Neural Tube Defects in the Czech Republic in 1961 - 2001

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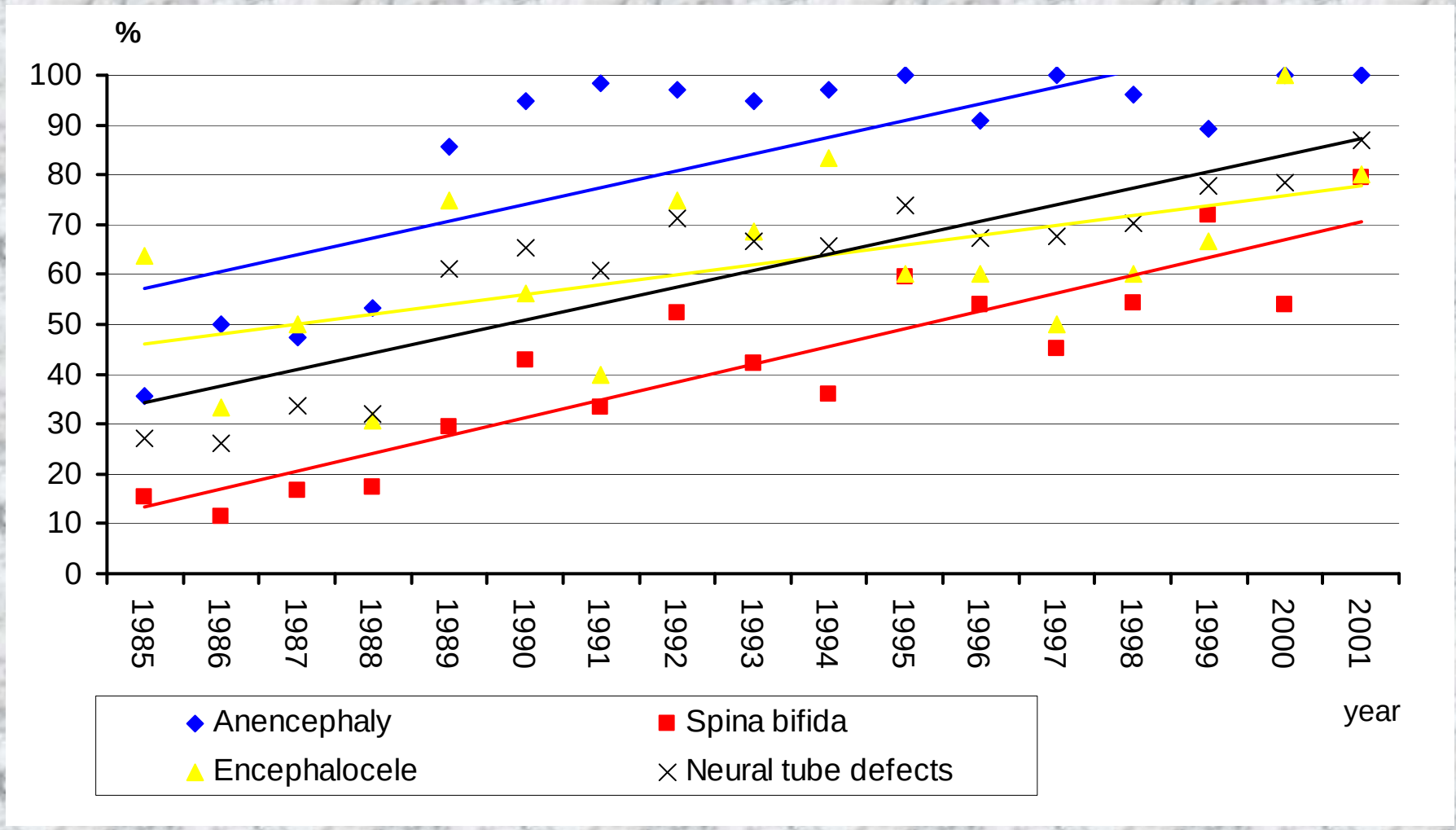
Anencephaly year	Number			Per 10 000 live births	
	Births	Prenatal diagnosis	Efficiency of prenatal diagnosis %	Births	Prenatal diagnosis
1961-1965	306			4.24	0.00
1966-1970	244			3.42	0.00
1971-1975	286			3.21	0.00
1976-1980	306			3.48	0.00
1981-1985	210	11	35.48	3.00	0.16
1986-1990	63	151	70.56	0.96	2.29
1991-1995	5	185	97.37	0.09	3.22
1996-2000	6	135	95.74	0.13	2.99
2001	0	19	100.00	0.00	2.09
Total	1426	501	84.20	2.51	0.88

Spina bifida year	Number			Per 10 000 live births	
	Births	Prenatal diagnosis	Efficiency of prenatal diagnosis %	Births	Prenatal diagnosis
1961-1965	490			6.79	
1966-1970	308			4.32	
1971-1975	371			4.16	
1976-1980	348			3.96	
1981-1985	247	9	15.52	3.53	0.13
1986-1990	191	63	24.80	2.90	0.96
1991-1995	134	102	43.22	2.33	1.77
1996-2000	84	106	55.79	1.86	2.35
2001	6	23	79.31	0.66	2.53
Total	2179	303	39.50	3.84	1.58

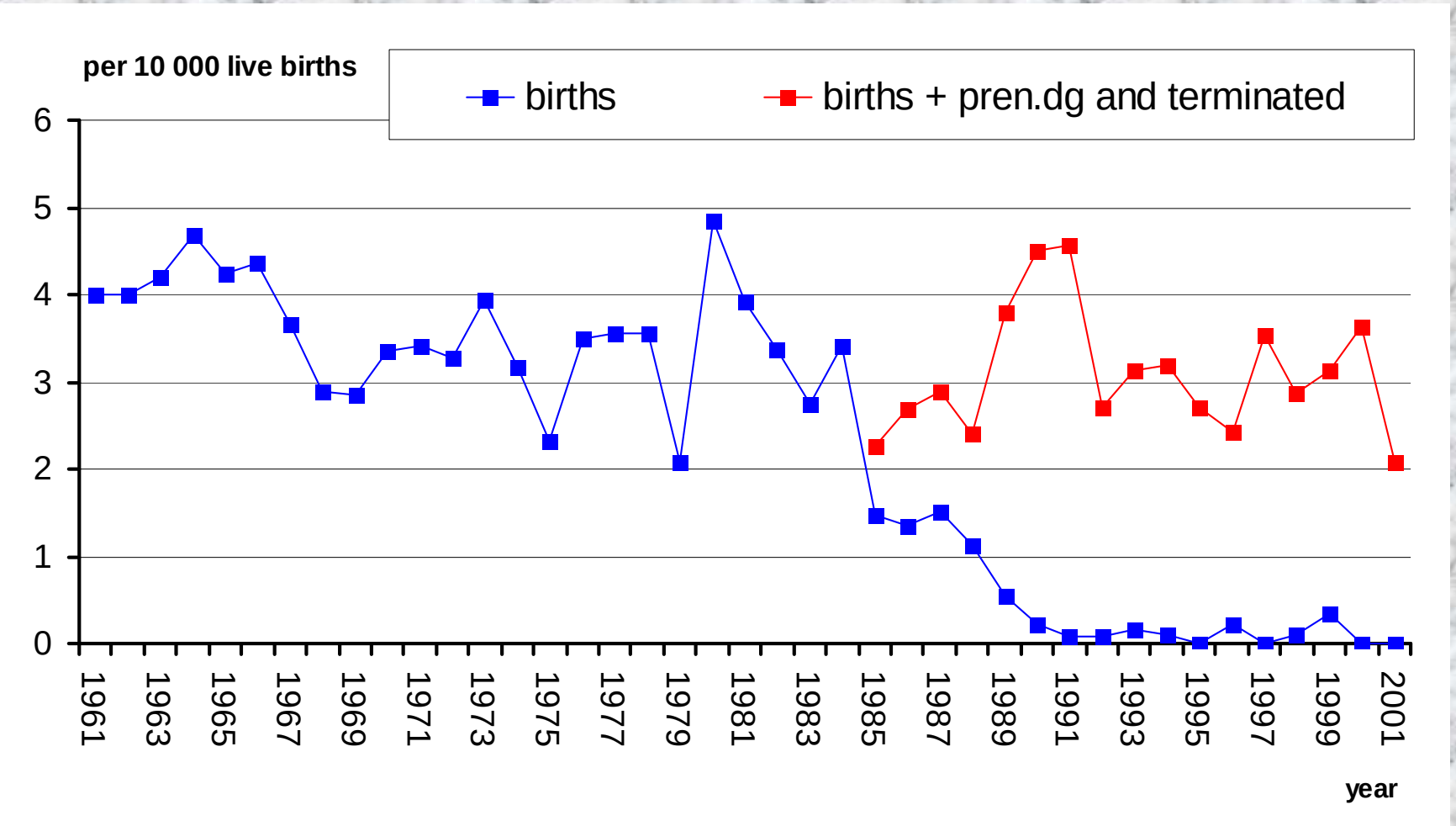
Encephalocele year	Number			Per 10 000 live births	
	Births	Prenatal diagnosis	Efficiency of prenatal diagnosis %	Births	Prenatal diagnosis
1961-1965	82			1.14	
1966-1970	54			0.76	
1971-1975	35			0.39	
1976-1980	53			0.60	
1981-1985	48	7	63.64	0.69	0.10
1986-1990	25	24	48.98	0.38	0.36
1991-1995	21	34	61.82	0.37	0.59
1996-2000	12	27	69.23	0.27	0.60
2001	1	4	80.00	0.11	0.44
Total	331	96	60.38	0.58	0.50

Neural Tube Defects year	Number			Per 10 000 live births	
	Births	Prenatal diagnosis	Efficiency of prenatal diagnosis %	Births	Prenatal diagnosis
1961-1965	878			12.17	
1966-1970	606			8.50	
1971-1975	692			7.76	
1976-1980	707			8.04	
1981-1985	505	27	27.00	7.22	0.39
1986-1990	279	238	46.03	4.24	3.61
1991-1995	160	321	66.74	2.78	5.58
1996-2000	102	268	72.43	2.26	5.93
2001	7	46	86.79	0.77	5.06
Total	3939	900	59.17	6.93	4.70

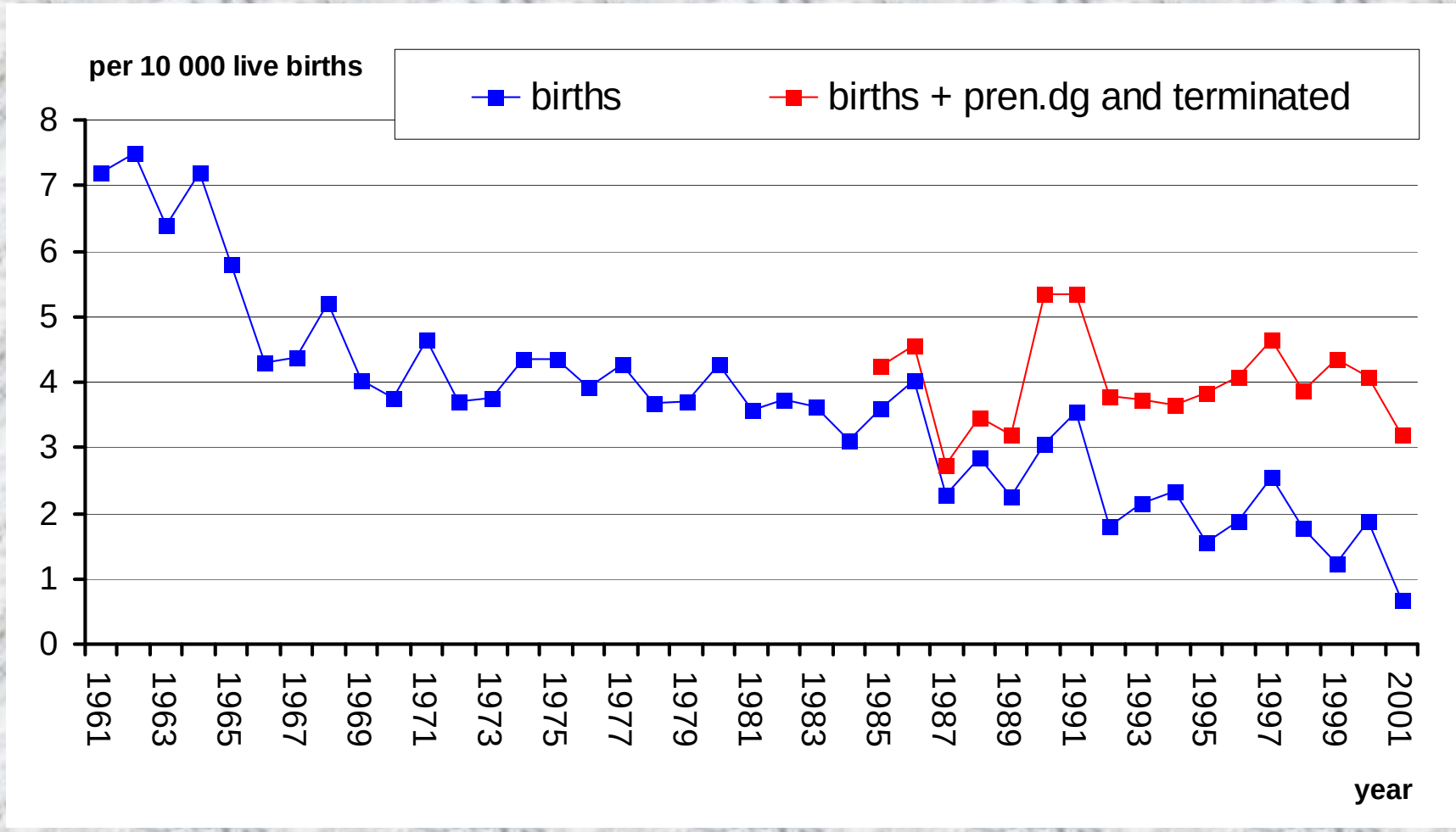
Efficiency of Prenatal Diagnosis of Neural Tube Defects



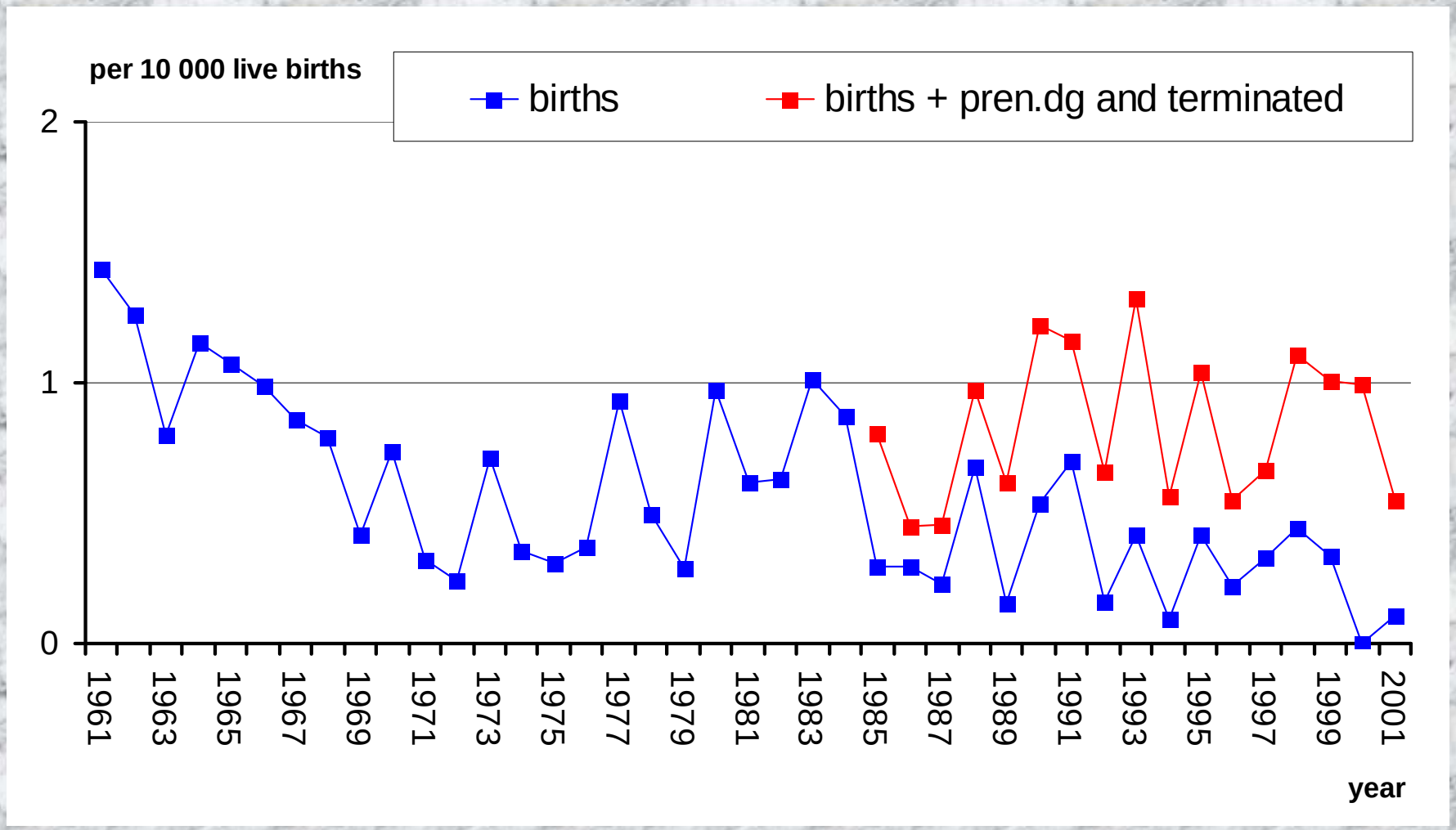
Anencephaly in the Czech Republic in 1961 - 2001



Spina bifida in the Czech Republic in 1961 - 2001



Encephalocele in the Czech Republic in 1961 - 2001



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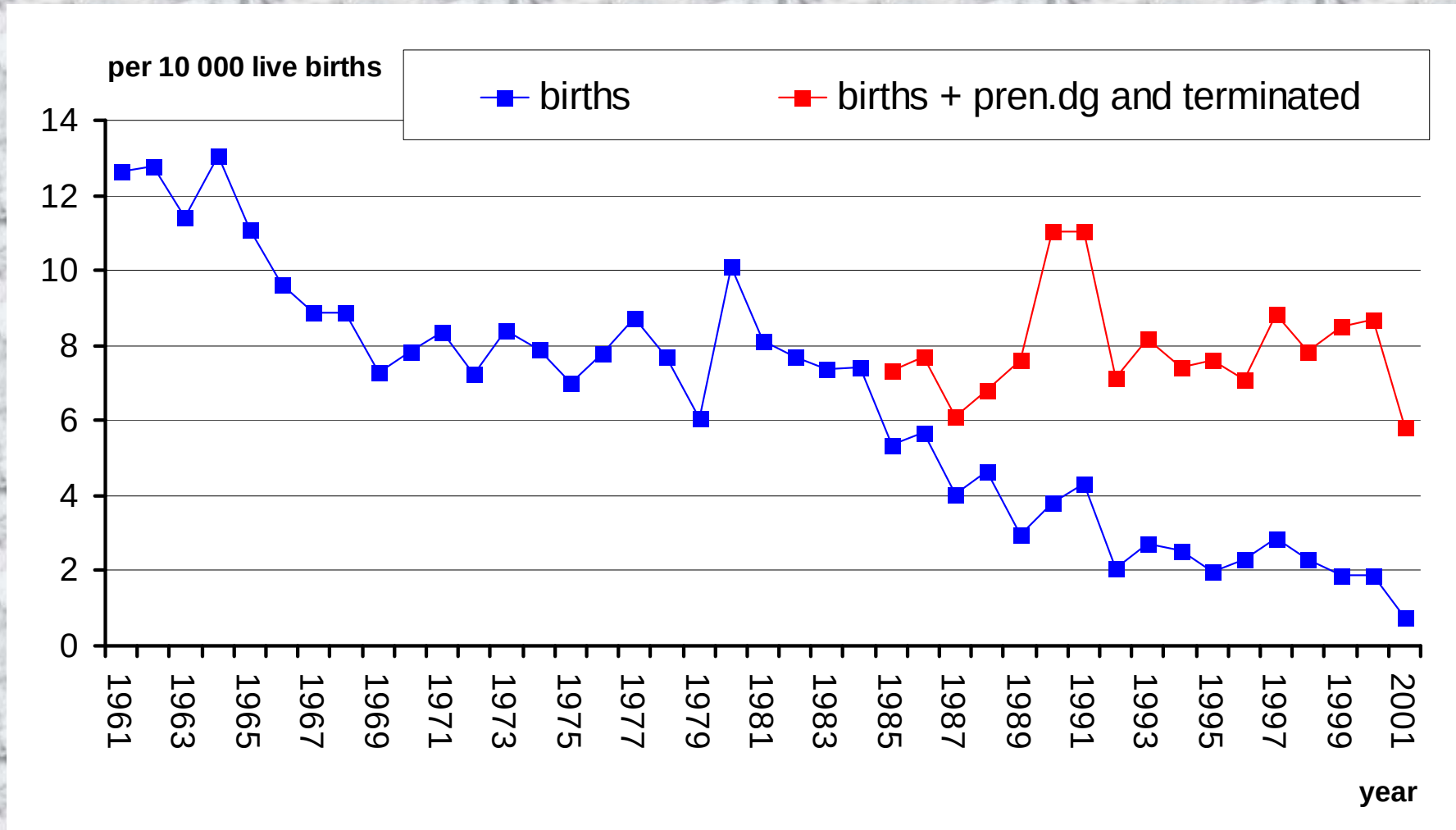
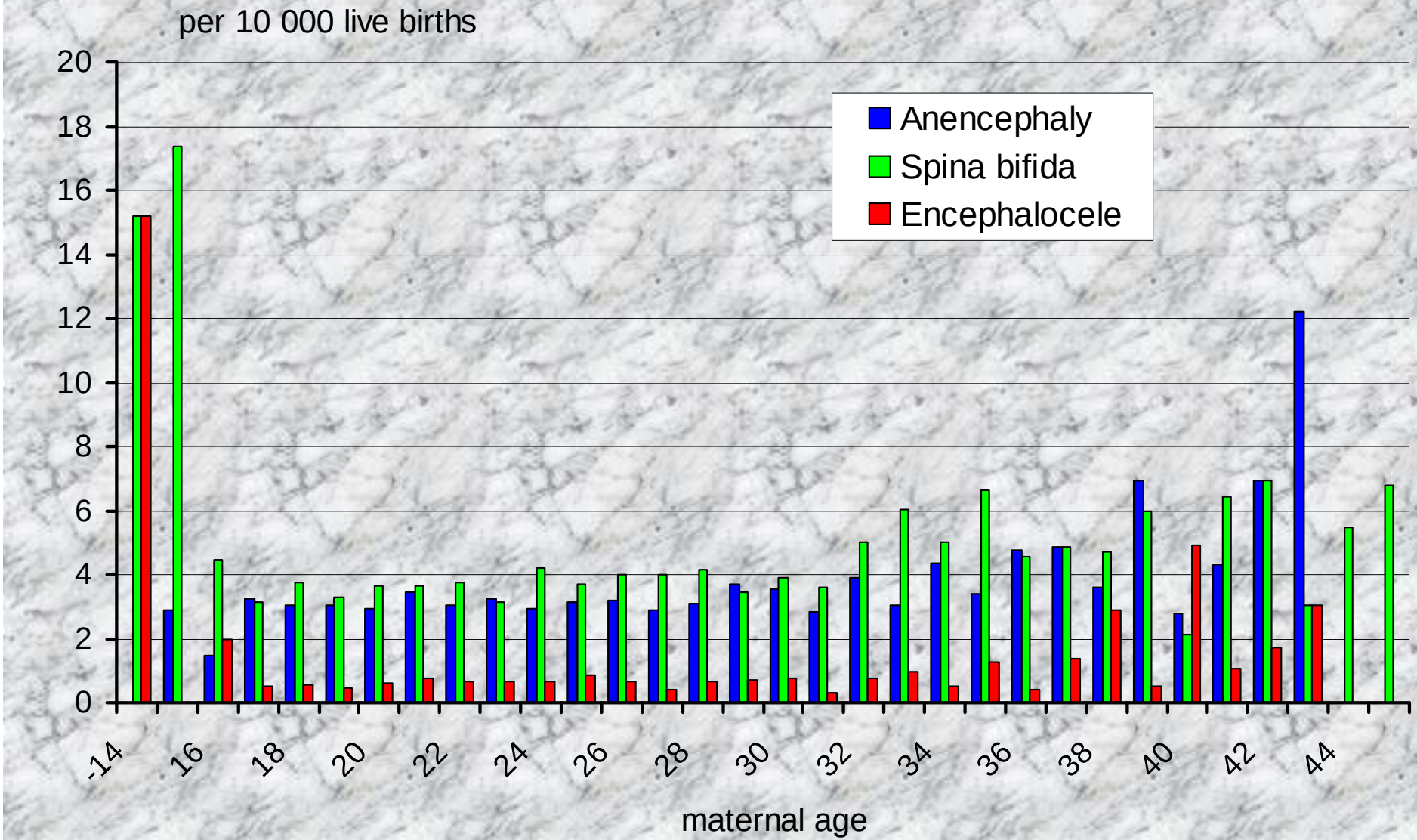


	Anencephaly	Spina bifida	Encephalocele
Total cases	1. 927	2.482	427
In births	1 .426	2.179	331 cases
Prenatally diagnosed	595	881	159 cases
male	35.16	45.09	36.21 %
female	64.84	54.91	63.79 %
isolated	46.86	41.59	39.06 %
combinated defects	53.14	58.41	60.94 %
System:			
cardiovascular	8.48	9.82	7.66 %
facial clefts	9.10	5.17	16.85 %
gastrointestinal	6.76	9.82	8.53 %
urogenital	40.07	23.90	18.82 %
musculoskeletal	21.03	39.00	29.32 %

Relative frequency of Neural Tube Defects per 10 000 live births in 1961-2001 according to maternal age



Survival of children with neural tube defects during first year of life, cohort of children's, Czech Republic, 1994-1998

ICD-10	Diagnosis	Survival of children during first year of life (%)	Mortality Rate in %				
			Stillbirth	Perinatal	Neonatal	Post neonatal	Infant
Q00.0 - 1	**Anencephaly**	0.0	0.00	71.4	0.0	100.0	100.0
Q01	**Encephalocele**	64.3	0.00	14.3	8.3	18.2	35.7
Q05	**Spina bifida**	75.0	1.25	7.5	8.0	13.0	25.0

index of stillbirth, calculated as ratio of stillbirths to 100 live-born babies;

index of perinatal mortality expressed as sum of stillbirths plus early neonatal deaths (0-6 days) to 100 live-born babies;

quotient of late neonatal mortality expressed as number of late neonatal deaths (7-27) versus 100 newborns surviving 7 days of life;

quotient of post-neonatal mortality calculated as number of infant deaths (28-364 days) per 100 infants surviving 28 days of life;

quotient of infant mortality calculated as number of infant deaths (0-364 days) to 100 live-born babies.

Survival of children with neural tube defects during first year of life, cohort of children's, Czech Republic, 1994-1998

Contribution of congenital malformations to total mortality and morbidity represents an important factor in the Czech Republic. Among the neural tube defects presented in this study, relatively high percentage of cases are diagnosed during pregnancy. However, the cases not diagnosed (insufficient diagnosis or impossible to diagnose) represent an important component of infant mortality and morbidity. Surviving infants are subject to operations, rehabilitation and other treatment procedures and contribute to high percentage of pediatric morbidity.

Results 1:

During the period under the study, totally 5 680 904 livebirths were registered in the Czech Republic.
Out of this number, 4 836 neural tube defects cases were registered in the Czech Birth Defects Register:
1 927 cases of anencephaly,
2 482 cases of spina bifida and
427 cases of encephalocele.
Out of the total number of neural tube defects cases, 900 were diagnosed prenatally and 3 936 cases postnatally.
Mean incidence of neural tube defects during the whole period under the study was 6.93 per 10 000 livebirths;
in anencephaly it was 2.51,
in spina bifida 3.84 and
in encephalocele 0.58 per 10 000 livebirths.

Results 2:

During this period, a statistically significant decrease of mean incidences of neural tube defects has occurred, both as a whole as well as in particular defects.

The availability and an improvement of prenetal diagnostics techniques played the main role in this process.

During the 1985 – 2001 period (when the prenatal diagnostics techniques became widely available), 501 cases of anencephaly (which represents 84.2 % out of all diagnosed cases) were registered. Corresponding numbers for the same period for spina bifida and encephalocele were 303 (39.5 %) and 96 (60.4 %) respectively, in neural tube defects as a whole there were 900 cases, which represents 59.2 %.

In the Czech Republic, mortality in births during the first year of life was 100 % in anencephaly, 25 % in spina bifida and 35 % in encephalocele during the last five year period

Conclusions:

During the 1961 – 2001 period, a statistically significant decrease of neural tube defects incidences has occurred in the Czech Republic, mostly due to technical improvement and general availability of prenatal diagnostics methods, especially during the last 15 years.
However, children born with neural tube defects cases still present an imortant part of perinatal, neonatal and infant mortality and morbidity.

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Czech Republic 2001:

90 910 livebirths

10 309 137 inhabitans

373 deaths under 1 year of age

3 572 births with birth defetcs