

**Strengthening immunization services and introduction of
hepatitis B vaccine in countries of Central and
Eastern Europe and Newly Independent States,
3rd meeting, Kiev, 25-28 May 2004**

Hib in countries of the WHO European Region

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***Hemophilus influenzae* type B (Hib) disease: public health impact and control**

- **Estimated at least 3 million cases of serious diseases, especially meningitis and pneumonia in young children, and more than 400 thousand deaths in the world each year**
- **Meningitis in >30% of cases in children below 5 years of age**
- **May cause deafness, learning problems, fits**
- **Immunization with modern Hib conjugate vaccines prevents >90% Hib disease**
- **Hib conjugate vaccines are usually given to infants together with DTP, OPV and HepB**

Measurement of Hib disease burden

- **Surveillance**
 - detection: standard case definition
 - recording and reporting
 - laboratory diagnosis
- **Studies**
 - prospective
 - retrospective
- **Rapid assessment tool**

WHO/V&B/02.18
ORIGINAL: ENGLISH

Vaccines and Biologicals

Haemophilus influenzae type b (Hib)
meningitis in the pre-vaccine era: a global review of
incidence, age distributions, and case-fatality rates

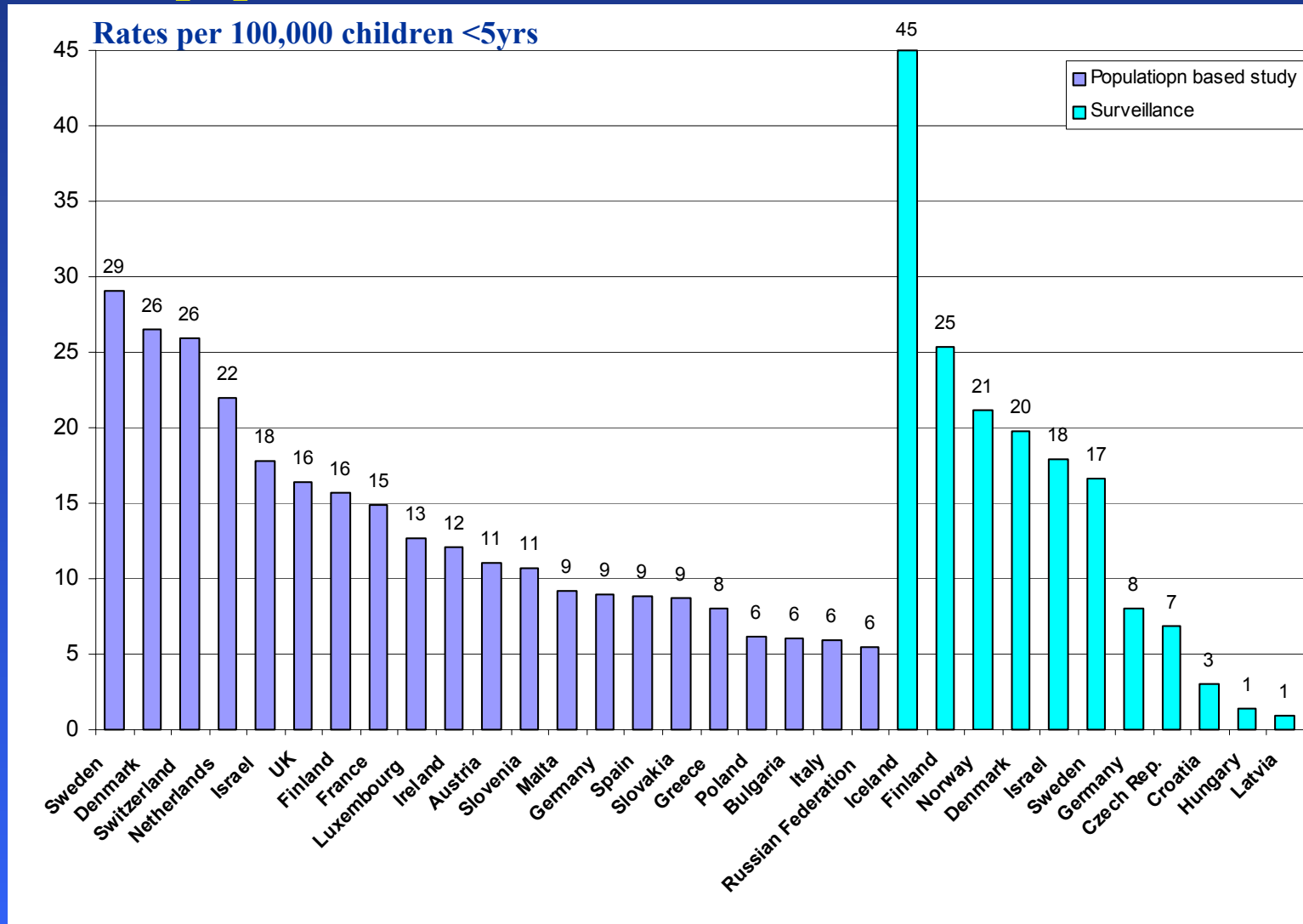


World Health Organization

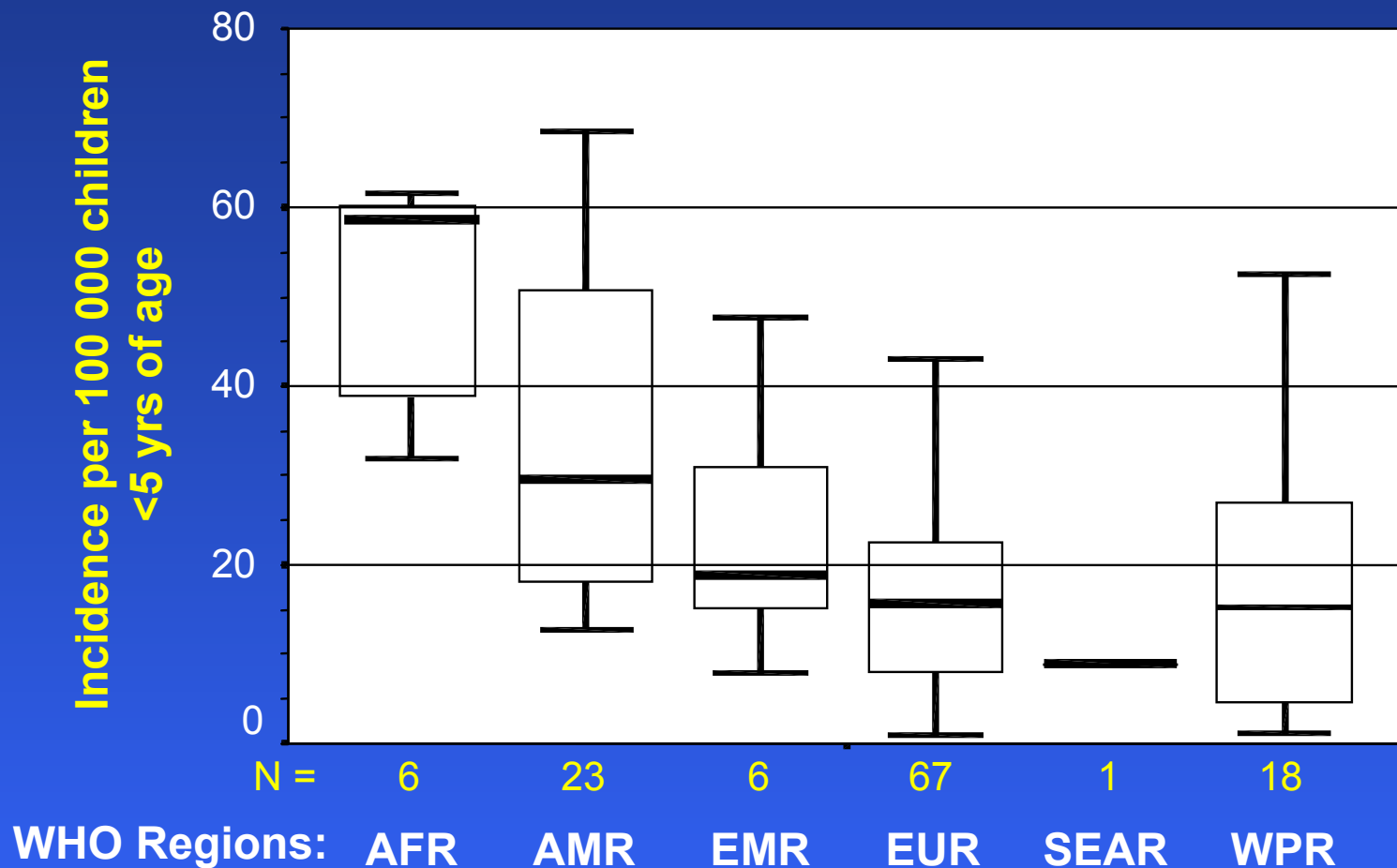
WHO document WHO/V&B/02.18

*“Haemophilus influenzae
type b (Hib) meningitis
in the pre-vaccine era:
a global review of incidence,
distribution and case fatality rates”*

Mean annual incidence of Hib meningitis in the WHO European Region before introduction of immunization: population based studies and surveillance data

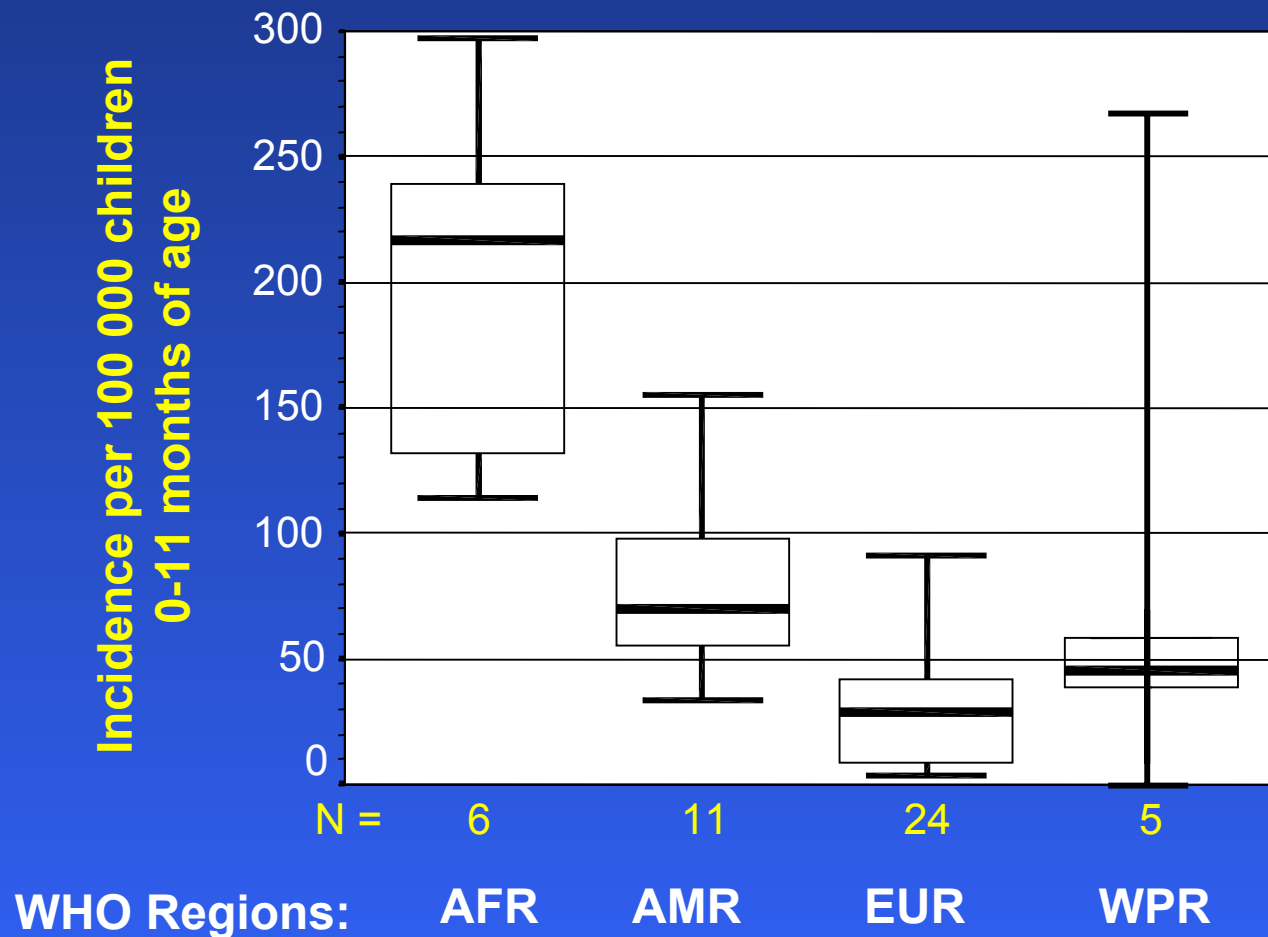


Incidence of Hib-meningitis in children < 5 yrs of age, by WHO Region



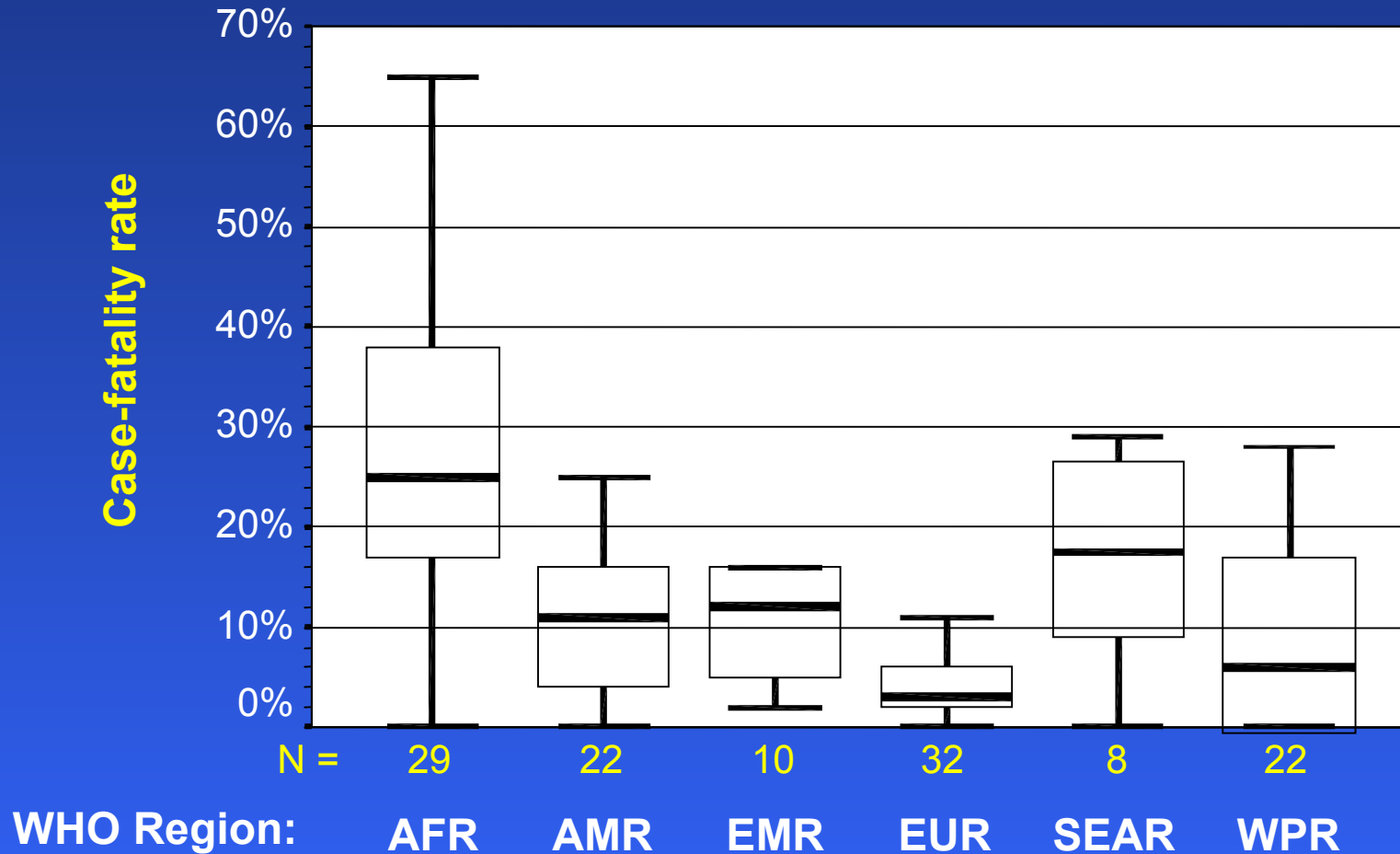
Source: WHO/HQ

Incidence of Hib-meningitis in children 0-11 months of age, by WHO Region



Source: WHO/HQ

Case-fatality rates of Hib-meningitis in children < 5 years of age, by WHO Region



Source: WHO/HQ

European Union Invasive Bacterial Infections Surveillance Network

Established in 2000, 21 countries involved



Disaggregated data for 1999-2002 supplied by:

Denmark

Netherlands

Finland

Portugal

Germany

UK

Greece

Ireland

Czech Republic

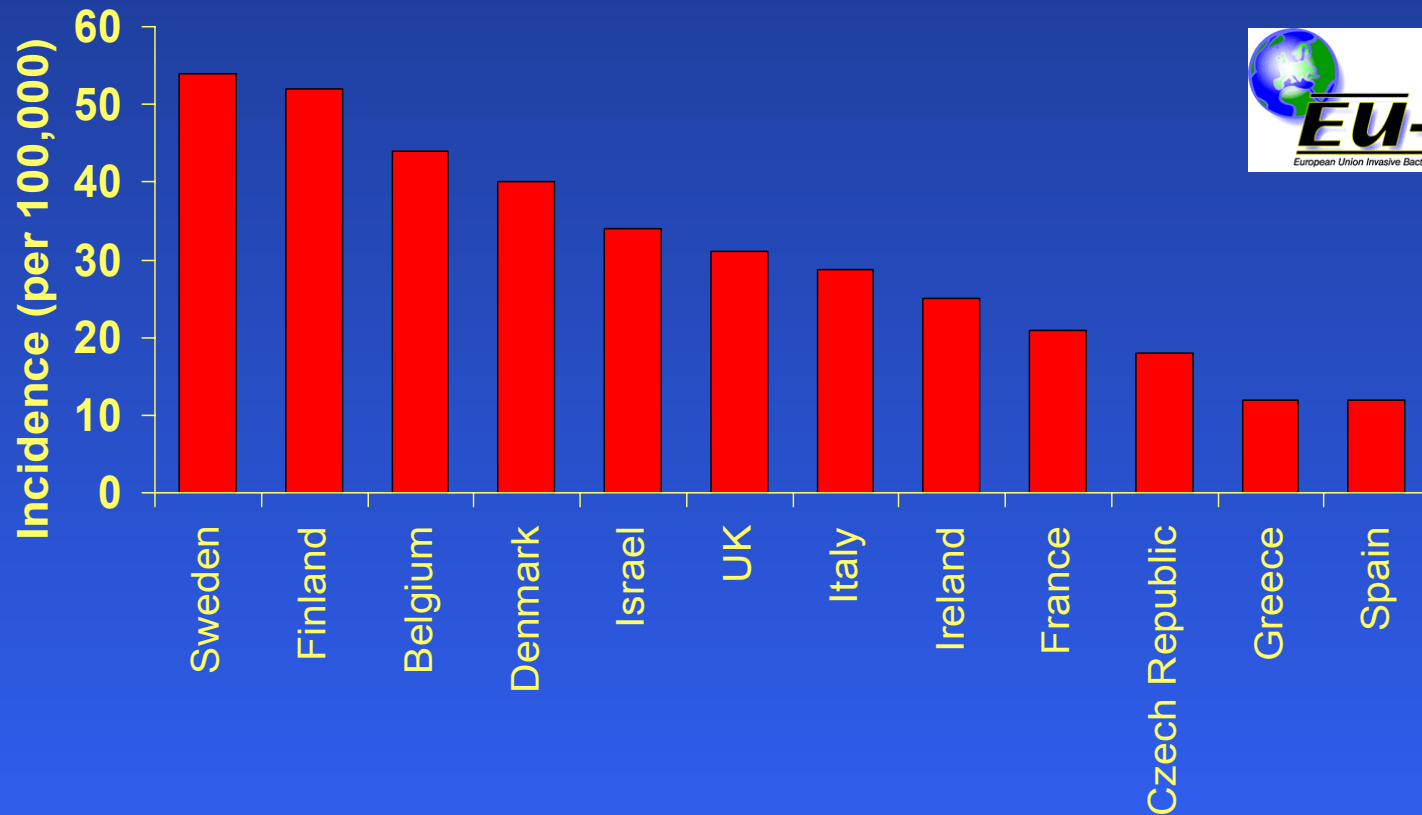
Israel

Italy

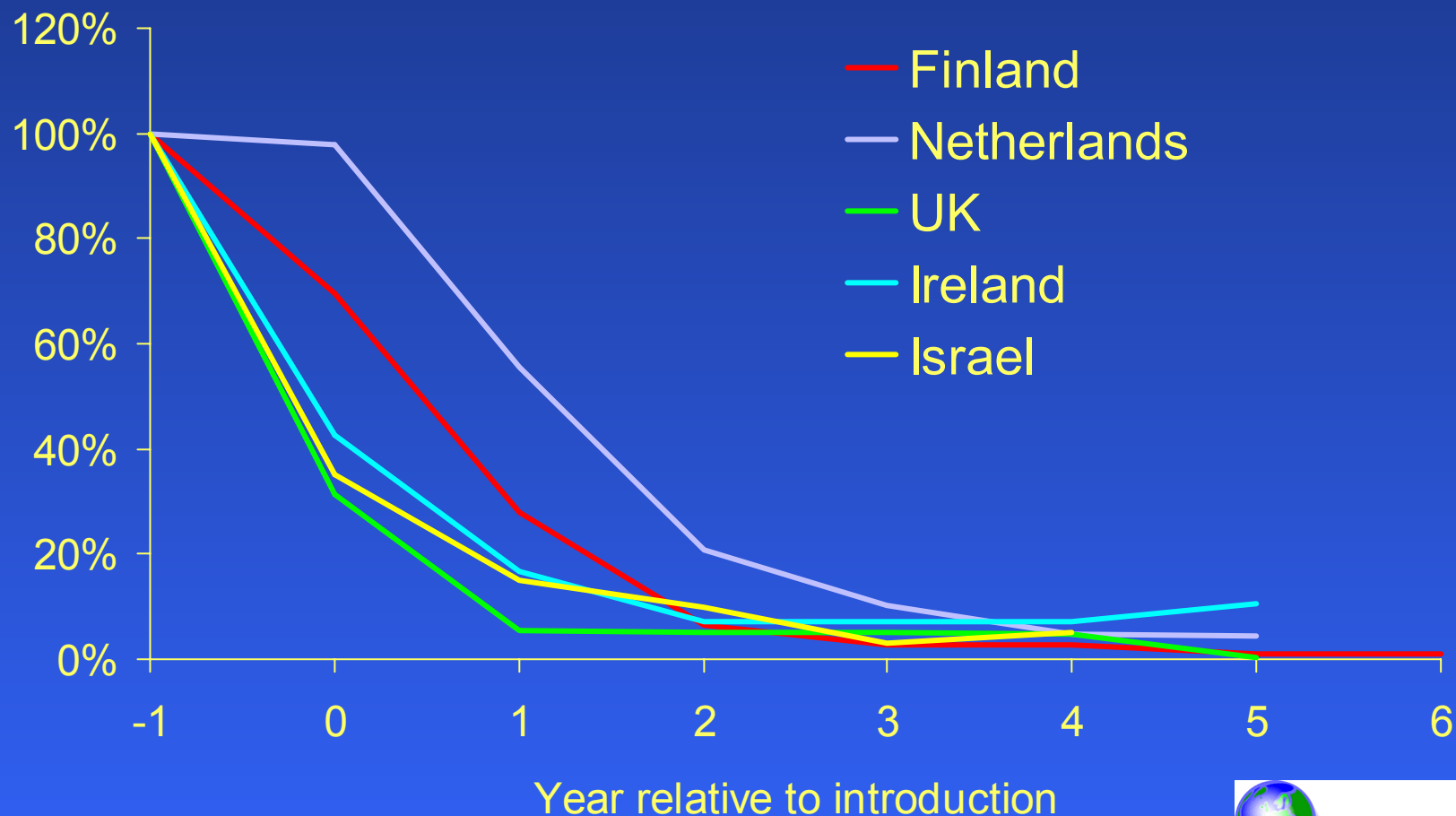
Norway

Some countries have not been able to fully contribute

Incidence of invasive Hib disease in children under 5 yrs prior to introduction of Hib immunisation

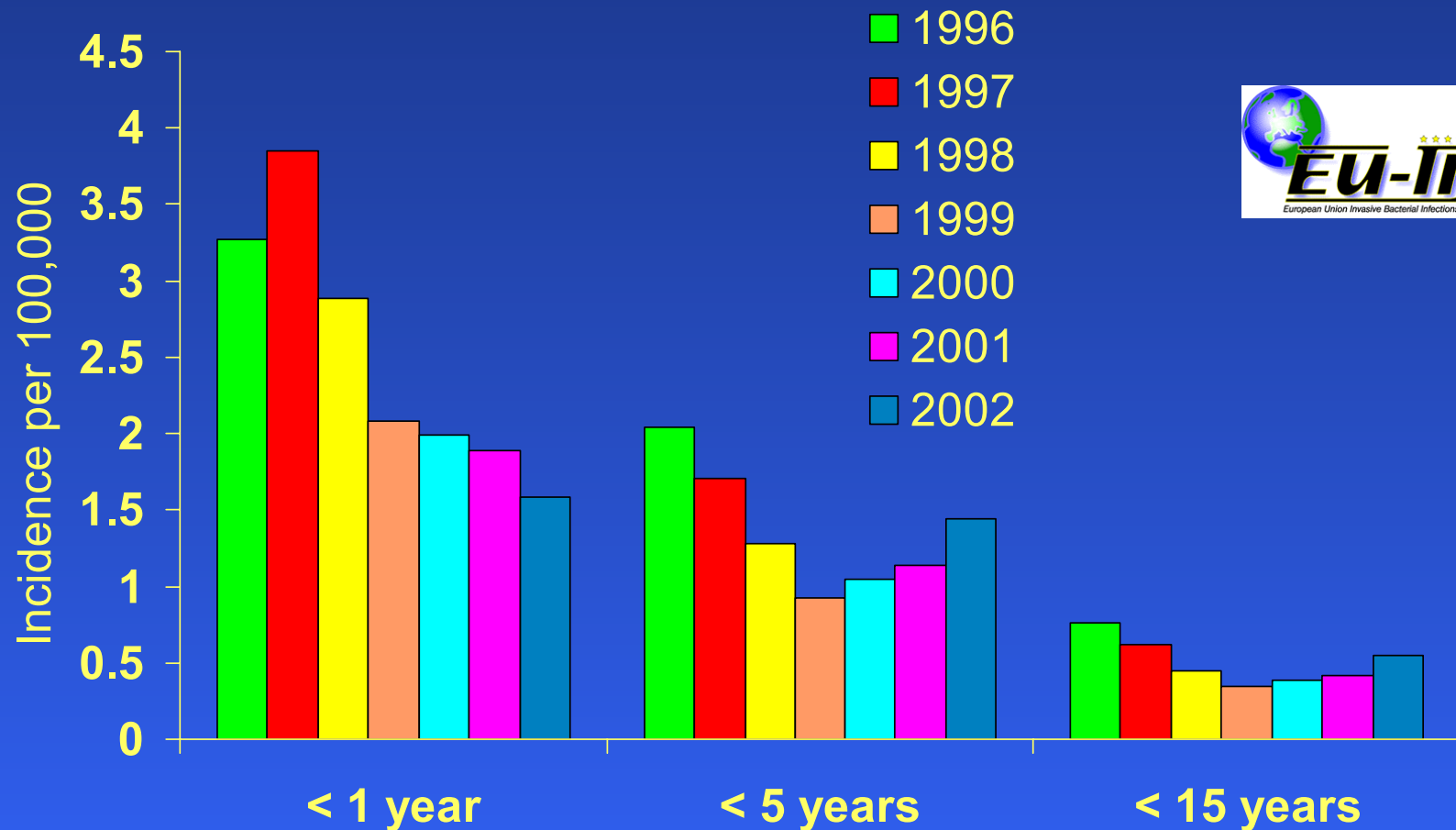


Percentage decline in incidence Hib following vaccine introduction

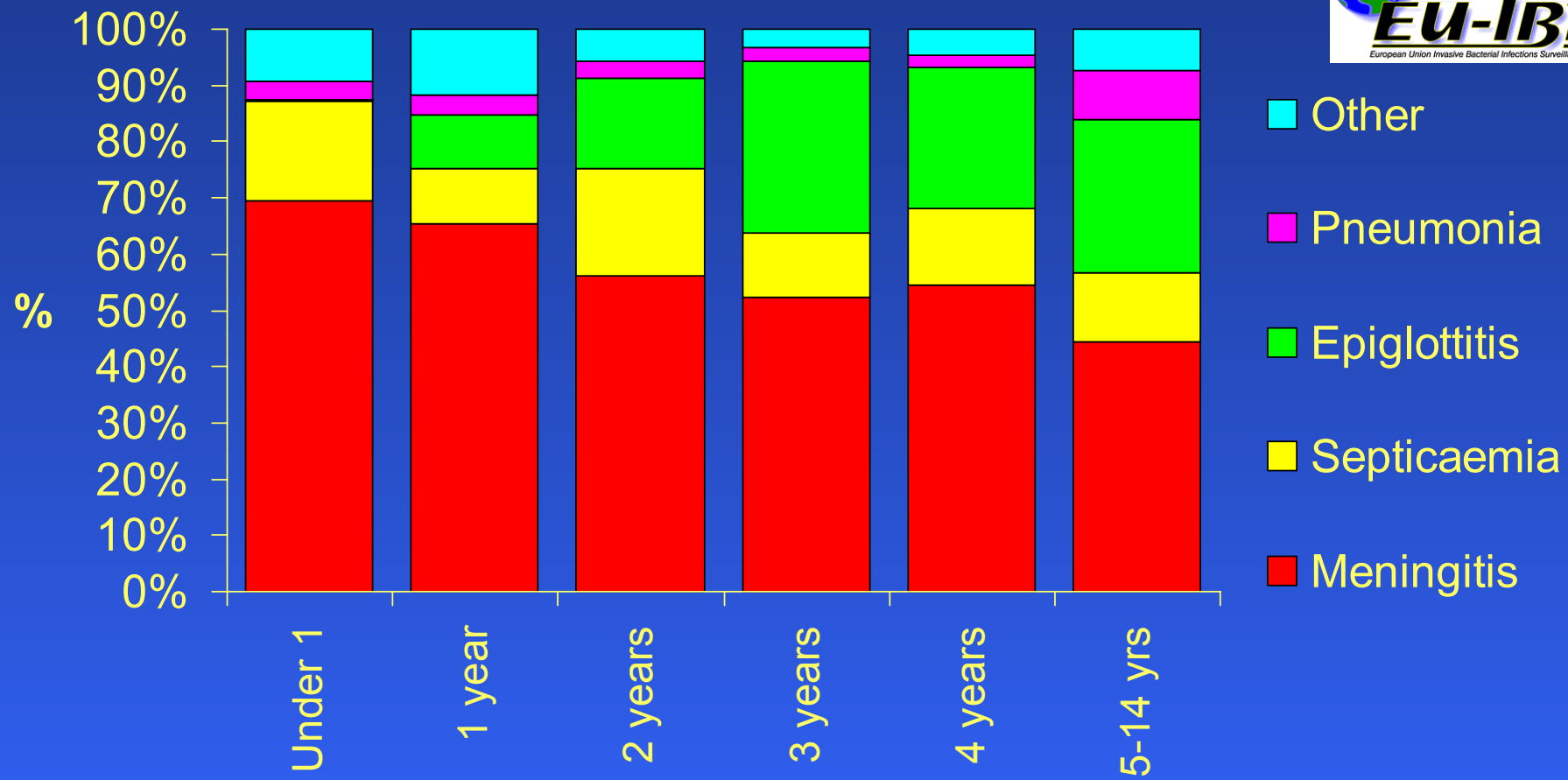


Incidence of Hib disease in children 1996-2002

(combined country data)



Age-specific distribution of diagnoses in all EU-IBIS countries and years combined

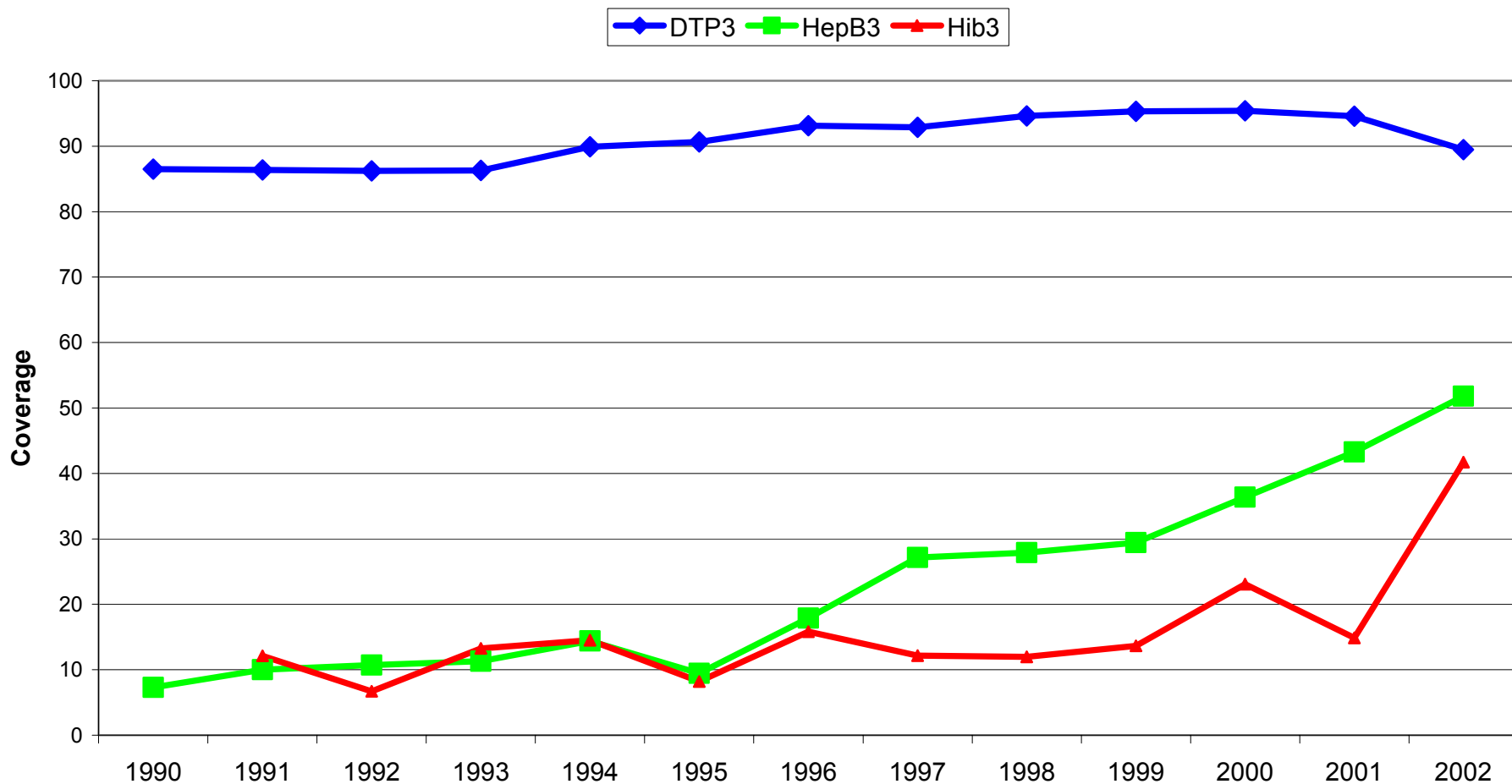


Hib diagnosis

- **Meningitis still the predominant diagnosis**
- **Meningitis decreases in importance with age**
- **Epiglottitis increases in importance with age**
- **Meningitis decreasing with the age shift in Hib infection**

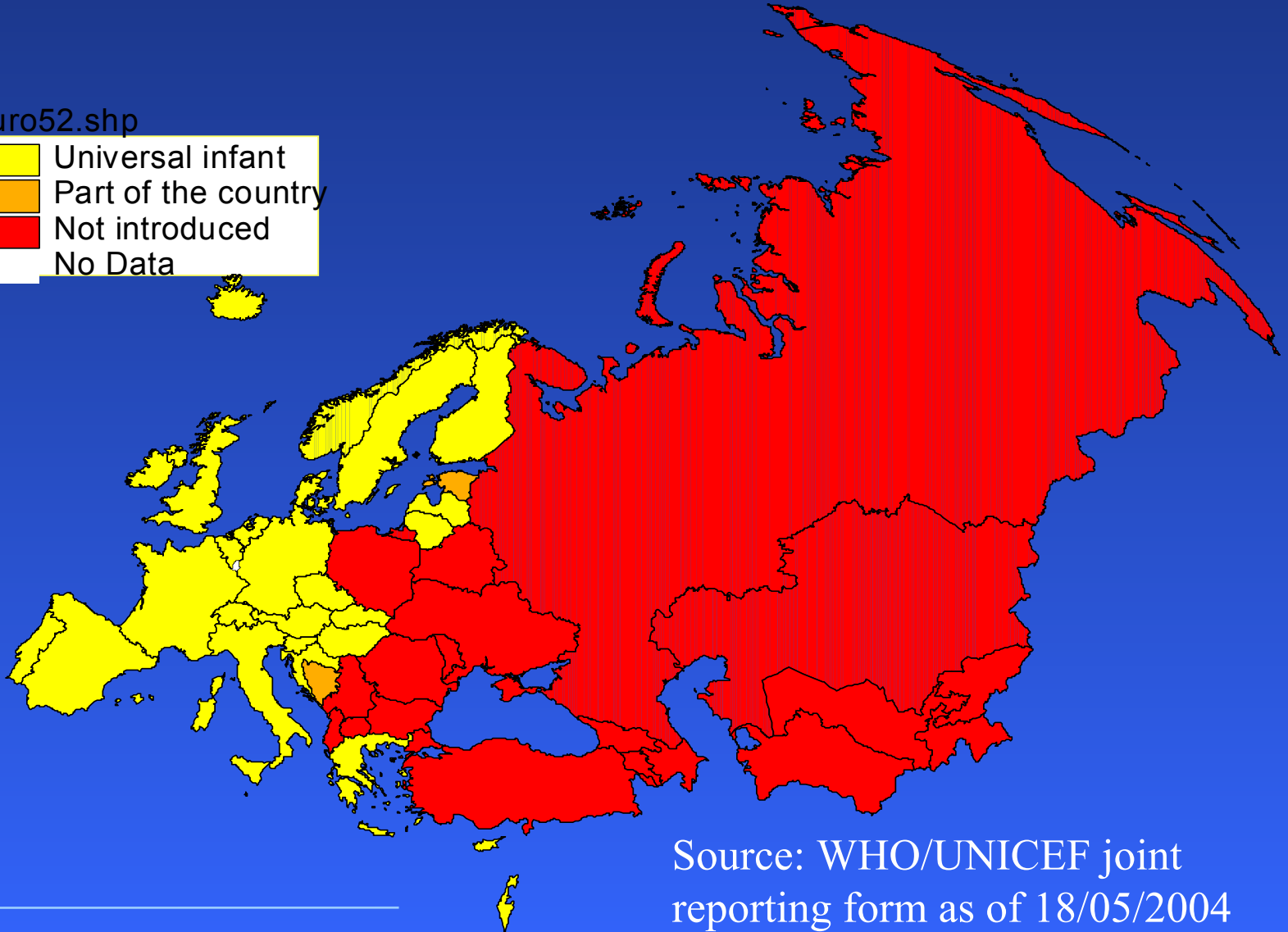
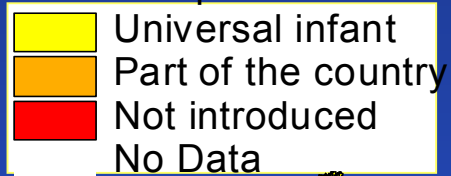


HepB3, Hib3 and DTP3 vaccine coverage in the European Region 1990-2002



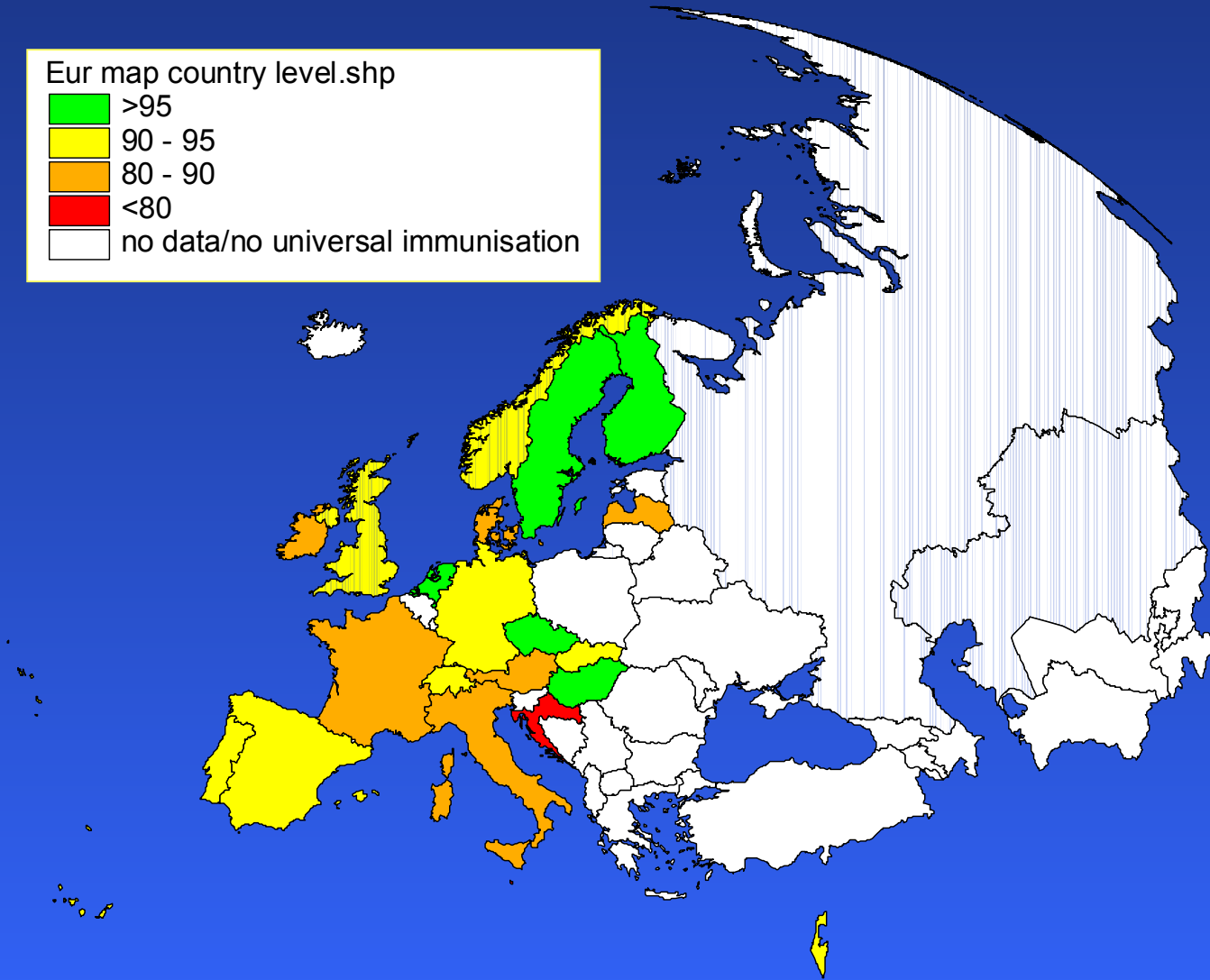
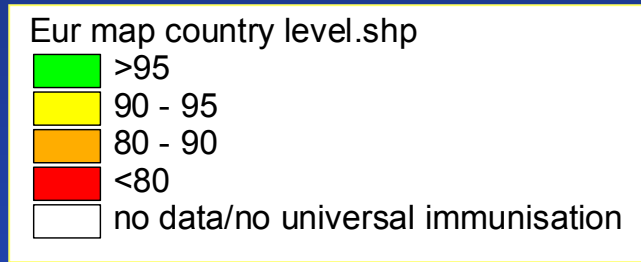
Haemophilus influenzae type *b* immunization policy in the European Region in 2003

Euro52.shp



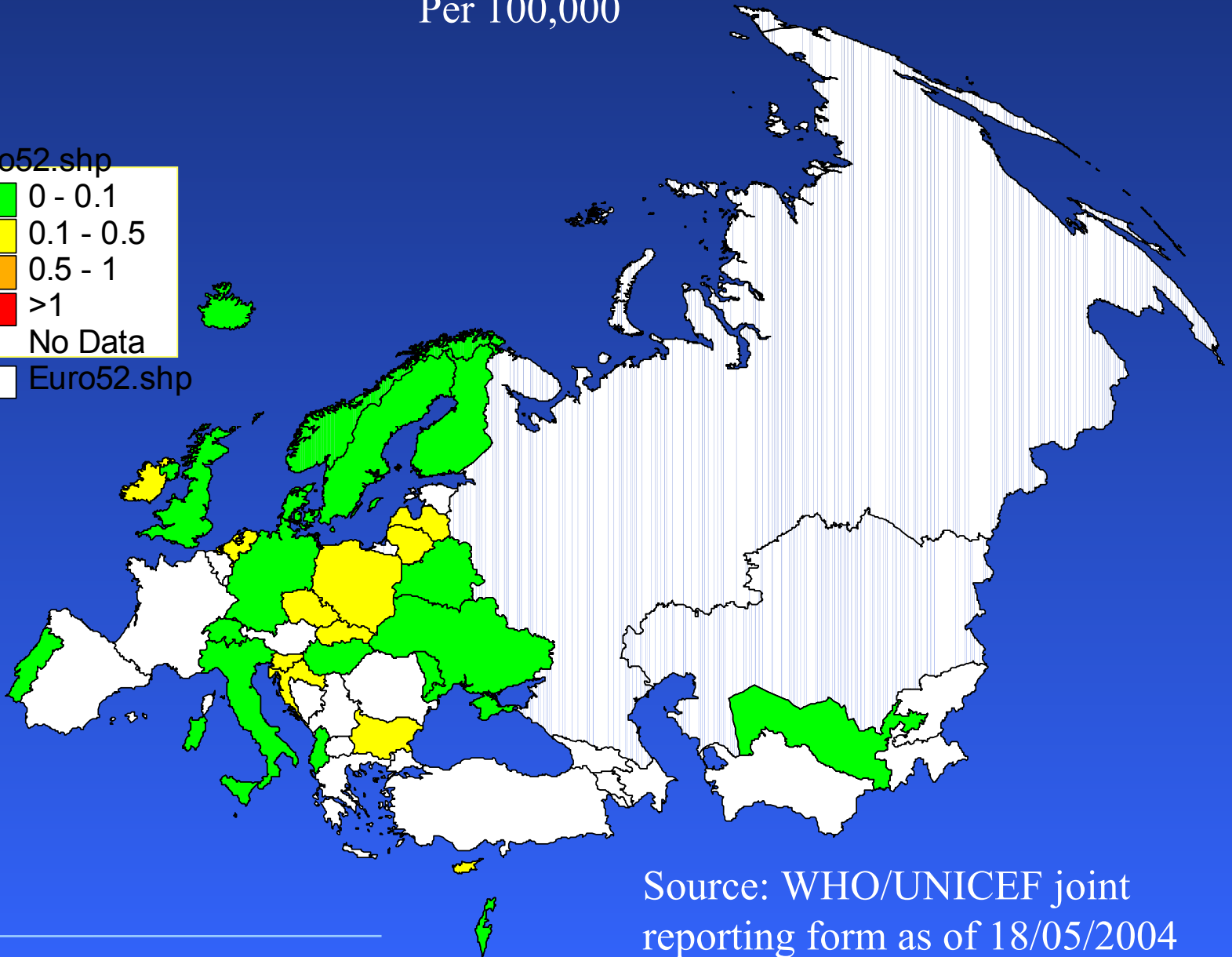
Source: WHO/UNICEF joint reporting form as of 18/05/2004

Hib3 coverage in the European Region in 2002



Incidence of Hib meningitis in the European Region in 2003

Per 100,000



Source: WHO/UNICEF joint reporting form as of 18/05/2004

WHO-supported population based Hib meningitis studies

Country	Period	Hib meningitis /100 000 <5 yrs
Bulgaria	1992-97	5.9
	1997-99	6.1
Poland	1998-99	3.1
		9.7
Russian Federation	1999-02	5.7

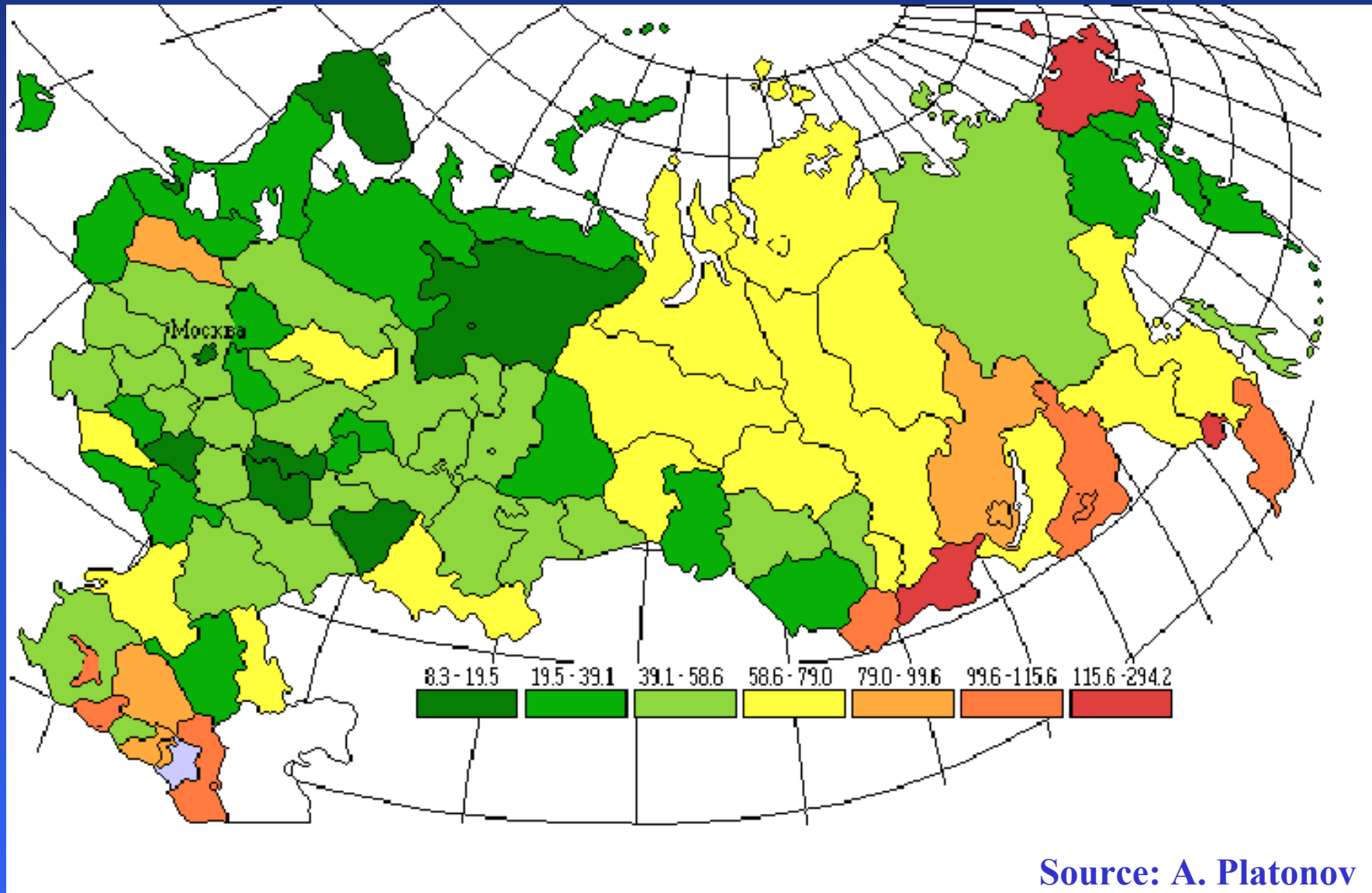
Compare to Finland 37-57 / 100 000 <5 yrs: pre-vaccination

Confirmed bacterial meningitis in children < 5 years of age

Country	Years	Total confirmed cases	N. mening.	Hib	S. pneum.	Other
BUL 6 regions	1997- 1999	88	23 (26%)	21 (24%)	23 (26%)	21 (24%)
POL 2 districts	1998- 1999	56	33 (59%)	17 (30%)	0	6 (11%)
RUS Moscow	1999- 2001	212	117 (55%)	39 (18%)	23 (11%)	33 (16%)

Sources: M. Kojouharova et al., A. Zielinski et al., A. Platonov

Annual incidence of acute lower respiratory tract infection caused by *H.influenzae* type b in Russia 1997-1999 (estimation)



Source: A. Platonov

Programme on study of epidemiology and prevention of Hib-infection in Russia supported by the Vishnevskaya-Rostropovich Foundation

Started in 2003

St. Petersburg

Novosibirsk

Nizhny Novgorod

Murmansk

Etiology of invasive infections in St. Petersburg 2001-2003

Years	Total confirmed cases	N. meningitidis	Hib	S. pneumoniae
2001-2003	138	81 (59%)	38 (27%)	19 (14%)

including 31 confirmed cases of Hib meningitis

Source: Research Institute of Child Infections, St. Petersburg, Russia

Hib rapid assessment tool

RAT is a methodology for rapid assessment of the burden of Hib disease using local available data

Two methods to develop national estimates:

- (1) Retrospective estimation of incidence of Hib meningitis in children <5 years of age (data from selected hospitals and labs) and use of meningitis rate to estimate morbidity and mortality of Hib.**
- (2) Estimation of morbidity and mortality of Hib based on local estimates of the overall mortality in children < 5 years of age**

Performed in Albania in 2001, Kyrgyzstan, Uzbekistan in 2002, Armenia, Moldova and Ukraine in 2003

Hib rapid assessments in the WHO European Region

Country	Hib meningitis per 100000 < 5 years old	Total annual estimated Hib cases	Total annual estimated Hib deaths
ALB (2001)	15	366-800	54-74
KGZ (2002)	5-25	139-750	15-78
ARM (2003)	3-15	36-180	2-9
MDA (2003)	13 (10-16)	120-198	6-10
UKR (2003)	4-12	480-1440	24-72
UZB (2002)	4-22	588-3391	37-351

Hib rapid assessments in the WHO European Region, 2003

Cost-effectiveness:

Savings equal to the Hib vaccination cost, if the cost is

in Moldova: USD 1.5 per child or USD 0.5 per dose

in Ukraine: USD 2.7 per child or USD 0.9 per dose

Conclusions:

- **High Hib incidence in the WHO Region was recorded in West Europe in pre-vaccination era**
- **Effective surveillance and additional studies are needed, especially in NIS**
- **Decision for Hib vaccine introduction should be based on thorough analysis of various factors**
- **Long-term political commitment and financial sustainability are crucial for decision-making**