

European Sero-Epidemiology Network (ESEN2): The comparative sero-epidemiology of Hepatitis A and B

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DRAFT RESULTS

ESEN2 Group

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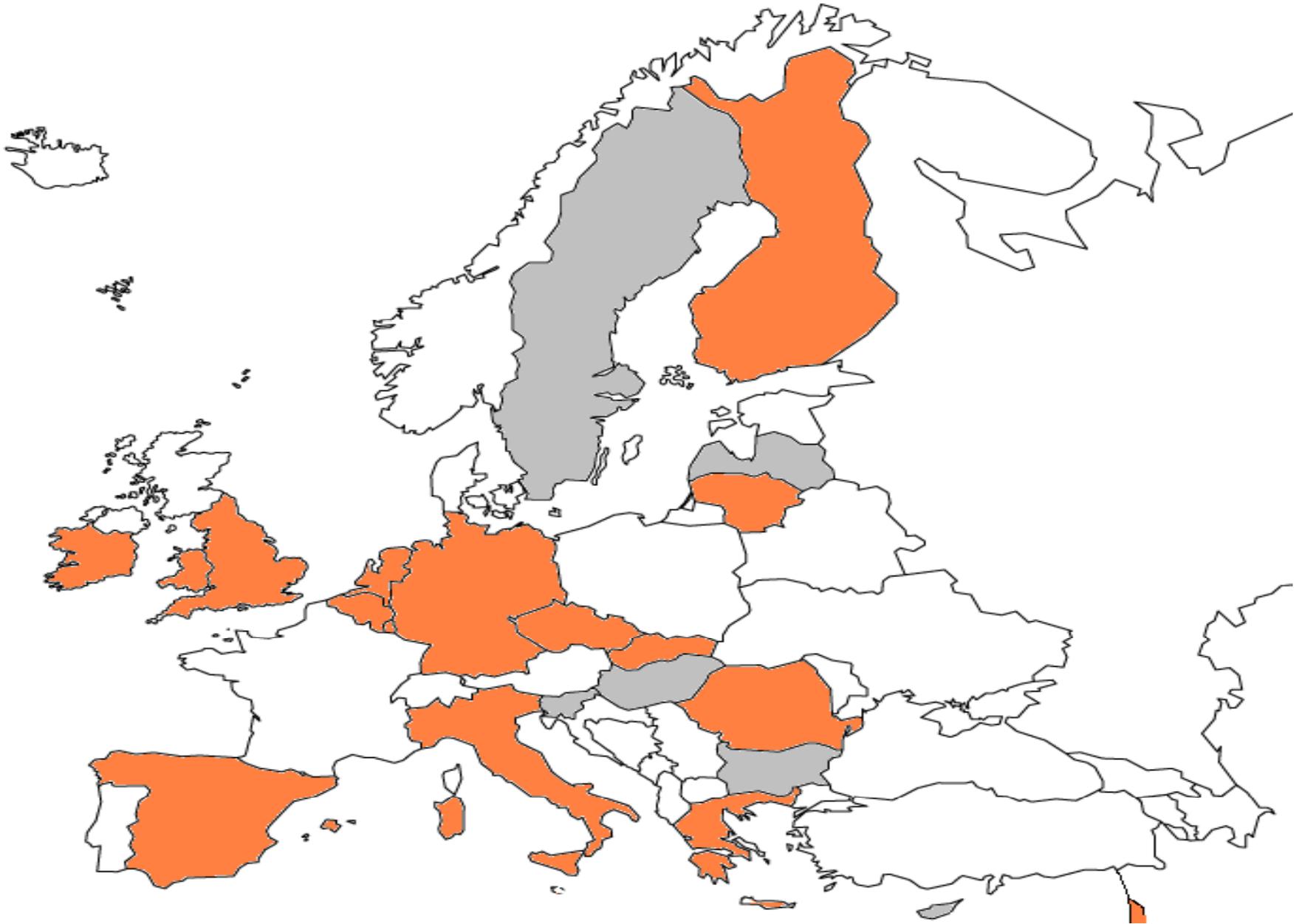
ESEN2: aims and objectives

- to coordinate the serological surveillance of vaccine-preventable disease in Europe:
 - to establish comparable methodologies for serosurveillance by standardising laboratory and epidemiological methods
 - to determine standardised age-specific antibody prevalence to 8 vaccine-preventable diseases
 - to identify strengths and weaknesses of existing vaccination programmes
 - design of optimal vaccine programmes
 - monitor progress towards disease control target

ESEN2: infections investigated

- **measles, mumps and rubella (MMR)**
- **diphtheria**
- **pertussis**
- **varicella-zoster virus (VZV)**
- **hepatitis A and hepatitis B (HAV/HBV)**

ESEN2: Participants



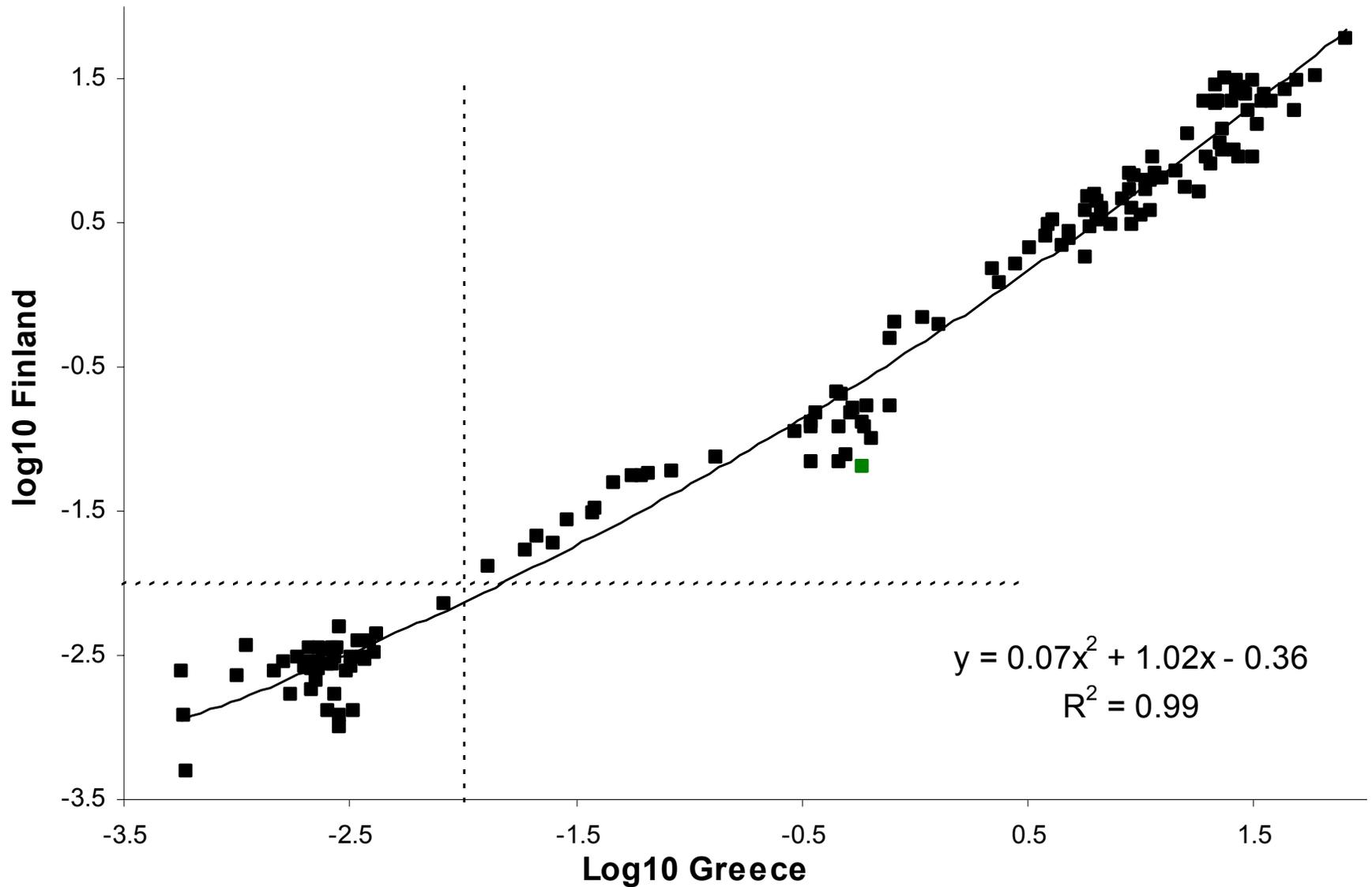
Methods

- Assay standardisation
 - different assays can give different results
 - participant countries can use usual assay
 - international comparisons of sero-epidemiology
- Main serum bank collection and testing
 - collection of either residual sera, community sampling or combination
 - minimum numbers in age groups
 - geographically representative sera collection
- Organisational analysis
 - questionnaire collecting information on:
 - vaccine policies (current and past)
 - reported incidence of disease

Assay standardisation

- reference centre for HAV and HBV
 - Hellenic Centre for Infectious Disease Control (HCAS), Athens, Greece
- development and distribution of standardisation panels
 - each panel includes negative, low positive and positive sera
- reference panel test x2 by participant laboratory
 - 1st test to evaluate assay
 - 2nd test 1/2 through testing main serum bank
- development of standardisation equations
 - plot of laboratory results against reference centre
 - application of reference centre's cut-offs

HAV Standardisation, Finland



National Serum Banks

	Type Collection	Year Collected (Tested)	Age Range	Number Tested
Belgium*	residual	2002 (02)	1-60+	3374
Czech	population	2001 (01)	1-60+	2644
Finland	residual	1998 (03)	1-60+	3165
Germany	population	1998 (98)	17-60+	6748
Ireland	residual	2003 (04)	1-60+	2535
Italy	residual	1996 (04)	1-60+	3500
Lithuania	residual	2003 (04)	1-29	2356
Luxembourg	population	2000 (01)	4-60+	2079
Malta	residual	2003 (04)	1-60+	1960
Netherlands	population	1995 (98)	1-60+	6900
Romania#	residual	2002 (04)	1-60+	2800
Slovakia	population	2002 (04)	1-60+	3600
UK	residual	1996 (00)	1-60+	4190

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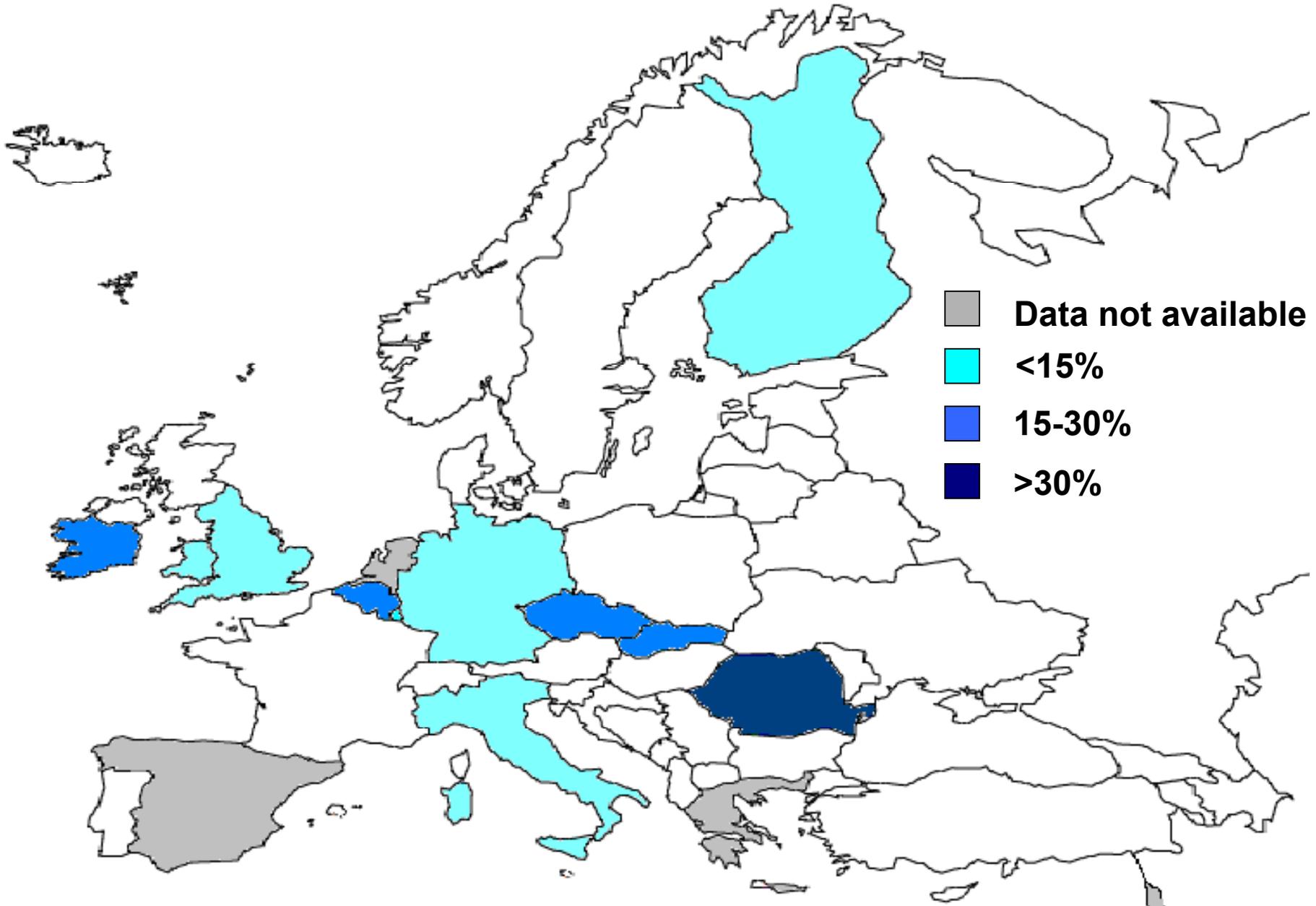
*Only <20 years tested for HBV markers #1258 samples tested for HBV

Vaccination Policies for Hepatitis A and B

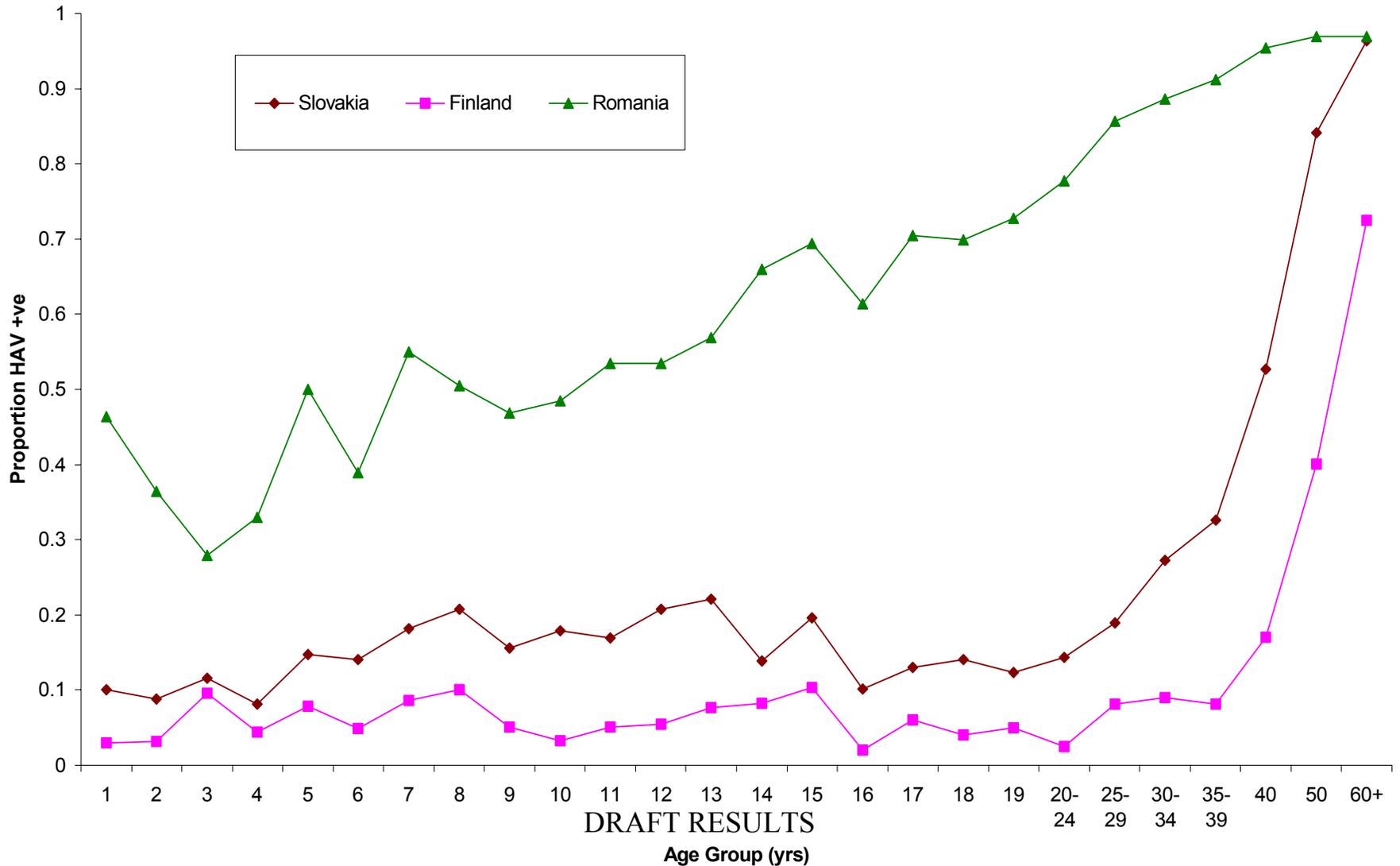
	HAV Vaccination		HBV Vaccination	
	Type	Type	Year	Catch-up
Belgium	Targeted	Infant	1999	11-12
Germany	"	"	1995	9-17
Italy	"	"	1991	12
Luxembourg	"	"	1996	12
Malta	"	"	2003	9-10
Romania	"	"	1995	9
Slovakia	"	"	1998	12
Spain	"	"	2001	14
Czech Republic	"	"	2001	12
England & Wales	"	Targeted	-	-
Finland	"	"	-	-
Ireland	"	"	-	-
Netherlands	"	"	-	-

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Proportion anti-HAV+ve (<20 years)



Example HAV sero-profiles from low, medium and high prevalence countries



Conclusions Hepatitis A

HAV sero-epidemiology in Europe characterised by:

- low sero-prevalence HAV in younger population (low current transmission)
- high adult sero-prevalence indicative of historical transmission

Some variation in HAV serology across Europe

- widespread transmission in Romania
- appears to be no north-south gradient in transmission

Implications for HAV vaccination programmes

- HAV vaccination policies targeted at-risk groups appears appropriate in most countries
- in Romania mass HAV vaccination to be considered

HBV testing algorithms by country

All samples tested:

Country	anti-HBs	anti-HBc
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Belgium	+	+
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Italy	+	+
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Germany	+	+
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Slovakia	+	+
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Romania	+	+
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Czech Republic	+	+
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Finland	-	+
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Ireland	-	+
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Netherlands	-	+
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All countries tested anti-HBc samples for HBsAg

Percentage anti-HBVcore +ve by age

Country	Age Groups		
	<20 yrs	20-49 yrs	50+ yrs
Belgium	2.2%	-	-
Ireland	1.0%	2.3%	2.7%
Netherlands	0.5%	2.2%	3.0%
Finland	2.4%	4.5%	5.0%
Germany	1.6%	4.2%	8.9%
Czech Republic	0.8%	2.9%	11.4%
Slovakia	6.6%	16.0%	19.5%
Italy	2.2%	8.5%	22.6%
Romania	20.6%	36.2%	54.1%

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Hepatitis B Surface Antigen

Country	Number HBsAg+ve	Percentage Population (Total)
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Belgium	13	0.9% (1528)
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Czech Republic	9	0.3% (2644)
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Finland	7	0.2% (3165)
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Ireland	2	0.1% (2535)
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Italy	21	0.6% (3574)
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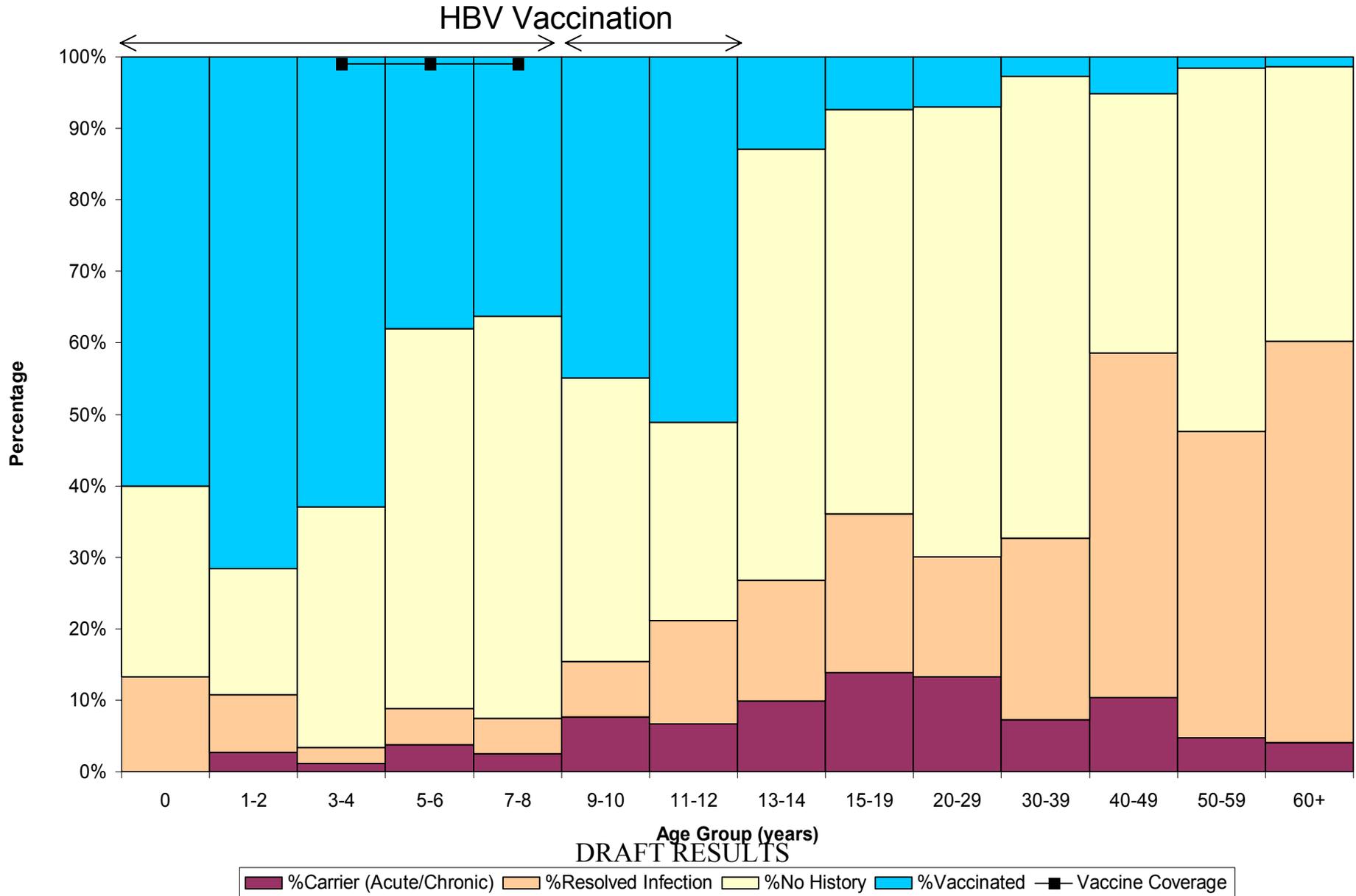
Slovakia	21	0.6% (3624)
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Netherlands	10	0.1% (6924)
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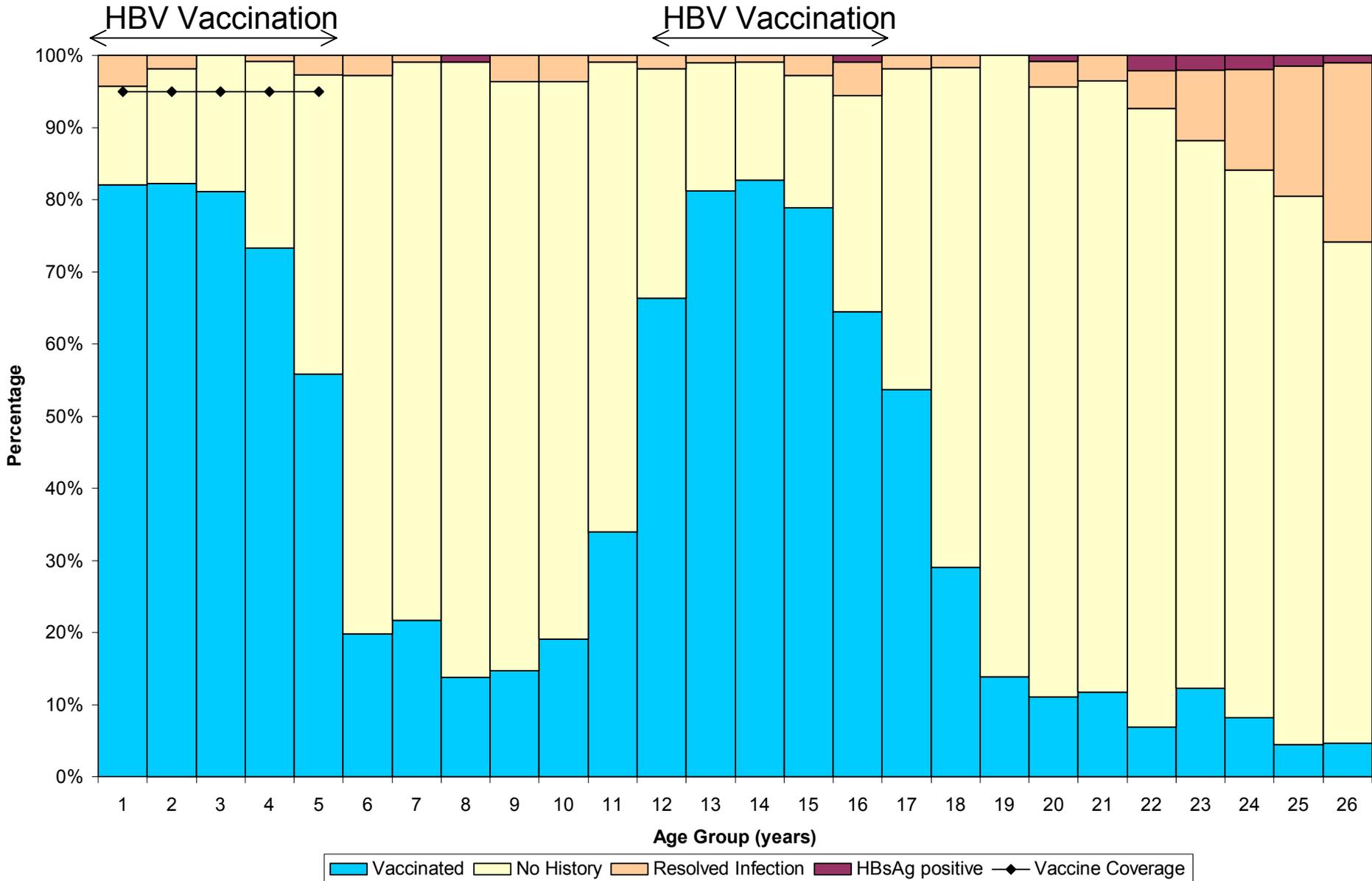
Romania	99	7.7% (1258)
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Romania (2002)



Italy (1996)



Conclusions Hepatitis B

Sero-epidemiology Hepatitis B:

- low prevalence past infection in younger population(except Romania)
- higher prevalence past infection older populations
- appears to be north-south gradient in levels past infection
- low endemicity HBsAg carriage rates (<1%) except Romania (borderline high endemicity)

Inclusion HBV in infant immunisation (WHO)

- 3 countries without universal infant HBV vaccination
 - low prevalence of past infection HBV and carriage HBsAg
- 5 countries with universal infant HBV vaccination
 - protection in targeted populations
 - discrepancy with reported coverage

Conclusions

Importance serological surveys

- evaluate vaccine campaigns
 - impact of vaccination programme on levels infections
 - protection in population
- identify appropriate control measures
- better understanding epidemiology disease

Coordinated serological surveillance in Europe

- monitor progress towards disease control targets
- coherence in disease control in Europe

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