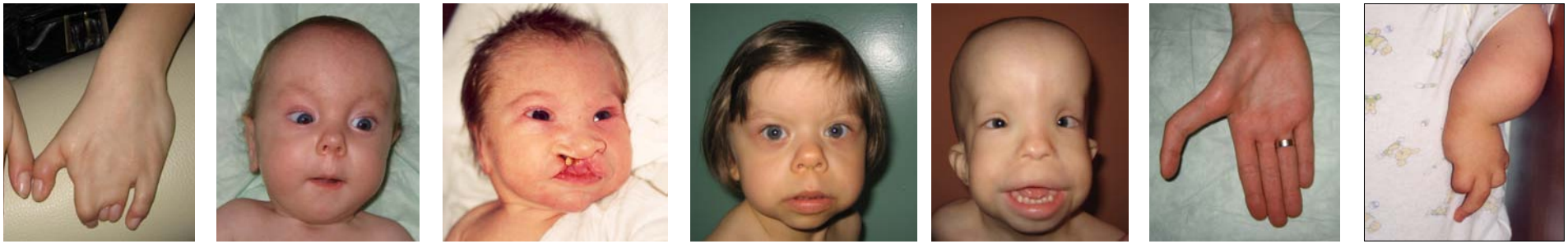
# Birth Defects in the Central and Eastern European Region: Morbidity, Epidemiology, Current Activities

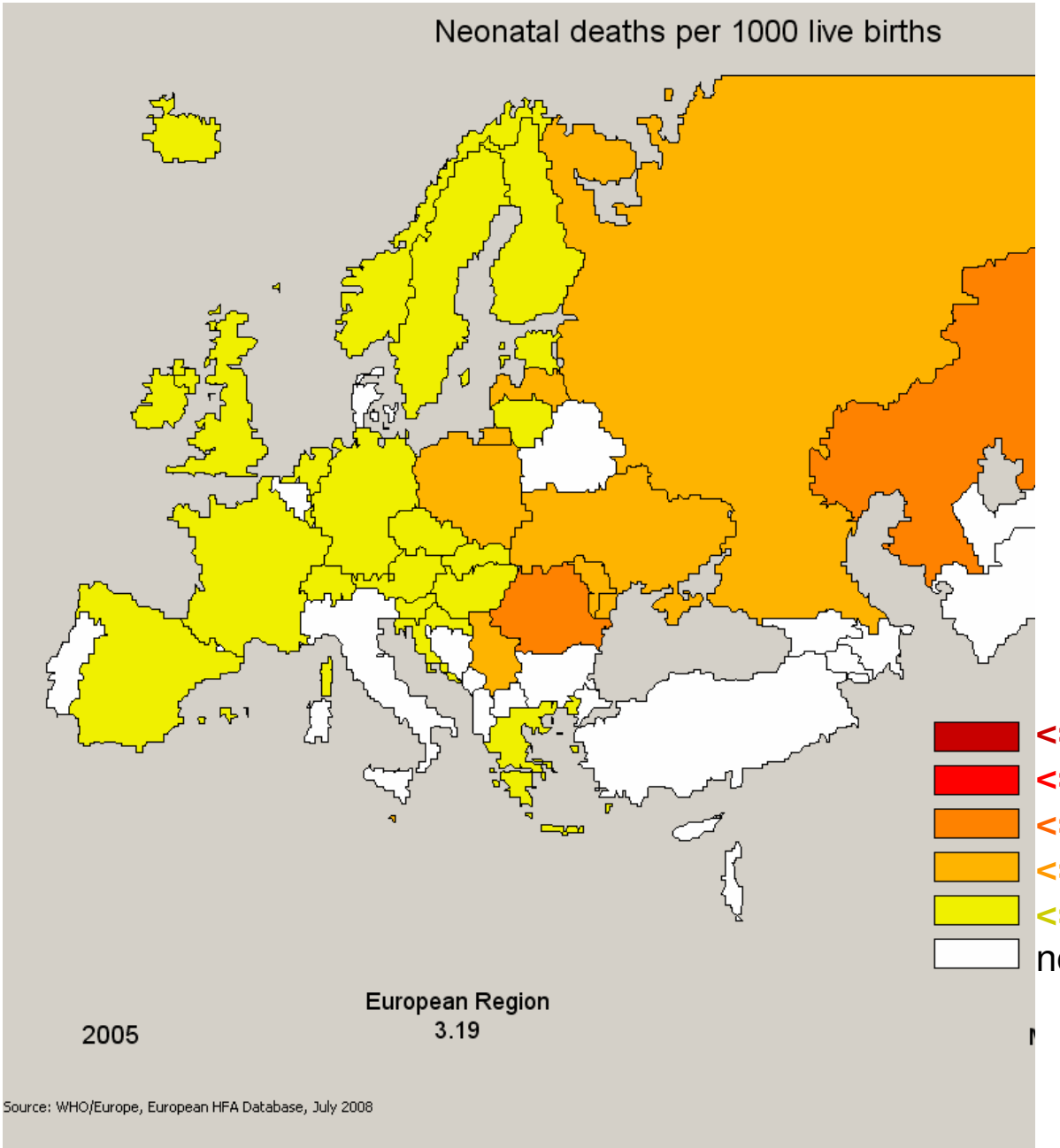

**Anna Latos-Bielenska**

*EUROCAT Working Group*

***1st Central and Eastern European Summit on Preconception Health and Prevention of Birth Defects***

*August 27-30, 2008 - Budapest, Hungary*






## Congenital anomalies as a cause of neonatal deaths (2000) (%)

| | |
|---|---|
| Lithuania | 40 |
| Poland | 35 |
| Slovakia | 29 |
| Ukraine | 27 |
| Croatia | 27 |
| Bulgaria | 27 |
| Czech Republic | 26 |
| Russian Feder. | 25 |
| Romania | 22 |
| Hungary | 20 |

# Central and Eastern European Region - new chances and new problems?


- Geopolitical transformations in the 90's caused functioning also of the health care system **in the conditions of transition to market economy**
- Politicians face **difficult choices** in allocating limited funds for health care
- Health initiatives **usually focus on cancer and cardiovascular diseases**

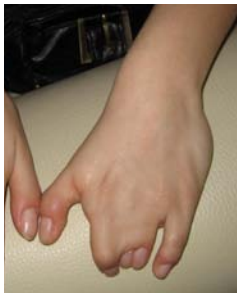
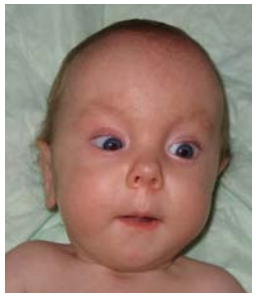
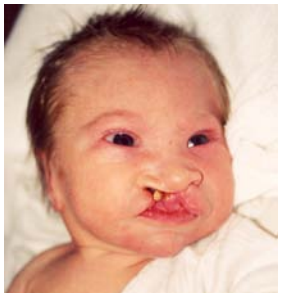
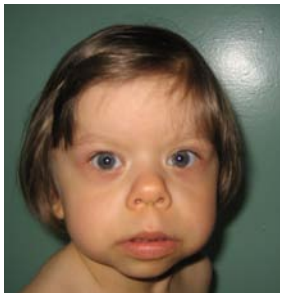
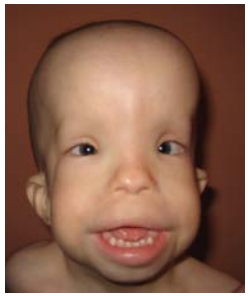
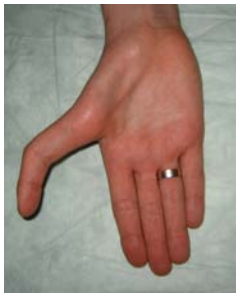
**It is necessary to recognize the enormous personal and social consequences of birth defects and to remind that prevention of birth defects is highly cost-effective!**

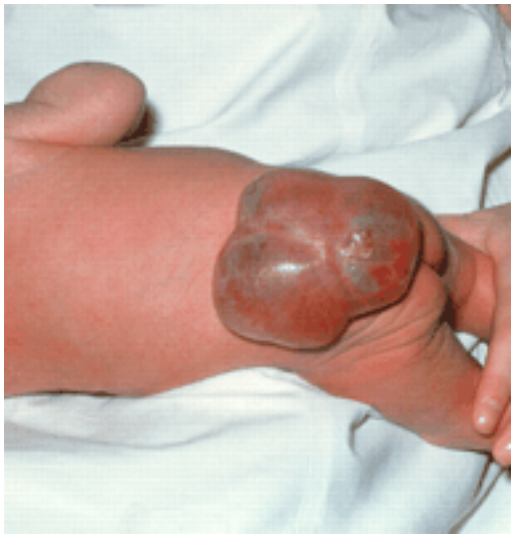
# Congenital malformations

(=**Structural defects:** congenital malformations, deformations, disruptions and dysplasias)

- **Affect 2-5% of all newborns**
- **A major cause of embryonic and fetal death**
- **A major cause (first or second cause) of infant mortality**
- **Among the leading causes of childhood morbidity**
- **A major cause of long-term disability**
- **Not rarely coexist with mental disability**
- **Carry a high burden to affected individuals and their families**
- **Individuals with congenital malformations need long-term expensive medical care**

- **Almost all malformation syndromes are „rare diseases" which are a special problem for health care systems**
- **Till now etiology of up to 60% of congenital malformations remains obscure but among cases of known etiology, genetic factors play an important role in 85%**

# Contemporary medicine

**Permanent monitoring** of diseases in a population (**registries!)**, international collaboration (pooling and comparison of data) and sharing of expertise for improvement of medical care and prevention.

**It concerns also congenital malformations**

# Registries

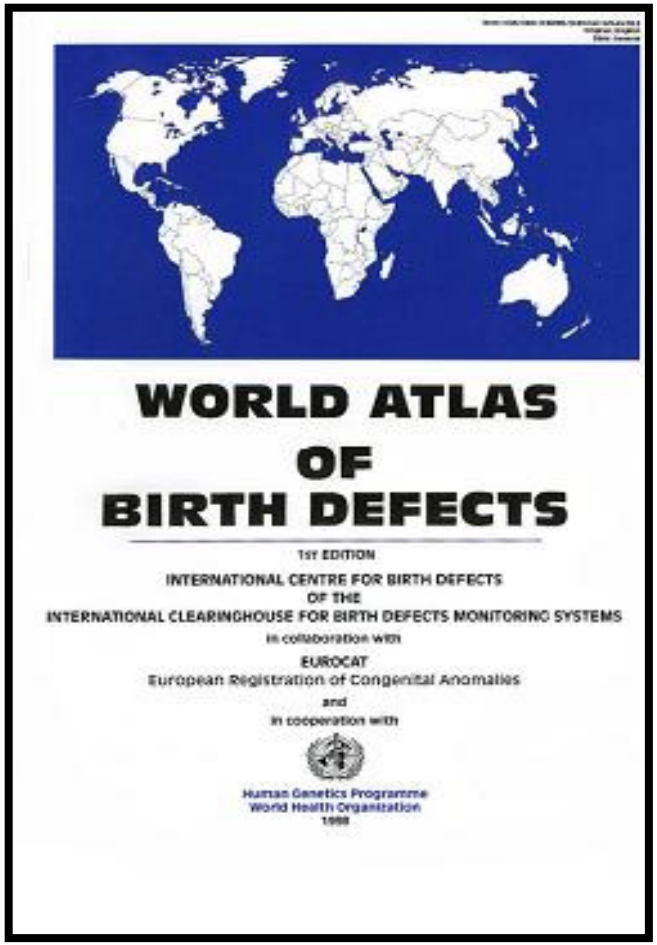
**1972** - WHO recommends organization of genetic diseases' registries

**1974** – International Clearinghouse for Birth Defects Monitoring Systems (ICBDMS),
current name: **International Clearinghouse for Birth Defects Surveillance and Research (ICBDSR)**

**1979** – establishment of **EUROCAT (European Surveillance of Congenital Anomalies)**



***The mission** of the **International Clearinghouse for Birth Defects Surveillance and Research** is to bring together birth defect programmes from around the world with the aim of conducting worldwide surveillance and research to prevent birth defects and to ameliorate their consequences.*

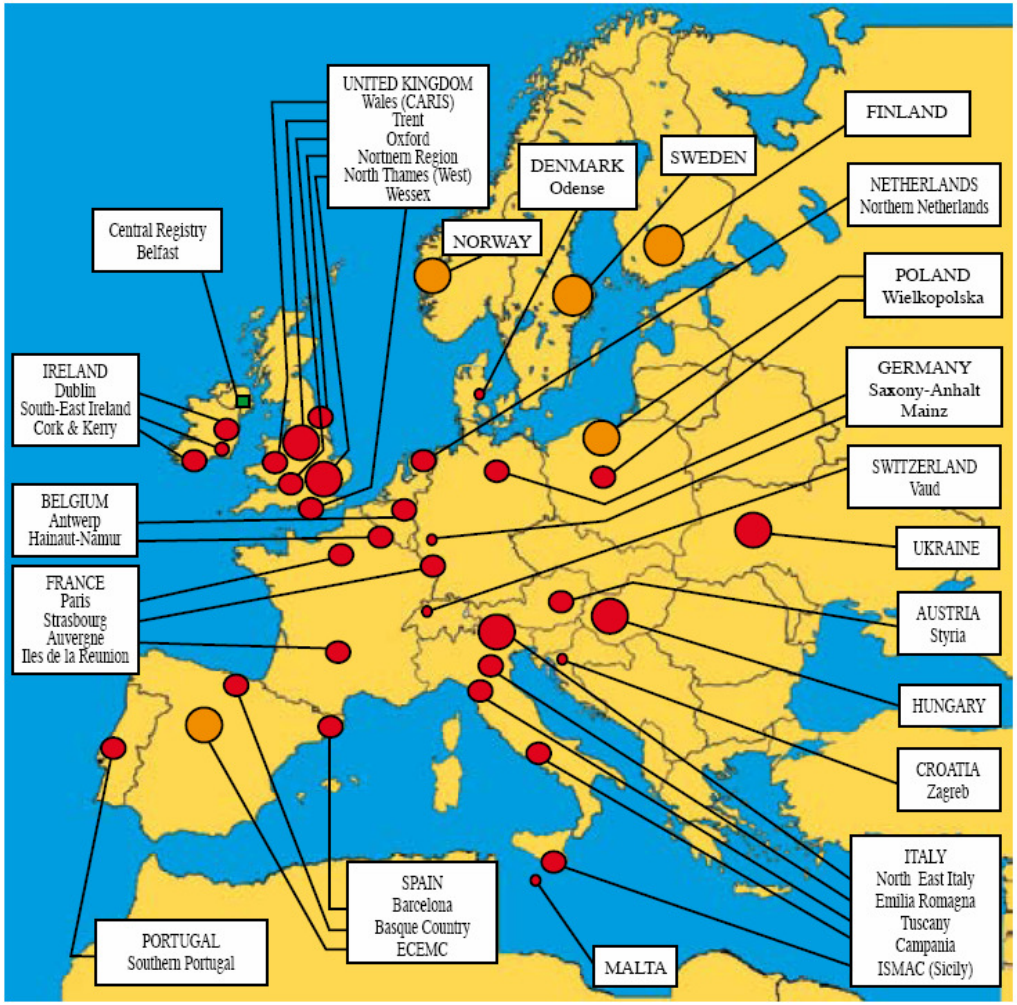



Australia: National
Australia: Victoria
Australia: Western
Canada: Alberta
Canada: British Columbia
Canada: National
Chile: Maule
China: Beijing
China: National
Costa Rica
Cuba
**Czech Republic**
England & Wales
Finland
France: Central-East
France: Paris
France: Strasbourg
Germany: Saxony-Anhalt
**Hungary**
Iran: Tabriz
Ireland: Dublin
Israel
Italy: Emilia-Romagna
Italy: Campania
Italy: Sicily
Italy: North East
Italy: Tuscany
Japan
Malta
Mexico
New Zealand
Northern Netherlands
Norway
**Russia: Moscow**
**Slovak Republic**
South Africa
South America
Spain
Sweden
**Ukraine**
United Arab Emirates
USA: Atlanta
USA: California
USA: Texas
USA: Utah
Wales: Caris

# Eurocat

## What is EUROCAT?

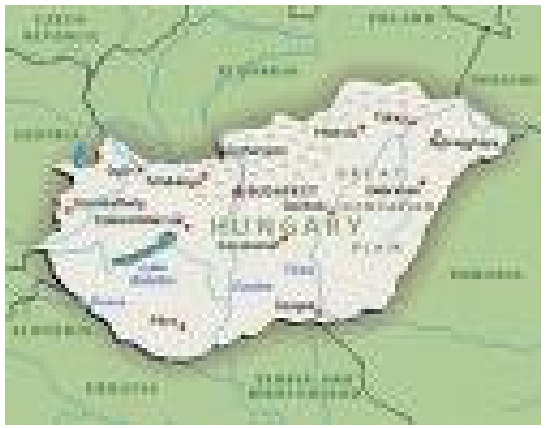
- A European **network of population-based registries** for the epidemiologic surveillance of congenital anomalies
- Started in 1979
- More than **1.5 million births** surveyed per year in Europe
- **43** registries in **20** countries
- **29%** of European birth population covered
- High quality multiple source registries
- **WHO Collaborating Centre** for the Epidemiological Surveillance of Congenital Anomalies




**Poland**
**Hungary**
**Ukraine**

# Hungary

## Hungarian Congenital Abnormality Registry




*History*: The Hungarian Congenital Abnormality Registry was established in 1962. Continuous and expert evaluation of data started in 1970, monitoring began in 1973. The Registry was a founding member of the ICBDSR and is a full member, also EUROCAT member in the past.

*Size and coverage*: The registry covers all births in Hungary, approximately 100,000 annually.

*Prevalence of congenital malformations:* **224/10,000 births** (1998-2002)

### First 25 years of the Hungarian congenital abnormality registry

**A. E. Czeizel** *

Department of Human Genetics and Teratology, National Institute of Public Health-WHO Collaborating Center for Community Control of Hereditary Diseases, Budapest, Hungary

Abstract

The Hungarian Congenital Abnormality Registry was established in 1962 based on obligatory notification of cases with congenital abnormalities by physicians. However, continuous and expert evaluation of data started in 1970 when the Registry was moved to the National Institute of Public Health. Later several other systems, including the Nationwide Evaluation of Multimalformed Infants, Case-Control Surveillance of Congenital Abnormalities, and Surveillance of Germinal Mutations, were based on the Registry. Data and results of the first 25 years of the Registry are evaluated from three different aspects: 1) evaluation of the originally planned and later adopted missions of the Registry; 2) quality control of the Registry is based on the proportion of misdiagnoses, completeness of notifications, and pathogenetically oriented classification; 3) outcome evaluation indicated the different quality of recorded data in lethal, severe, and mild congenital abnormalities. The data base of the Registry was appropriate to estimate the proportion of preventable congenital abnormalities due to the four different preventive programs and to evaluate the pregnancy outcomes after the Chernobyl nuclear power plant accident. ***Teratology 55:299-305, 1997.*** 

# Czech Republic

Congenital Malformations Monitoring Programme of the Czech Republic

*History:* A registration of malformations began in 1961and regular monitoring started in 1975. The Programme was a founding member of the ICBDSR and is a full member.

*Size and coverage*: All births occurring in Czech Republic (Bohemia, Moravia and Silesia regions) are covered, at present comprising about 90,000 births annualy.

*Prevalence of congenital malformations:* **339/10,000 births** (1994-2006)

# Slovak Republic

Congenital Malformations Monitoring Programme of the Slovak Republic

*History:* Reporting of congenital malformations began in 1964.

Member of the ICBDSR

*Size and coverage*: The registry covers all births in Slovak Republik, approximately 55.000 births annually

# Poland

## Polish Registry of Congenital Malformations (PRCM)


**www.rejestrwad.pl**

*History:* In April 1997 the PRCM was introduced in one province (Poznan province = Wielkopolska) and thereafter gradually in the whole Poland.
In EUROCAT since 2001

**The largest EUROCAT registry till now**

*Size and coverage*: The whole Poland is covered by the PRCM (**almost 400,000 births/year**)

*Prevalence of congenital malformations:* **196/10,000 births** (1998-2003)

# Ukraine

OMNI-Net Ukraine Birth Defects Program (OMNI-Net UBDP)

*History:* Population-based birth defects surveillance began in 2000 in the framework of the Ukrainian-American Birth Defects Program.
Member of ICBDSR and EUROCAT

*Size and coverage*: BD surveillance covers about 25,000 births anually in two provinces (Rivine and Khmelnytsky)

*Prevalence of congenital malformations:* **221/10,000 births** (2005-2006)

# Russia: Moscow

## Moscow Regional Registry of Congenital Malformations (MRRCM)


*History:* Moscow Registry started the activity in 1999. Member of ICBDSR since 2001

*Size and coverage*: Moscow Registry covers about 55,000 births anually in the Moscow Region

# Lithuania

## Lithuanian Registry of Congenital Anomalies (LIRECA)

*History:* LIRECA started in 1992. In 1992-1996 it was a Programme of the Ministry of Health

*Prevalence of congenital malformations:* **150/10,000 births** (1992-1996)


# Bulgaria: Sofia

*History:* The Registry started in 1996. Member of EUROCAT since 1996.

*Size and coverage*: The Registry covers region of Sofia, about 10,000 births anually

*Prevalence of congenital malformations:* **186/10,000 births**


# Croatia: Zagreb

*History:* The Registry started in 1983. Member of EUROCAT since 1983.

*Size and coverage*: The Registry covers region of Rijeka, Varazdin, Koprivnica, Pula, about 7,000 births anually

*Prevalence of congenital malformations:* **162/10,000 births** (1983-2006)

## Other countries of the Region experienced in monitoring of birth defects:

**Slovenia**
**Latvia**
**Romania**
**Moldova**

# Registries of congenital malformations are a real challenge!

- Gaining **funds** – different sources of funds

- Organisation, logistics depending on individual features of a country. **A model of a registry is specific to one's country** and it usually can't be transmitted directly to another country

- Elaboration of **notifications' completness control system**

- Using the registry for purposes of medical genetics (genetic counselling and research): **parents' consent** is important

***Comment:***
***Running a malformation registry is a hard and expensive work but the benefits are undeniable***

Eurocat

European Surveillance of Congenital Anomalies

welcome to eurocat

# EUROCAT – how is it organized?

*Prof. Helen Dolk*

The Central Registry is located **in the University of Ulster**, Northern Ireland in collaboration with London School of Hygiene and Tropical Medicine and Trinity College Dublin.

**Professor Helen Dolk** – Director of the EUROCAT Central Registry and a Project Leader

The EUROCAT Association is the association of member EUROCAT registries. The EUROCAT Association elects a President (currently **Dr Patricia Boyd**) and elects seven Steering Committee members

*Dr Patricia Boyd*


## The Objectives of EUROCAT:

✓To provide essential **epidemiologic information** on congenital anomalies in Europe.

✓To facilitate the **early warning** of new teratogenic exposures.

✓To evaluate the **effectiveness of primary prevention** and **prenatal screening**.

✓To act as an **information and resource center** for the population, health professionals and managers regarding clusters or exposures or risk factors of concern.

✓To provide a ready **collaborative network and infrastructure for research** related to the causes and prevention of congenital anomalies and the treatment and care of affected children

✓To act as a **catalyst for the establishment of registries throughout Europe** collecting comparable, standardised data.

*The Polish Registry has the same objectives but special attention is paid to the use of the Registry for medical genetics*


## Committee on Classification and Coding of Malformations
**(Chair: Dr Ester Garne, cochair Prof Ingeborg Barisic)**

## Committee on Drugs during Pregnancy
**(Chair: Prof Lolkje van den Berg)**

## Committee on Ethics
**(Chair: Dr Annukka Ritvanen)**

## Working Group on Clusters and Environmental Exposures
**(Chair: Prof Helen Dolk, co-chair Dr Alan Kelly)**

## Working Group on Prenatal Diagnosis
**(Chair: Dr Ester Garne, co-chair Dr Catherine de Vigan)**

## Working Group on Periconceptional Folic Acid Supplementation and the Prevention of NTD and other congenital anomalies
**(Chair: Dr Lenore Abramsky, co-chair Dr Patricia Boyd)**

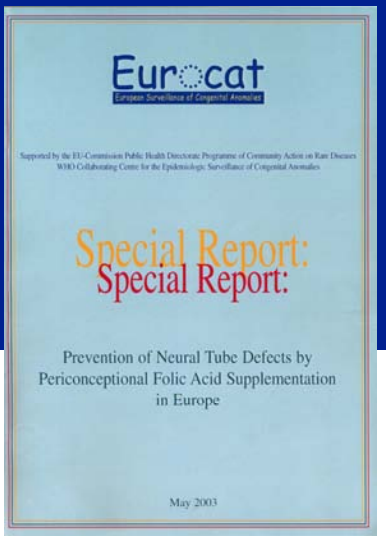

# EUROCAT projects

- Cornelia de Lange syndrome
- Gastro-intestinal atresias: gestational age at LB
- Gastroschisis: maternal age specific trends
- Multiple malformations: Cleft lip and palate
- TGA: Suvival and health of LB TGA
- Prenatal screening policies in Europe
- Using Capture-Recapture Methods to Ascertain Completeness of a Register
- A Study of the Geographical Variation in Overall Rates of Congenital Abnormalities and the Rates of Specific Abnormalities
- An Assessment and Analysis of Surveillance Data on Hypospadias in Europe
- EUROCAT and Orofacial Clefts: The Epidemiology of Orofacial Clefts in 30 European Regions
- Prevention of Neural Tube Defects by Periconceptional Folic Acid Supplementation in Europe
- Risk of Congenital Anomaly in relation to Residence near Hazardous Waste Landfill Sites
- Orofacial clefts and exposure to lamotrigine
- Drug Safety Surveillance
- Trends and Geographic Inequalities in the Livebirth Prevalence of Down Syndrome in Europe 1980-1999
- Sex and Congenital Malformations: An International Perspective
- The EUROSCAN Study
- Therapeutic Drug Use During Pregnancy: A Comparison in Four European Countries
- Congenital Malformations in Twins
- Maternal Smoking and Deformities of the Foot
- Congenital Malformations and Maternal Occupational Exposure to Glycol Ethers
- The Epidemiology of Tracheo-oesophageal Fistula and Oesophageal Atresia in Europe
- Chorionic Villus Sampling and Limb Abnormalities
- Congenital Rubella Syndrome
- Evaluation of the Genetic Impact of the Chernobyl Accident: Analysis of the Frequency of Chromosomal Anomalies in 19 EUROCAT Registries

Eurocat

European Surveillance of Congenital Anomalies

welcome to eurocat




# EUROCAT Special Reports

**Prenatal Screening Policies in Europe**
www.eurocat.ulster.ac.uk/pdf/Special-Report-Prenatal-Diagnosis.pdf

**A Study of the Geographical Variation in Overall Rates of Congenital Abnormalities and the Rates of Specific Abnormalities**
www.eurocat.ulster.ac.uk/pdf/Geo-Het/Full-Report.pdf

**An Assessment and Analysis of Surveillance Data on Hypospadias in Europe**
www.eurocat.ulster.ac.uk/pdf/Hypospadias-Special-Report.pdf

**EUROCAT and Orofacial Clefts: The Epidemiology of Orofacial Clefts in 30 European Regions**
www.eurocat.ulster.ac.uk/pdf/Orofacial-Report.pdf

**Prevention of Neural Tube Defects by Periconceptional Folic Acid Supplementation in Europe**
www.eurocat.ulster.ac.uk/pubdata/Folic-Acid.html

**A Review of Environmental Risk Factors**
www.eurocat.ulster.ac.uk/pubdata/Envrisk.html

**Risk of Congenital Anomaly in relation to Residence near Hazardous Waste Landfill Sites**
www.eurocat.ulster.ac.uk/pubdata/Landfill-Sites.html

**World Atlas II**
www.eurocat.ulster.ac.uk/pubdata/worldatlas.html

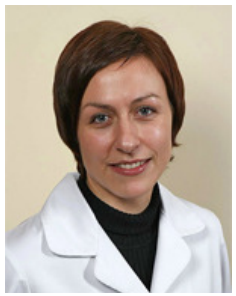

8th European Symposium „Prevention of Congenital Anomalies”
Poznań, POLAND, June 9-10, 2005
(280 participants from 21 countries)

# Polish Registry of Congenital Malformations (PRCM) – current activities

Anna Latos-Bieleńska
***Project Leader***

Anna Materna-Kiryluk
***Organizing Co-ordinator***

Marzena Wiśniewska



Magdalena Badura

Katarzyna Wiśniewska

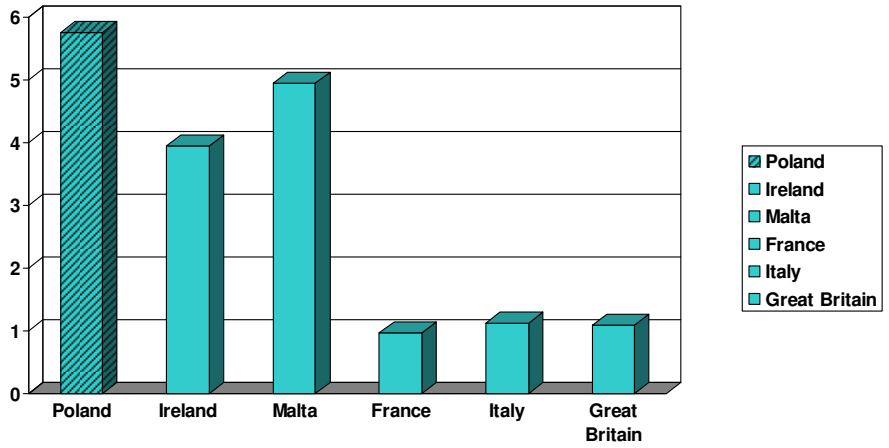
Aleksander Jamsheer

Members of the PRCM Central Working Group participating in the Budapest Summit


The Central Working Group and the computer database are located in the Department of Medical Genetics, University of Medical Sciences in Poznan

At the level of province the Regional Working Groups have been organized

The PRCM indicates **differences in prevalence** of some malformations in **live born** children between Poland and some European countries

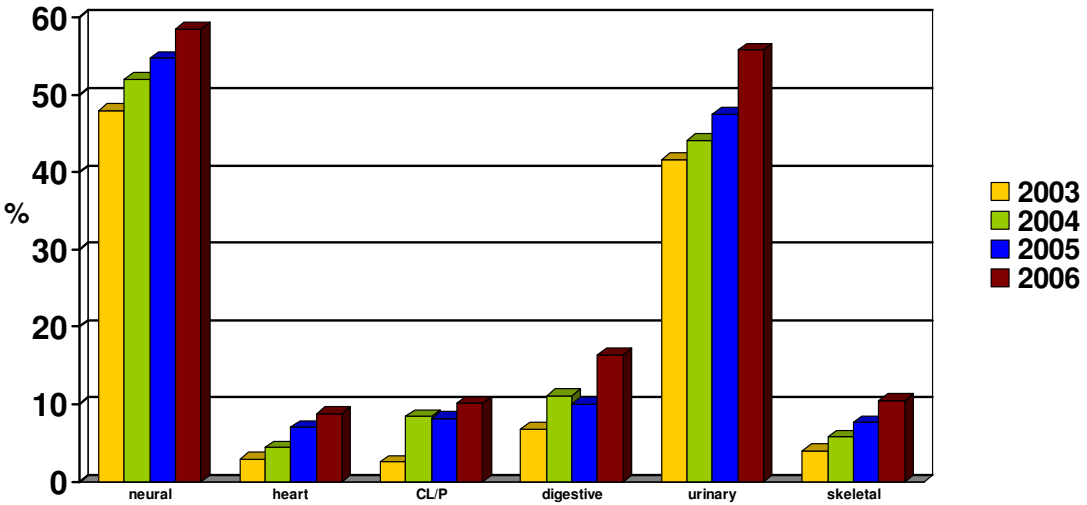



*spina bifida* **(per 10 000 livebirths)**

1998 - 2005

Monitoring of the **state of prenatal diagnosis** of some selected groups of isolated malformations

PRCM 2003-2006 (N = **neural 1256**; **heart 5606**; **CL/P 1338**; **digestive 577**; **urinary 1664**; **skeletal 3804**



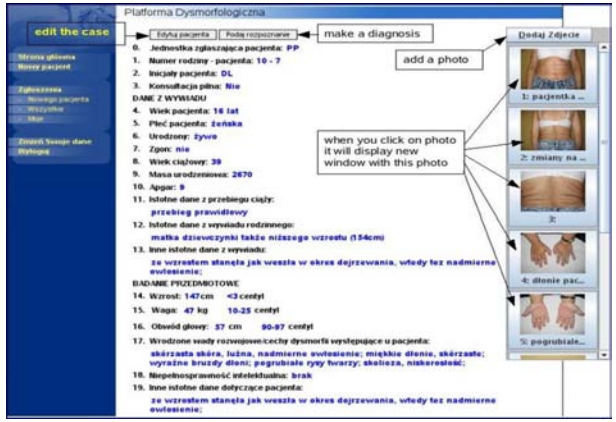
# PRCM activities - 2

*(oral and poster presentations)*

## PRCM:

- **evaluates the state of folic acid supplementation**
- **is a partner in research projects on molecular background of congenital malformations**
- **is involved in active identification of some rare malformation syndromes for research projects and for improvement of medical care**
- **created the Polish Dysmorphology Platform**

*I am so happy… You have my favorite disease!*

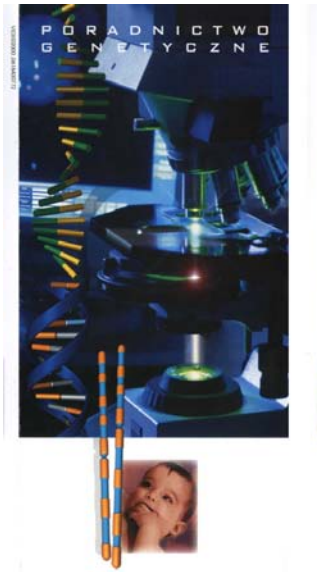
# PRCM activities - 3

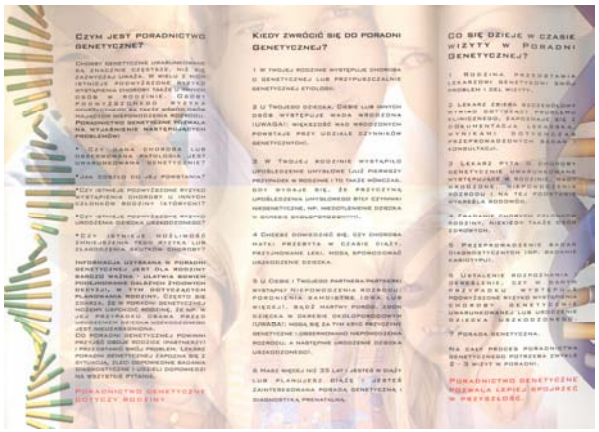
**Clinical geneticist from the Central Working Group analyses all registration forms and sends the letters to the parents (30% of notified cases)**

Content:

- Information on genetic counselling
- Address of the genetic clinic in the patient's province
- Information on folic acid

*Wielkopolskie and Lubuskie provinces are not covered within this activity*




KRAJOWY ZESPÓŁ D/S PROGRAMU MONITOROWANIA I PROFILAKTYKI WRODZONYCH WAD ROZWOJOWYCH W POLSCE
PROFILAKTYKI WRODZONYCH WAD ROZWOJOWYCH W POLSCE
Katedra i Zakład Genetyki Medycznej Akademii Medycznej w Poznaniu
skrytka pocztowa Nr 79 60-955 Poznań 37 lub: ul. Szpitalna 27/33, 60-572 Poznań
*Przewodnicząca Zespołu i Kierownik Katedry: prof. AM dr hab. med. Anna Latos-Bieleńska*
tel. 0 (prefix) 618-49-14-10; fax. 847-53-94
*Koordynator Organizacyjny: dr n. med. Anna Materna-Kiryluk*, tel. 0 (prefix) 618-49-13-96
*Przewodnicząca Wojewódzkiego Zespołu ds. PRWWR dla woj. dolnośląskiego i opolskie:*
*Prof. dr hab. n.med. Elżbieta Gajewska*, tel. 0 (prefix) 713-34-41-61, 713-34-41-21, fax: 713-67-36-26

*Poznań, październik 2001*

*Szanowni Państwo !*

*W związku ze zgłoszeniem wady u Państwa dziecka do Polskiego Rejestru Wrodzonych Wad Rozwojowych, chcielibyśmy przekazać Państwu kilka istotnych informacji.*

*Nawiązywanie przez nas kontaktu z rodzinami, w których urodziło się dziecko z wadą wrodzoną ma na celu poprawę opieki nad dziećmi urodzonymi z wadą, a zwłaszcza przekazanie Rodzicom informacji o możliwościach objęcia poradnictwem genetycznym.*

*Zdajemy sobie sprawę, że urodzenie dziecka choćby z najmniejszą wadą budzi niepokój rodziców i powoduje, że rodzice zadają sobie wiele pytań, na które nie zawsze mogą znaleźć odpowiedź.*

*Na wiele z tych pytań mogą Państwo uzyskać odpowiedź w poradni genetycznej. Jeśli nie zostali jeszcze Państwo objęci opieką poradni genetycznej, w załączeniu podajemy adres i telefon poradni na terenie Państwa województwa, obejmującej opieką genetyczną rodziny, w których urodziło się dziecko z wadami. Poradnictwo genetyczne należy do świadczeń medycznych wchodzących w zakres finansowania przez Kasy Chorych (konieczne jest skierowanie do poradni genetycznej przez lekarza mającego kontrakt z Kasą Chorych, zazwyczaj lekarza rodzinnego).*

*Dodatkowe informacje dotyczące poradnictwa genetycznego i przebiegu porady genetycznej znajdą Państwo w załączonej ulotce.*

- **Zespół wad wrodzonych** może być uwarunkowany genetycznie lub może powstać pod wpływem szkodliwych czynników niegenetycznych. W celu ustalenia etiologii zespołu wad wrodzonych u Państwa dziecka, konieczna byłaby wizyta w poradni genetycznej. Istnieją bowiem możliwości diagnostyczne, dzięki którym w znacznej części zespołów wad można sprecyzować rozpoznanie. Stwarza to możliwość ustalenia sposobu dalszego postępowania z dzieckiem oraz określenia, czy istnieje podwyższone ryzyko genetyczne wystąpienia wad także u następnych Państwa dzieci.

*Przekazujemy Państwu także informacje dodatkowe, dotyczące wad wrodzonych:*

- W związku z prowadzoną w Polsce profilaktyką wrodzonych wad rozwojowych, a zwłaszcza wad centralnego układu nerwowego, każda kobieta w wieku rozrodczym, która może zajść w ciążę, powinna przyjmować kwas foliowy w dawce 0,4 mg/dobę (np. preparat Folik) w okresie przynajmniej 3 miesiące przed planowaną ciążą aż do 12 tyg. ciąży.
- U kobiet powyżej 35 roku życia wzrasta ryzyko urodzenia dziecka z zespołem Downa lub inną aberracją chromosomową. Aberracje chromosomowe można wykryć na drodze diagnostyki prenatalnej, o ile rodzina jest taką diagnostyką zainteresowana.

***Uwaga:* Niniejsza korespondencja nie zastąpi wizyty w poradni genetycznej.**

*Z wyrazami szacunku,*

*W imieniu Krajowego Zespołu*

*Prof.AM dr hab.n.med. Anna Latos-Bieleńska*

**Województwo dolnośląskie:**

Poradnictwo genetyczne prowadzi:

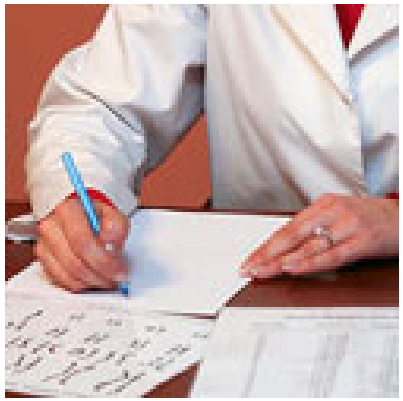
Zakład Genetyki AM
ul. Marcinkowskiego 1
50-368 Wrocław
Tel. 0 (prefix) 717 - 84 – 12 – 56
717 - 84 – 12 – 55
717 - 84 – 12 – 57
Fax: 0 (prefix) 717 - 84 – 00 – 63

email: sasiadek@gen.am.wroc.pl

Godziny przyjęć: poniedziałki, wtorki i piątki: 8:00 – 11:00

Kierownik Zakładu Genetyki Katedry Patofizjologii AM
i Konsultant Wojewódzki w dziedzinie genetyki klinicznej dla
woj. dolnośląskiego.
***Dr hab.n.med. Maria Sąsiadek, prof. nadzw.***

# PRCM activities - 4

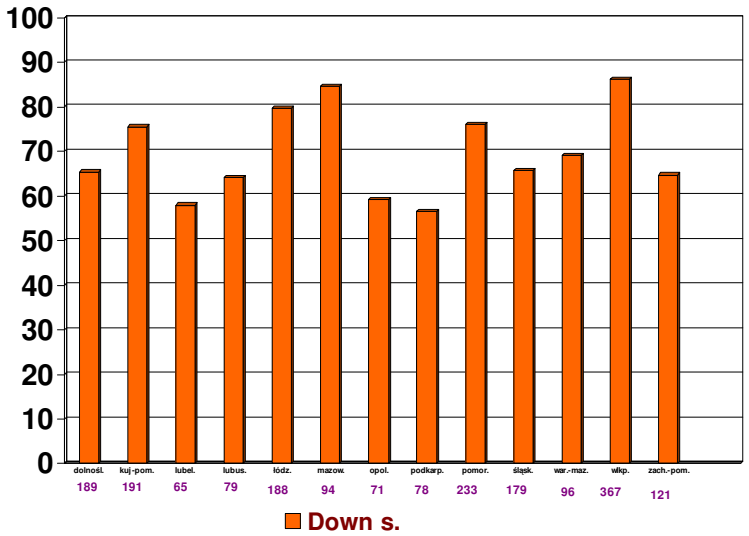


**PRCM evaluates the state of genetic care for children with congenital malformations and their families**

**In Poland every year** about **7,500** children with at least one serious congenital malformation are born

**How many of them are under genetic care?**

**40,263 children (1998-2006) with congenital malformations (PRCM) have been analysed**




**Down syndrome – percentage of karyotype studies according to province**
**2004-2005**

**Comment:**
**Differences among provinces: 56-86%**
**Better situation is observed in provinces with medical universities**

# Children with congenital malformations - genetic care
## 1998-2006

| Years | Genetic counselling | | |
|---|---|---|---|
| | Number of children | | Percentage |
| 1998 | 3532 | 344 | 9.7% |
| 1999 | 3172 | 307 | 9.7% |
| 2000 | 3543 | 458 | 12.9% |
| 2001 | 4217 | 578 | 13.7% |
| 2002 | 5070 | 573 | 11.3% |
| 2003 | 5010 | 696 | 13.9% |
| 2004 | 5732 | 869 | 15.2% |
| 2005 | 5210 | 774 | 14.9% |
| 2006 | 4777 | 478 | 10.0% |
| 1998-2006 | 40 263! | 5077 | 12.6% |

Comment:
1999 – reform of the Health Care System in Poland
2000 – letters to the parents

# Children with multiple malformations (excl. Down s.) - genetic care

1998-2006

| Years | Genetic care | | |
|---|---|---|---|
| | Number of children | | Percentage |
| | All | under genetic care | |
| 1998 | 385 | 47 | 12.2% |
| 1999 | 305 | 36 | 11.8% |
| 2000 | 297 | 77 | 25.9% |
| 2001 | 398 | 113 | 28.4% |
| 2002 | 503 | 129 | 25.6% |
| 2003 | 489 | 151 | 30.9% |
| 2004 | 548 | 189 | 34.5% |
| 2005 | 543 | 157 | 28.9% |
| 2006 | 398 | 89 | 22.4% |
| 1998-2006 | 3866 | 988 | 25.6% |

# PRCM activities - 5

## Education

**Physicians** (family doctors and specialists) – also telephone and Internet contacts

**Improvement of collaboration** among obstetricians, neonatologists, pediatricians and clinical geneticists

**Society**


**PRCM 2000-2007:**

**181** lectures

**35** interviews in TV, radio and press

# CONCLUSIONS - 1

- The malformation registries are a challenge but their **benefits** make them irreplaceable

- In the Central and Eastern Europe are **good conditions for birth defects monitoring**. Almost all countries of the Region are experienced in surveillance of congential malformations.

- It would be of great value to **introduce birth defects registries in all countries of Central and Eastern Europe** (covering the whole country by a registry would be easier along with the informatization of the health care system).

***One of conclusions of the Budapest Summit?***

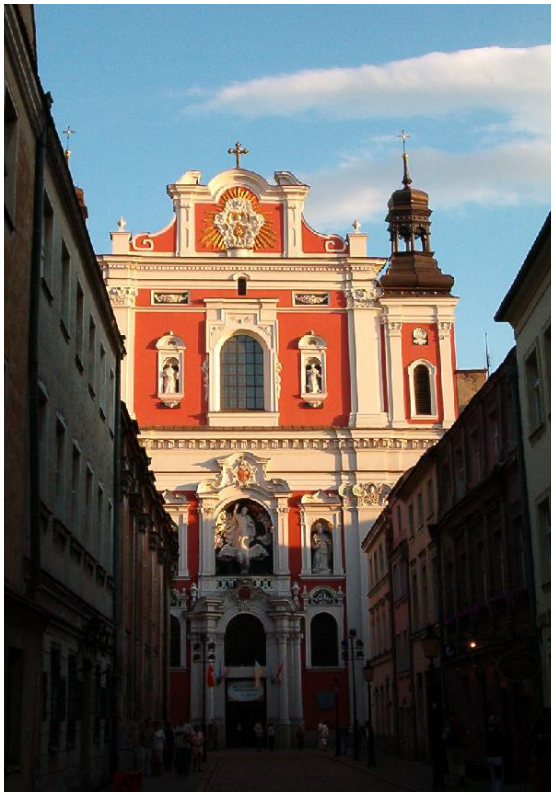
Existing and being created malformation registries are cordially invited to join the EUROCAT

# CONCLUSIONS - 2

- Irrespectively of cooperation on the European and world scale, **cooperation of countries of Central and Eastern Europe is important for solving common problems** (i.e. state of medical care of children with congenital malformations in the conditions of the transition to market economy)

- In some cases **bilateral cooperation** would be fruitful, especially between neighbouring countries

*For example:*
**Polish-Ukraine collaboration**
(**not only for UEFA Euro 2012**)

# Greetings from Poznan

*„Lengyel, Magyar – két jó barát,*
*együtt harcol, s issza borát”*

*Thank you for your attention!*


alatos@amp.edu.pl