

# **Epidemiology and Surveillance of Invasive Meningococcal Diseases in the Slovak Republic**

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## **Background:**

Reporting of the invasive meningococcal diseases (IMD) is obligatory in the Slovak Republic since 1952. The National Reference Centre for meningococci (NRC) was created in 1993, in the frame of which the National Reference Laboratory for meningococci (NRL) and Department of Epidemiology closely co-operate. The NRC for meningococci co-ordinates surveillance of IMD in the Slovak Republic. Anti epidemic measures in the foci of IMD are performed according to the special Decree of the Ministry of Health of the Slovak Republic. No regular children vaccination against meningococcal meningitis is realised in the Slovak Republic. It is recommended only to persons exposed to the high risk of IMD.

## **Methods.**

Incidence of IMD is reported by local physicians to the competent Regional Public Health Authorities (RPHA). Epidemiologists of the RPHA carry out promptly the epidemiological examination of each case and order the anti-epidemic measures. Simultaneously, reports are sent to the National Register of Infectious Diseases and to the NRC for meningococci as well. Laboratory diagnostics of meningococcal invasive diseases is performed in numerous microbiological laboratories involved in the hospitals. These are sending the isolated strains for further identification to NRL. Each bacterial strain is characterised by biochemical testing, serogrouping, serotyping and serosubtyping according to Poolman's ELISA and antimicrobial susceptibility testing (MICs of PNC, RIF, SMTX)

## Results:

Until 1996, the morbidity to IMD was below 0,5/100 000 inhabitants in the Slovak Republic with age specific morbidity being the highest in the age group 0-4 years. In etiology, *N. meningitidis*, serogroup B predominated. An epidemic caused by the new invasive strain C:2a:P1.2(5) ET – 15/37, occurred in the Slovak Republic in 1996, culminated in 1997 with morbidity 2,4/100 000 inhabitants (*figure 1*). In the course of the epidemic, besides small children, namely 15-19 years old persons were affected (*figure 2*). Lethality reached high levels, from 8,5% in 1996 to 10,1% in the year 2001 with a maximum 23,0% in the years 1998 and 1999. In the next years, mortality gradually fell down, reaching pre-epidemic values (*figure 3*). From the 2001 a gradually decline of serogroup C was registered (*table 1*).

## Results (cont.):

In the year 2004, 31 illnesses were recorded (morbidity 0.6), mortality fell down to 6.3% and in the etiology *N. meningitidis*, serogroup B predominated again (60,8% of strains belonged to serogroup B).

During the period of 1998 – 2004 a total 3000 strains were subjected to serogroup testing. From them 1679 strains (61%) were identified as *Neisseria meningitidis*. IMD were diagnosed in 358 patients (21,4%) which underwent laboratory investigations in NRL for meningococci.

## **Conclusions:**

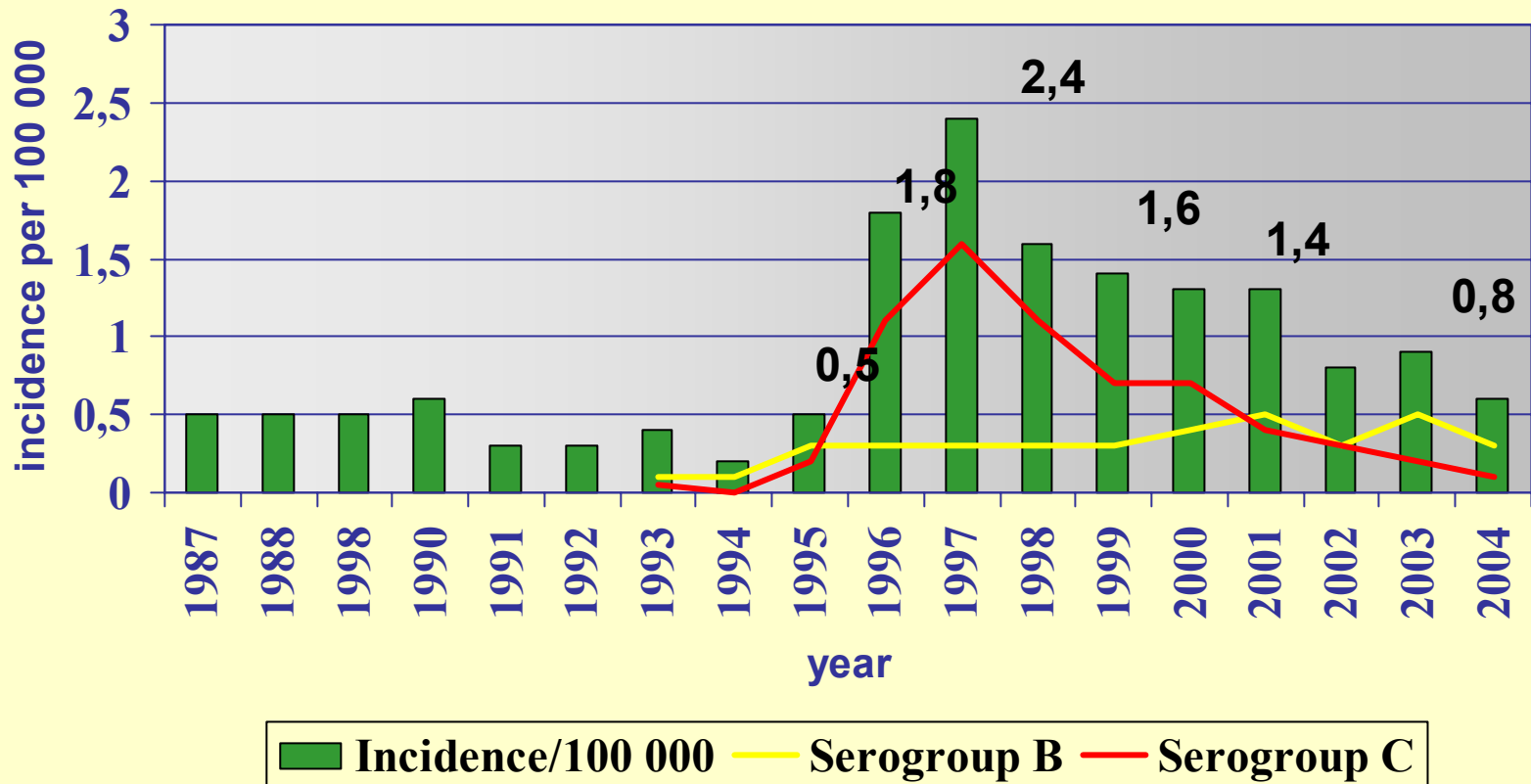
Laboratory and epidemiological surveillance of invasive meningococcal diseases is based on consistent and closed collaboration between clinicians, epidemiologists and microbiologists.

After the epidemic caused by invasive strain of *N. meningitidis* C:2a:P1.2(5), ET- 15/37 in the years 1996-2001 subsides, situation in incidence of IMD in the Slovak Republic reached pre-epidemic level.

# INVASIVE MENINGOCOCCAL DISEASES

Incidence per 100 000 population  
Slovak Republic, 1987-2004

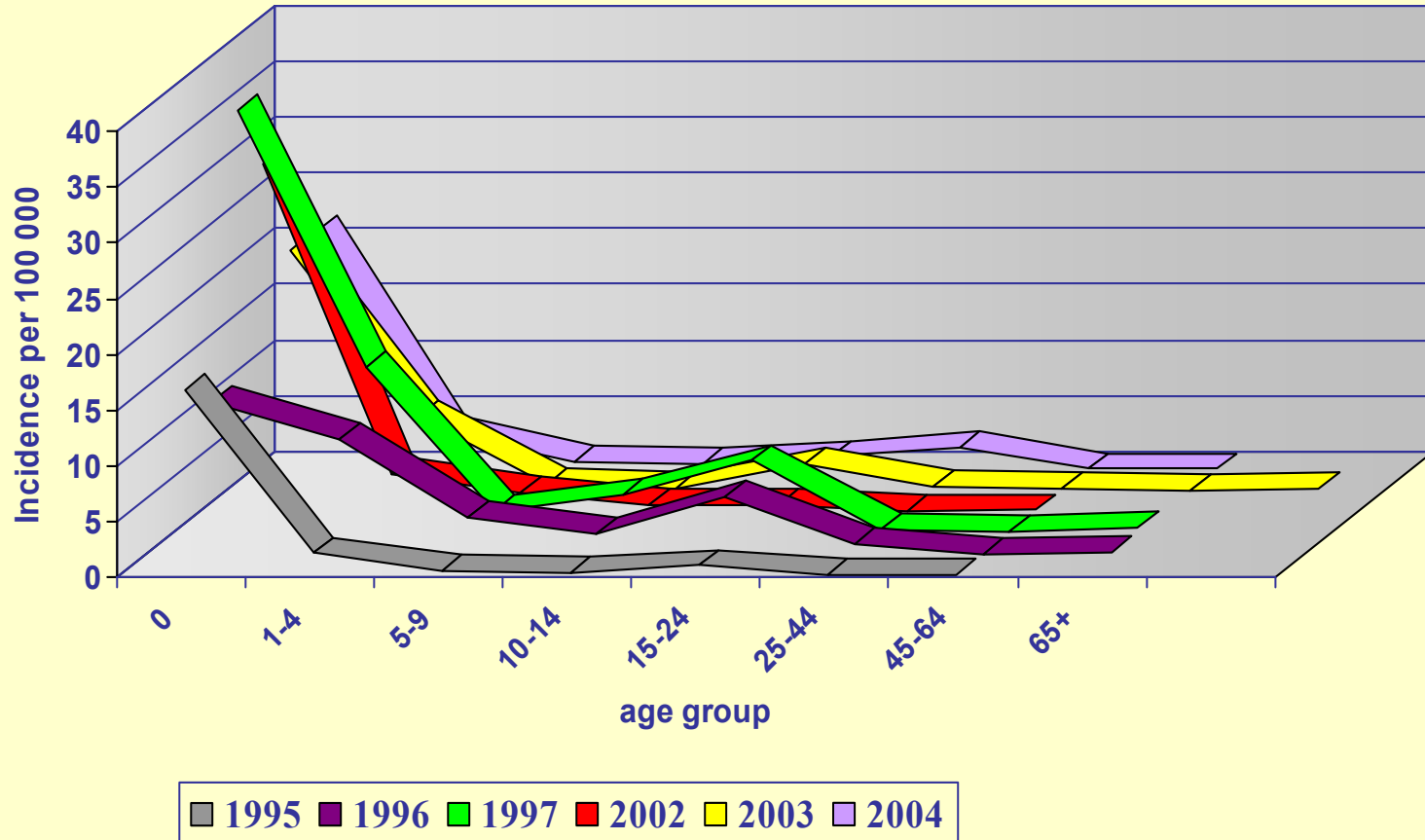
Figure 1



# INVASIVE MENINGOCOCCAL DISEASES

Age-specific incidence rates per 100 000  
Slovak Republic, 1994-2004

Figure 2

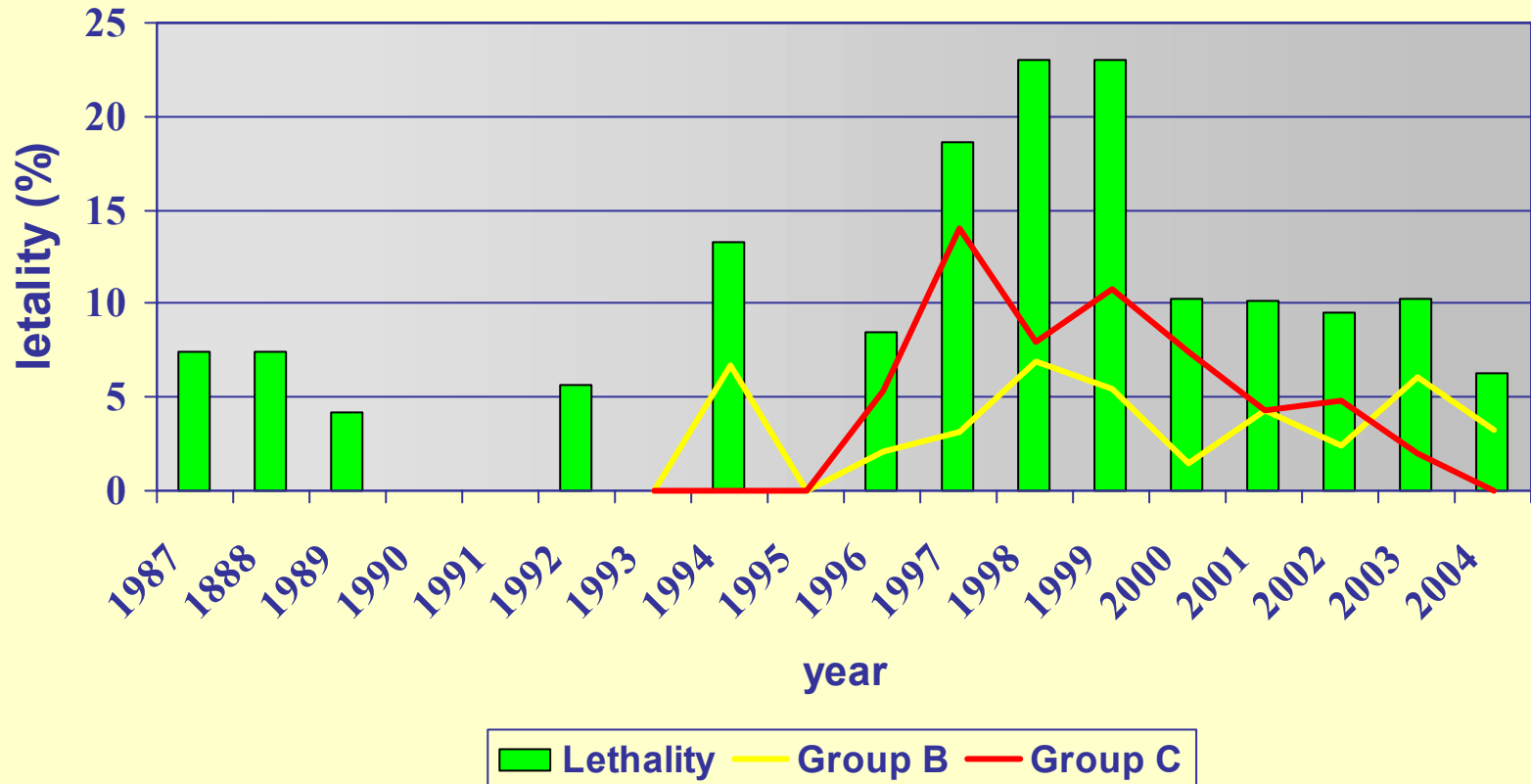


# INVASIVE MENINGOCOCCAL DISEASES

## Lethality

Slovak Republic, 1987-2004

Figure 3



# INVASIVE MENINGOCOCCAL DISEASES

## Serogroups Slovak Republic, 1987 - 2004

Table 1

Year	serogrouped cases (%)	Groups (% from serogrouped cases)				
		A	B	C	Other	ungroupable
1987-1994	29,6	14,5	47,3	30,9	-	7,3
1995	86,2	-	56,0	44,0	-	-
1996	80,9	1,3	21,1	76,3	-	1,3
1997	82,9	1,9	14,2	81,1	2,8	-
1998	88,5	-	23,4	75,3	1,3	-
1999	87,3	-	25,5	70,9	1,8	1,8
2000	86,8	-	33,9	61,0	5,1	-
2001	88,4	3,3	47,5	41,0	6,6	1,6
2002	90,5	-	47,5	40,0	10,0	2,5
2003	83,7	2,4	68,4	26,8	2,4	-
2004	80,6	4,0	72,0	24,0	-	-