figure 1).

Figure 1. **Perinatal mortality in Lithuania and European Union, 1990-2008**

Source: WHO European Health for All Database, 2010.

The increase in perinatal mortality in 1991-1993 could be explained by the adaptation of international definitions of live birth and stillbirth. According to WHO, perinatal mortality cases include stillborns with the gestational age of over 22 weeks and the live-born who died within the first six days after delivery (Rychtarikova 1995). At present, perinatal mortality in Lithuania reaches 4.66 per 1000 births, and it's lower than European Union average.
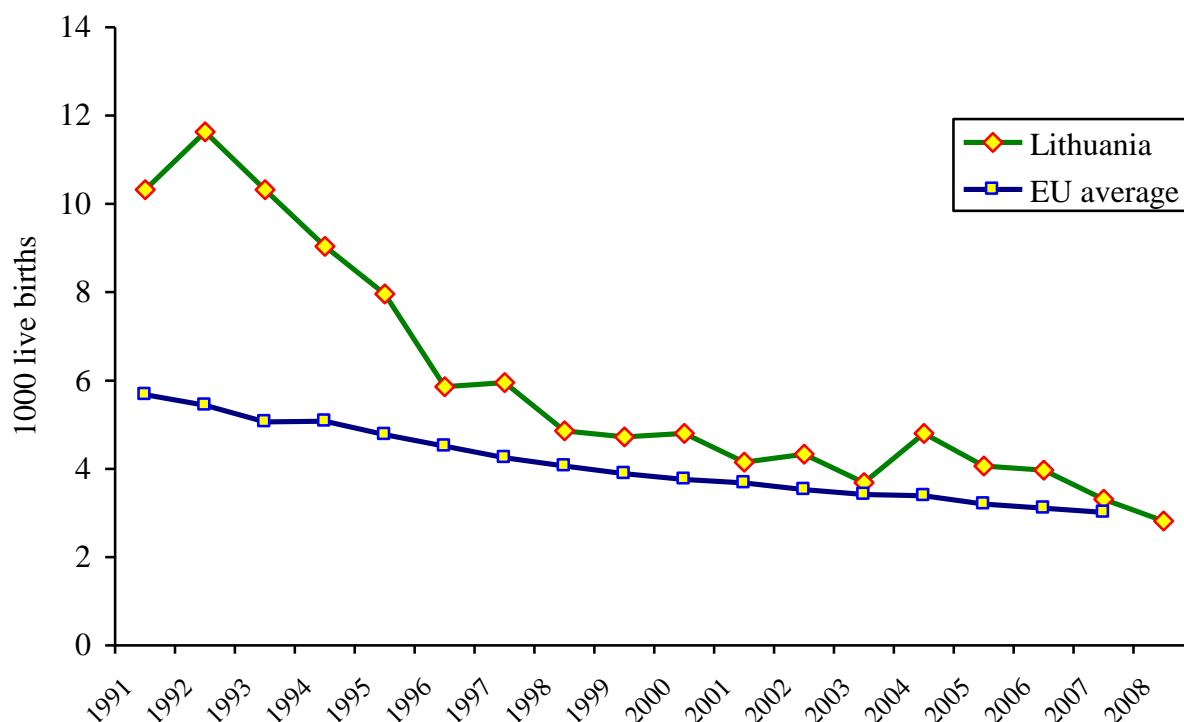
The main causes of perinatal mortality in 2008 were intrauterine hypoxia (29.7%), intrapartum asphyxia (29.7%), congenital malformation (18.5%), perinatal infection (6.5%) and immaturity-related disorders (6.5%) (Institute of Hygiene Health Information Centre 2009).

There are several studies carried out on risk factors of perinatal mortality in Lithuania. Gaizauskiene et al. (2003) has analyzed more than 75 000 records from the Medical Birth Register database. According to the study results, the septic state of the mother during the delivery (OR=13.3) and hemorrhage due to placenta separation (OR=11.6) were associated with substantial increased risks of fetus. In addition, it was found, that some sociodemographic factors (i.e. marital status) had higher impact on perinatal mortality than that of some clinical factors. Later study has supported associations between parents' sociodemographic factors and perinatal mortality in Lithuania. Gaizauskiene et al. (2007) estimated that reported manual or harmful working conditions during the pregnancy and fathers' alcohol abuse has increased the risk of perinatal mortality. Similar risk factors were reported in studies carried out in other countries (Forssas 1999, Anthony 2009).

Stillbirths made up 0.52% of all births (165 cases) in Lithuania in 2008, 21.2% of fetuses died intrapartum (0.66% in 2000) (Institute of Hygiene Health Information Centre 2001 & 2009).

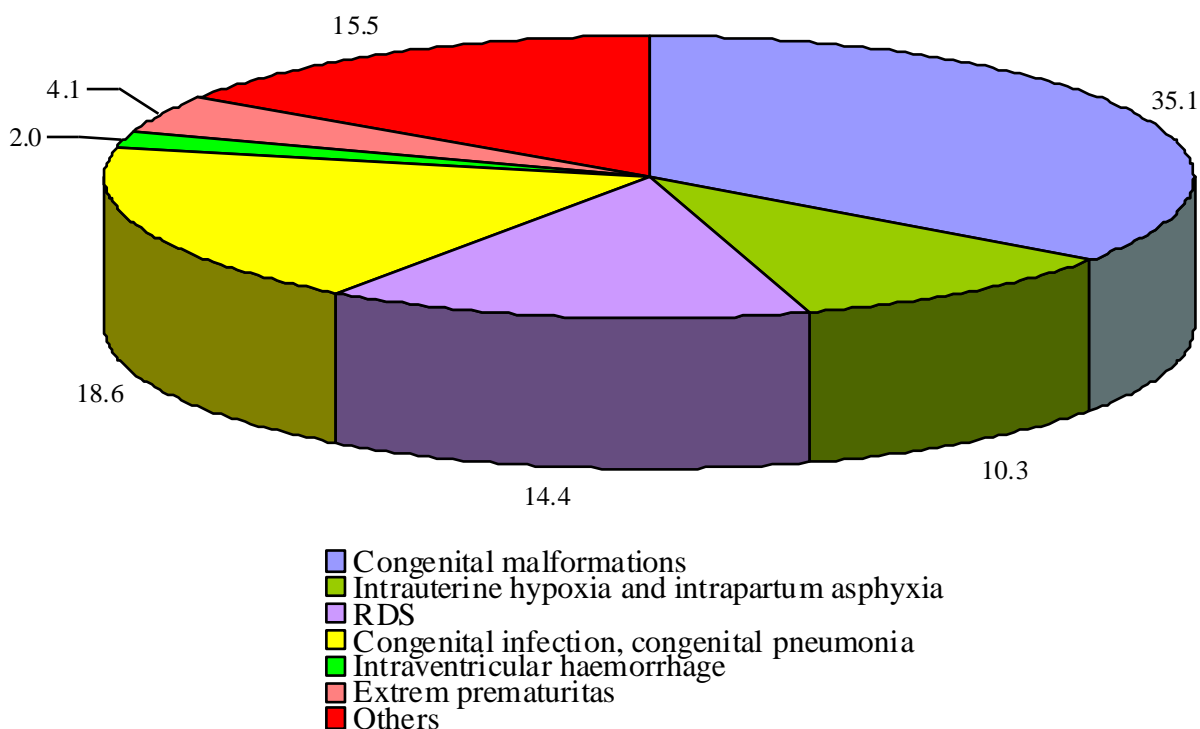The neonatal mortality decrease in Lithuania is presented in Figure 2.

Figure 2. **Neonatal mortality in Lithuania and European Union, 1991-2008**

At present, perinatal mortality in Lithuania reaches 2.82 per 1000 live births, and it's similar with European Union average. The main causes of neonatal mortality in 2008 were congenital malformations (35.1%), congenital infections and congenital pneumonia (18.6%), and neonatal respiratory distress syndrome (14.4%) (Institute of Hygiene Health Information Centre 2009) (Figure 3).

Figure 3. **Main causes of neonatal mortality in Lithuania, 2008**

Congenital malformations
Intrauterine hypoxia and intrapartum asphyxia
RDS
Congenital infection, congenital pneumonia
Intraventricular haemorrhage
Extrem prematuritas
Others

HEALTH 21, a document of the World Health Organization, stresses the importance of reducing the infant mortality in the all European Region (WHO Regional Office for Europe, 1999). The same goal was included in Lithuanian Health Program (Ministry of Health of the Republic of Lithuania 1997). In order to achieve these goals several perinatal health programs has been initiated in Lithuania (Kalediene 2002, Lazarus 2004, Nadisauskiene 2006). The first – "The Preventive Program of Perinatal, Neonatal and Congenital Abnormalities in Lithuania" was initiated by Lithuanian Association of Obstetrics and Gynecology and launched in 1992 (Nadisauskiene 1999). Program lasted till 1996 and aimed to create a system of maternal and neonatal care (two national perinatology centers in Vilnius and Kaunas were established and their service areas were defined); to create newborns transportation system, to create a system of diagnosis and prevention of congenital abnormalities; to collect, process, and analyze maternal and neonatal data (to establish a new database); to evaluate, distribute, and use available resources efficiently; to plan financial and human resources for a perinatal care infrastructure; and to train medical personnel and control the level and quality of their knowledge. The reorganization was based on a three-tiered maternal and neonatal care system (Basys 1997). As the continuation of the previous program, Ministry of Health developed Perinatology program in 1997. One of the most important achievements of the program was the involvement of family doctors (GPs) in providing health care for pregnant women and newborns (Nadisauskiene 2006). The third step was the start of National Mother and the child Health Program in 2004 (Nadisauskiene 2006). This program was like the continuation of the previous one with strong emphasize on renovation of equipment in health care institutions, development of continue monitoring of child development, and the education of the society (Nadisauskiene 2006). It could be concluded that these holistic and continuing programs helped to achieve the major goal - perinatal, neonatal, and infant mortality rates decreased significantly (Basys 1997, Bagdoniene 2006).

Guideline appraisal

1. Scope and purpose of guideline

1.1. The objectives of the guideline are specifically defined? – *Yes, they are. In the very beginning of the document is mentioned, that this leaflet provides neonatal and perinatal estimates for 2004.*

1.2. The questions covered by the guideline are specifically described? – *Yes, they are. It is said, perinatal and neonatal mortality estimates have been updated with new data from surveys and vital registration. This document is prepared in response to a surge in national community studies and acknowledging improved reporting of vital registration data.*

1.3. The patient /community/group of people (women, men, and children, adolescent....) to whom the guideline is meant to apply are specifically described? – *Yes, it is. The target group in the document is stillbirths and newborns.*

2. Stakeholder involvement

2.1. The guideline was developed with the involvement of different relevant professional group? – *The document is dealing with the estimates of neonatal and perinatal mortality in different countries. For this purpose, information was collected from different sources, i.e. surveys, vital registers. Therefore, it could be those different specialists were involved in the development of this document.*

2.2. Patients and target groups views and preference have been sought? – *It is not clear from the document. However, I think that it has not been sought.*

2.3. Who are the users of this guideline (doctors, nurses, midwives, health workers etc.)? – *In the document it is said, that this information is very important for health mangers. However, I would add, that this information is very important for doctors, health policy makers, politicians, and researchers.*

2.4. Has the guideline been piloted among target users? – *This document is a statistical information report. Therefore, I doubt that it has been piloted among target users.*

3. Guideline development

3.1. Systematic methods were used to search for evidence? – *Yes, they were. Information for this document was search from various studies and vital registrations.*

3.2. Criteria for selecting the evidence are clearly described? – *Yes, it is. It is described, how information was collected, how it is reliable, and how estimates were calculated.*

3.3. Methods used for formulating the recommendations are clearly described? – *Methods used for formulating the recommendations were not described.*

3.4. The health benefits, side effects and risks have been considered in formulating the recommendations? – *The recommendations in the document will have no direct effect to ones health.*

3.5. There is an explicit link between the recommendations and the supporting evidence? – *Yes it is.*

3.6. Procedure for upgrading the guideline is provided? – *No, it doesn't.*

3.7. The recommendations are specific and unambiguous (clear)? – *Recommendations are specific and related to the problem, which is presented in the document.*

3.9. Key recommendations are easily identifiable, practical and strong? – *In this guideline only one recommendation could be identified - "will stimulate further research and collection of population-based data, which will help to improve mortality monitoring". In my opinion, this recommendation is logical, practical and I fully agree with the authors of this document.*

3.10. Guideline is supported with tools for application? – *No, it doesn't.*

3.11. Has the guideline had peer review and testing? – *It is not identified in the guideline. However, it could be presumed that some process of peer review has been performed. In addition, it is mentioned that the document uses data from various surveys. Normally all studies pass peer review procedure. Therefore, it could be said, that primary data sources has been peer reviewed and tested.*

4. Applicability

4.1. Is this guideline known in your professional environment? – *Yes it is. Me and my colleagues are delivering lectures on public health, reproductive health etc. Therefore, this document is essential for our lectures. I think that colleagues from other institutions know this document too.*

4.2. Are the recommendations applicable to your professional practice, are they applied in your country? – *Yes, they are.*

Conclusions

This document is very important not only for policy makers, health managers or doctors, but for researchers and academia as well. It provides reliable information about global situation in neonatal and perinatal mortality. The reliable and comparable information is crucial in starting and organizing further reproductive health programs. The particular document allows countries to know the nature and extent of

the problem, to review their achievements, and to compare with situation in other ones. Moreover, it can help to indentify the best practice of solving this problem.

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