

Meningococcal serogroup C conjugate immunisation in Europe



Caroline Trotter & Mary Ramsay



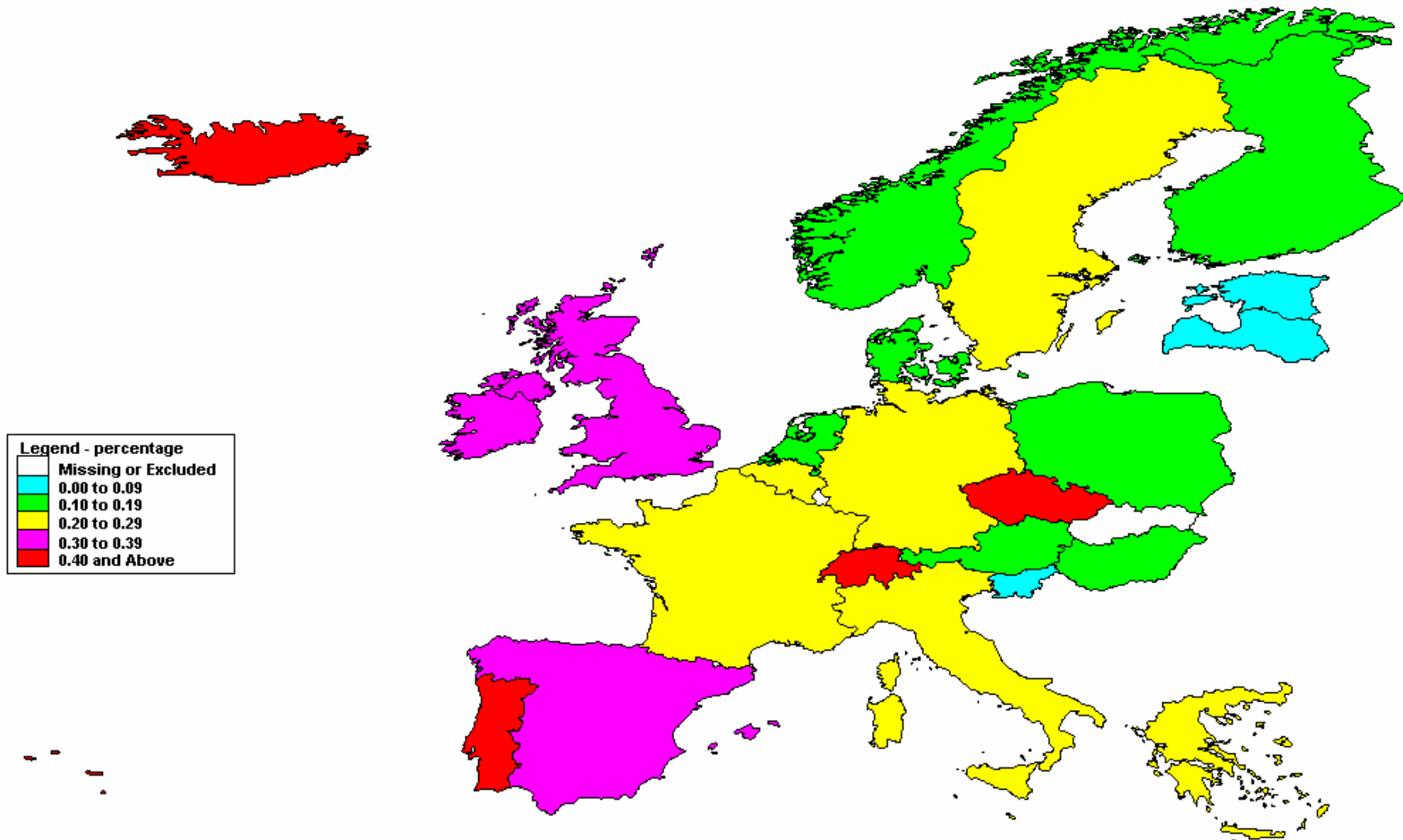
12 January 2006

Overview

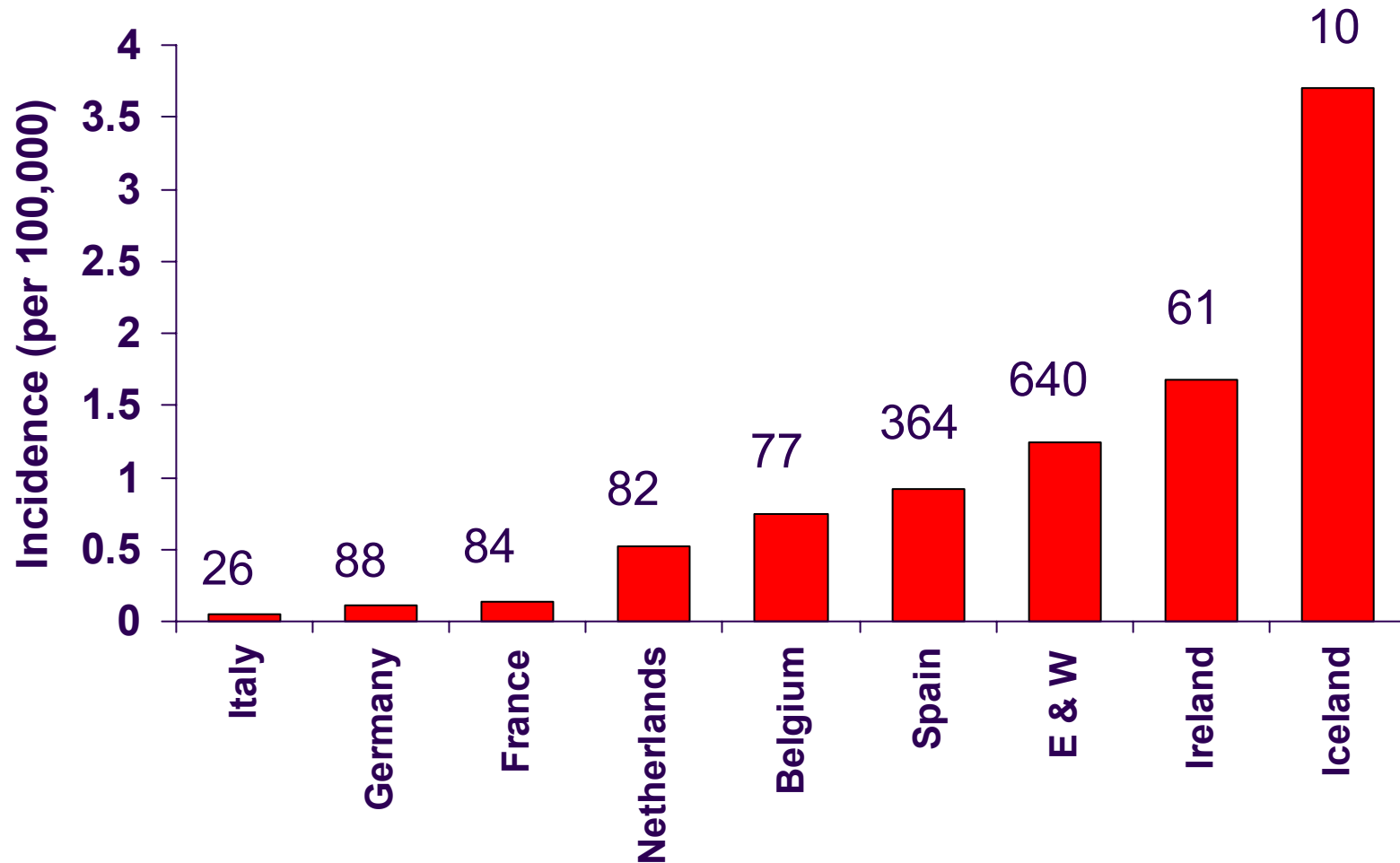


- **Serogroup C incidence in Europe**
- **MCC vaccine schedules**
- **MCC vaccine effectiveness**
- **Comparison of England v Spain**
- **Modelling MCC immunisation**

Proportion of invasive meningococcal disease due to serogroup C (1999 or baseline year)



Incidence (number) of culture confirmed serogroup C IMD, selected countries, 1999



MCC vaccine schedules



Country	Routine	Catch-up	Year started
UK	2, 3, 4 months	Under 18 years (to 24y in 2001)	1999
Ireland	2, 4, 6 months	Under 23 years	2000
Spain	2, 4, 6 months	Under 6 years (regional variation)	2000
Netherlands	14 months	1 to 19 years	2002
Belgium	12 months	1 to 5/ 1 to 18 years (regional variation)	2002
Iceland	6, 8 months	Up to age 20	2002



Introduction of MCC vaccine

Countries with largest problems were the first to implement MCC vaccines

Choice of schedules differed by country

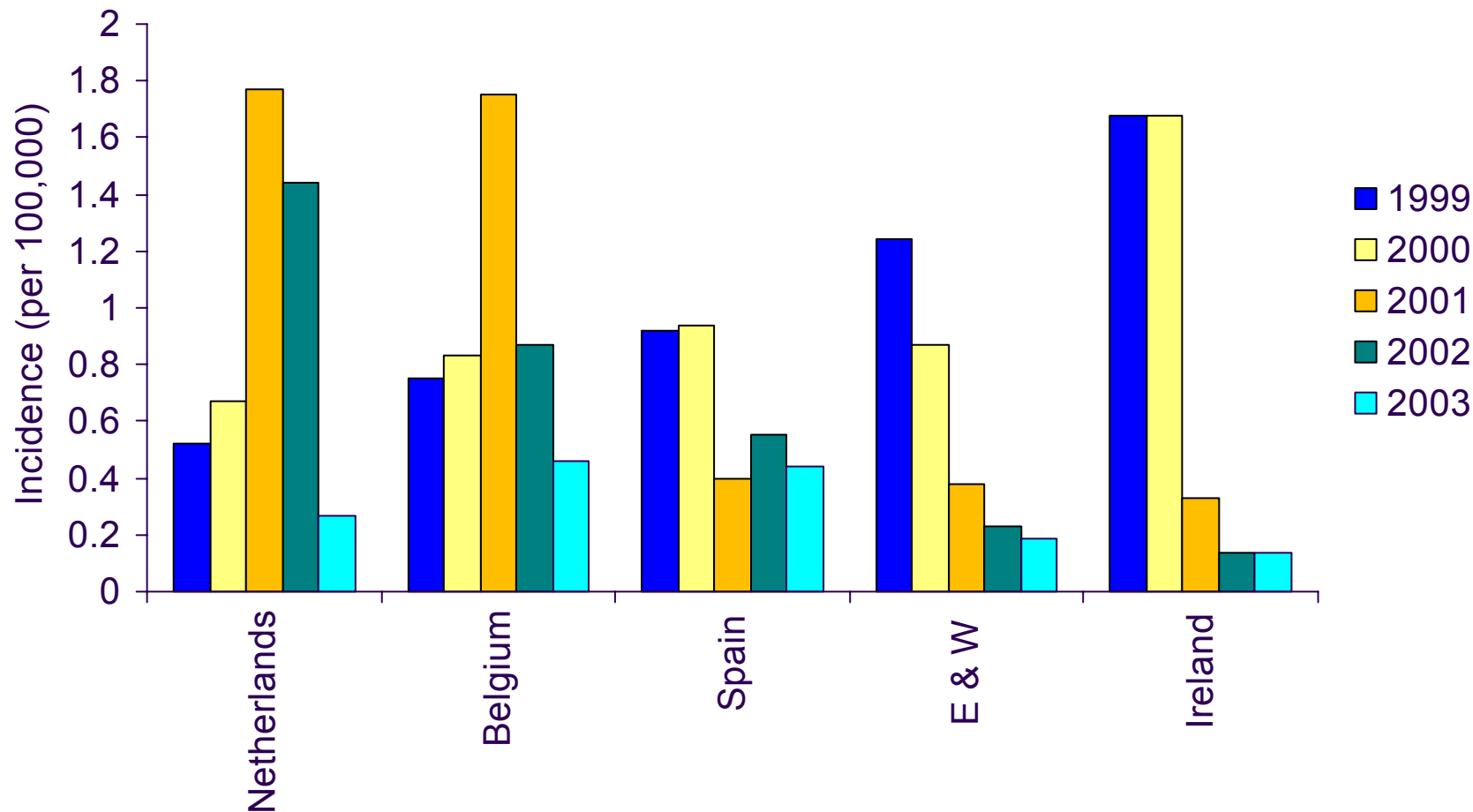
Not necessarily for clear epidemiological reasons

Fit into existing/future vaccination schedules

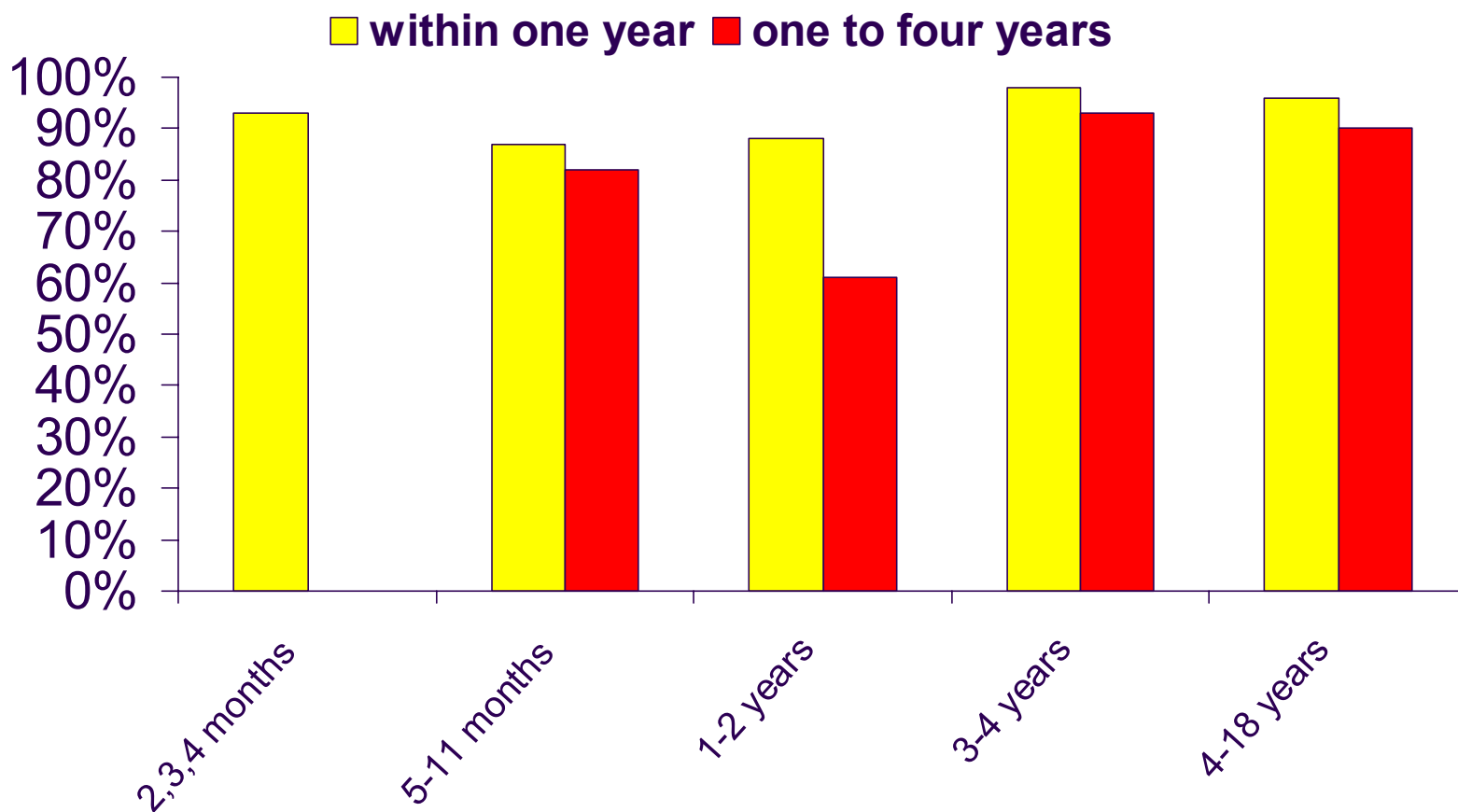
Choice of catch-up varied by country

Major decrease in cases of serogroup C infection in all countries using the vaccine

Incidence of culture confirmed serogroup C IMD, selected countries, 1999-2003



Vaccine effectiveness to four years by catch-up cohort and time (England)



Comparison of vaccine effectiveness in England and Spain, infant schedules



	Overall	Within 1 year	After 1 year
England	66% (6%, 80%)	93% (67%, 99%)	-81% (-7430%, 71%)
Spain	95% (89%, 97)	98% (94%, 99%)	82% (19%, 96%)



Efficacy estimates

High short term efficacy in all age groups

Significant decline in protection after one year

Levels remain high in most age groups over 1 year

Infants vaccinated early appear to lose protection quickly

Protection in older infants appears to hold up

2, 4, 6 months (Spain)

Two dose infant catch-up 5 to 11 months (England)

What is likely impact on control of disease?

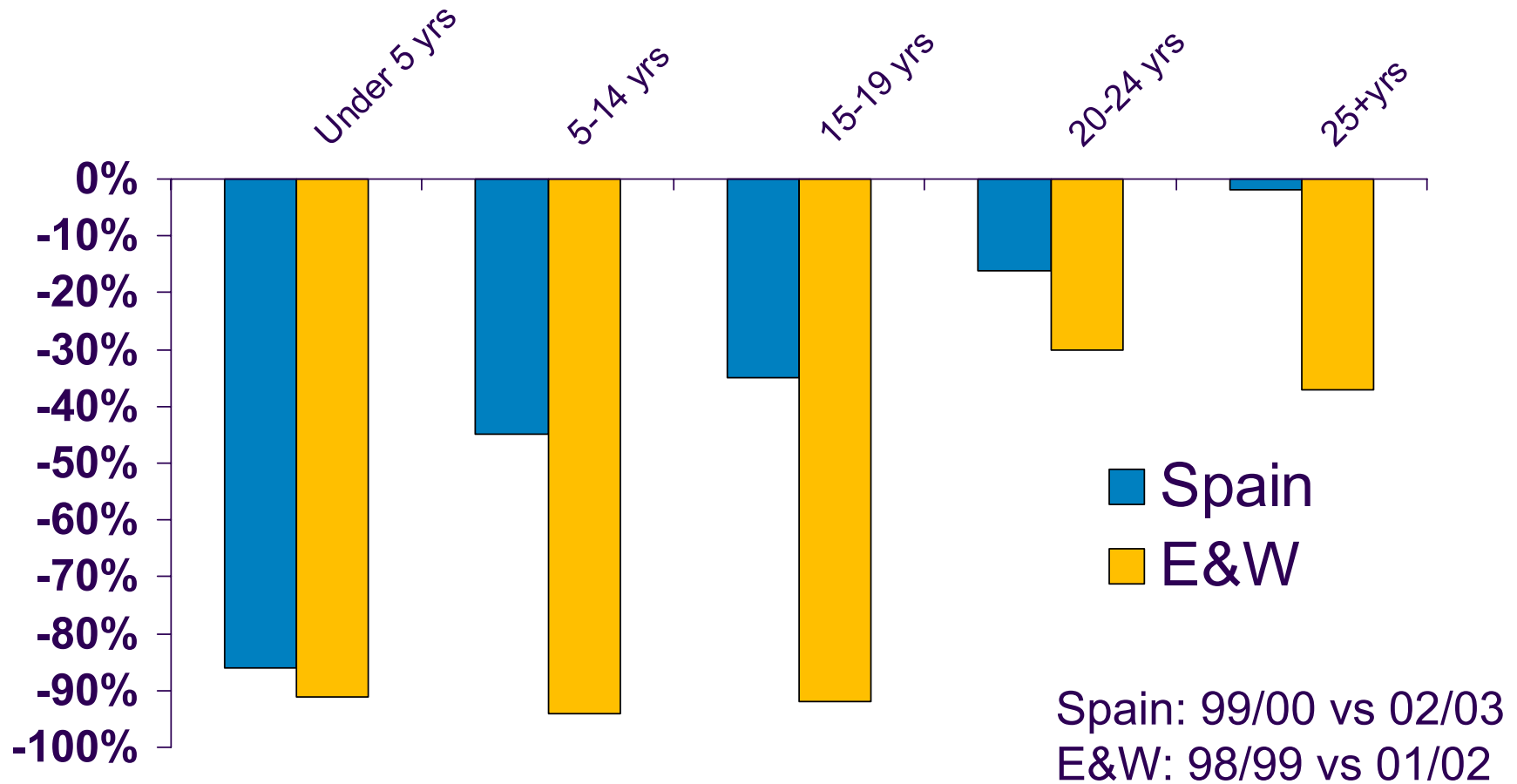
Herd immunity



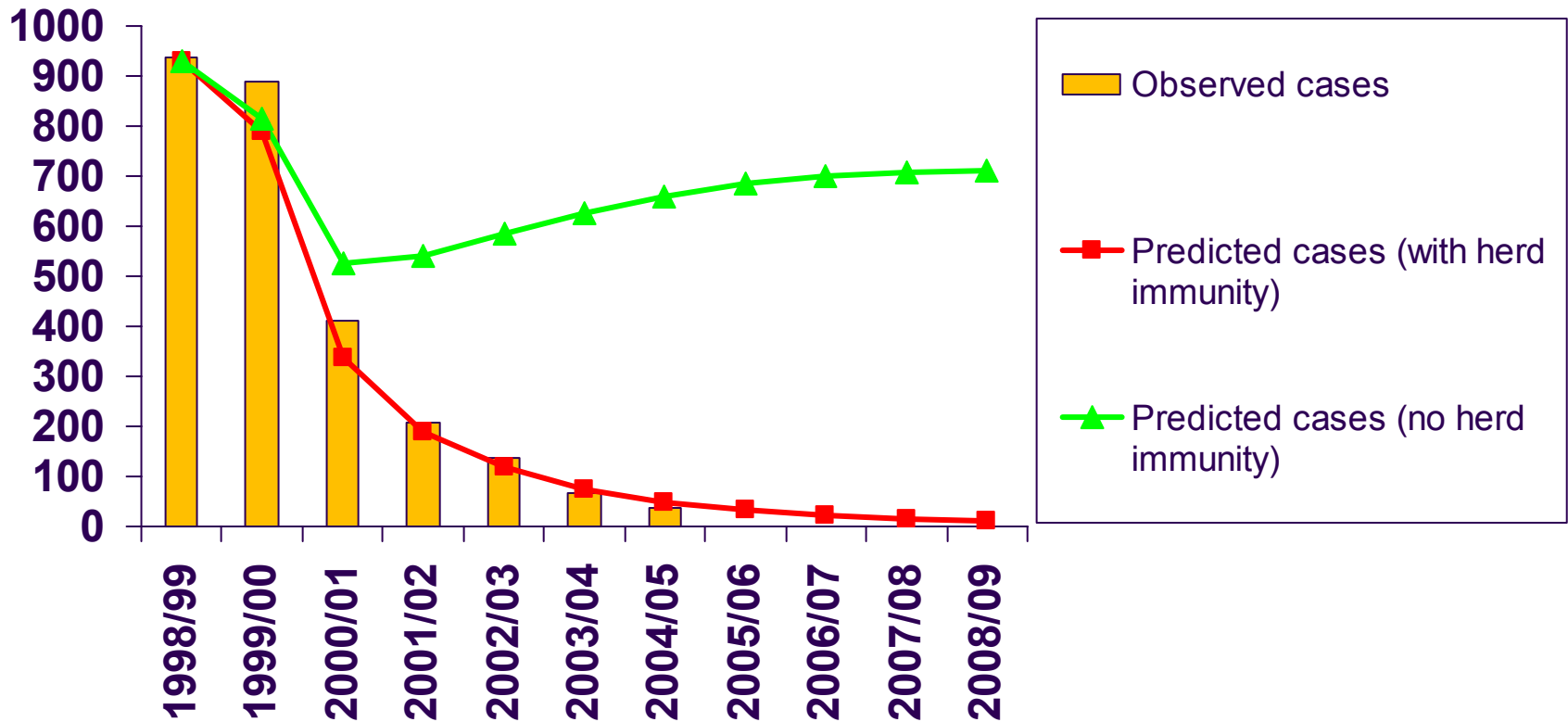
Prevalence of serogroup C carriage in teenagers 66% lower 1 year after MCC programme (Maiden et al, Lancet, 2002)

Attack rate of serogroup C disease 67% lower in unvaccinated individuals in 2001/02 compared to 1998/99 in vaccine targeted age range (Ramsay et al, BMJ 2003)

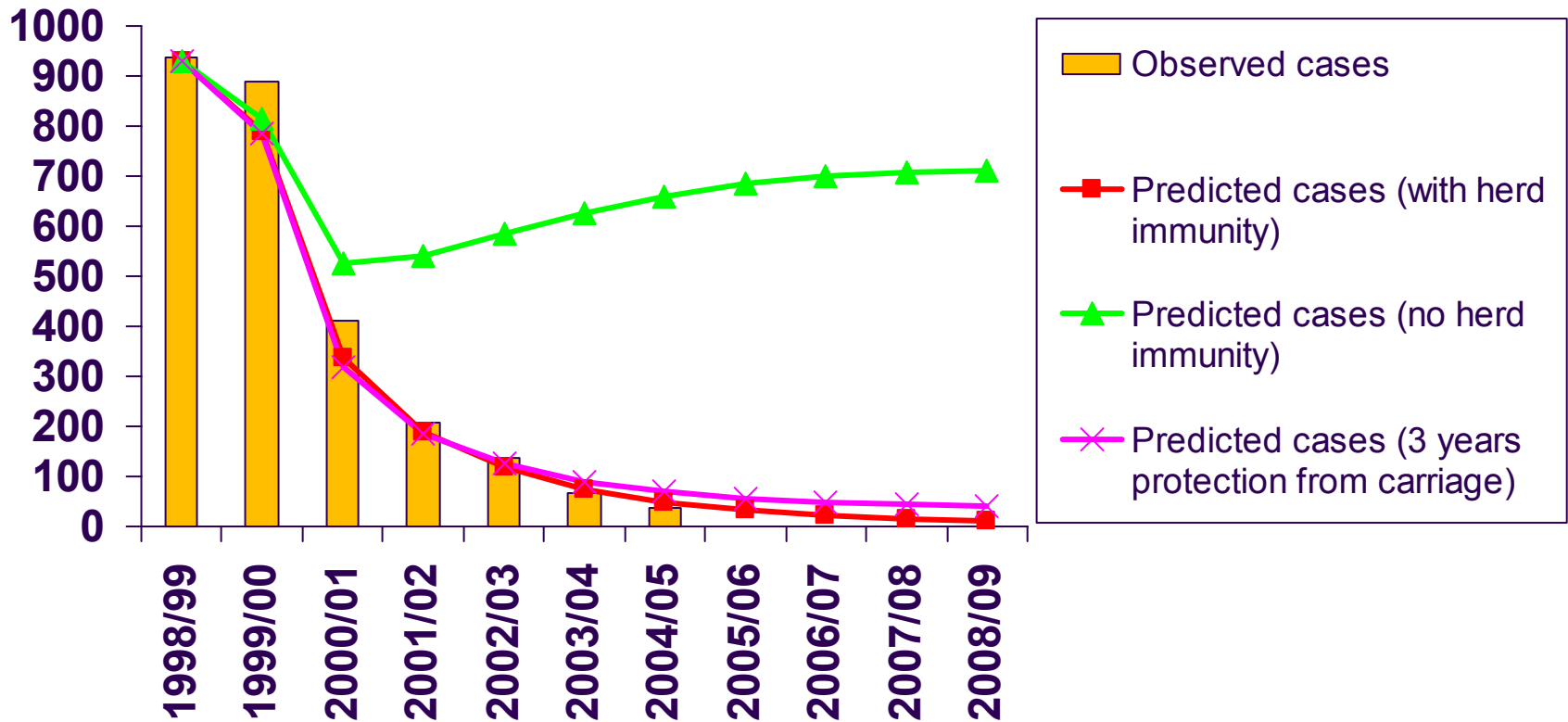
Change in number of cases of serogroup C IMD by year 4 of programme, Spain and E&W



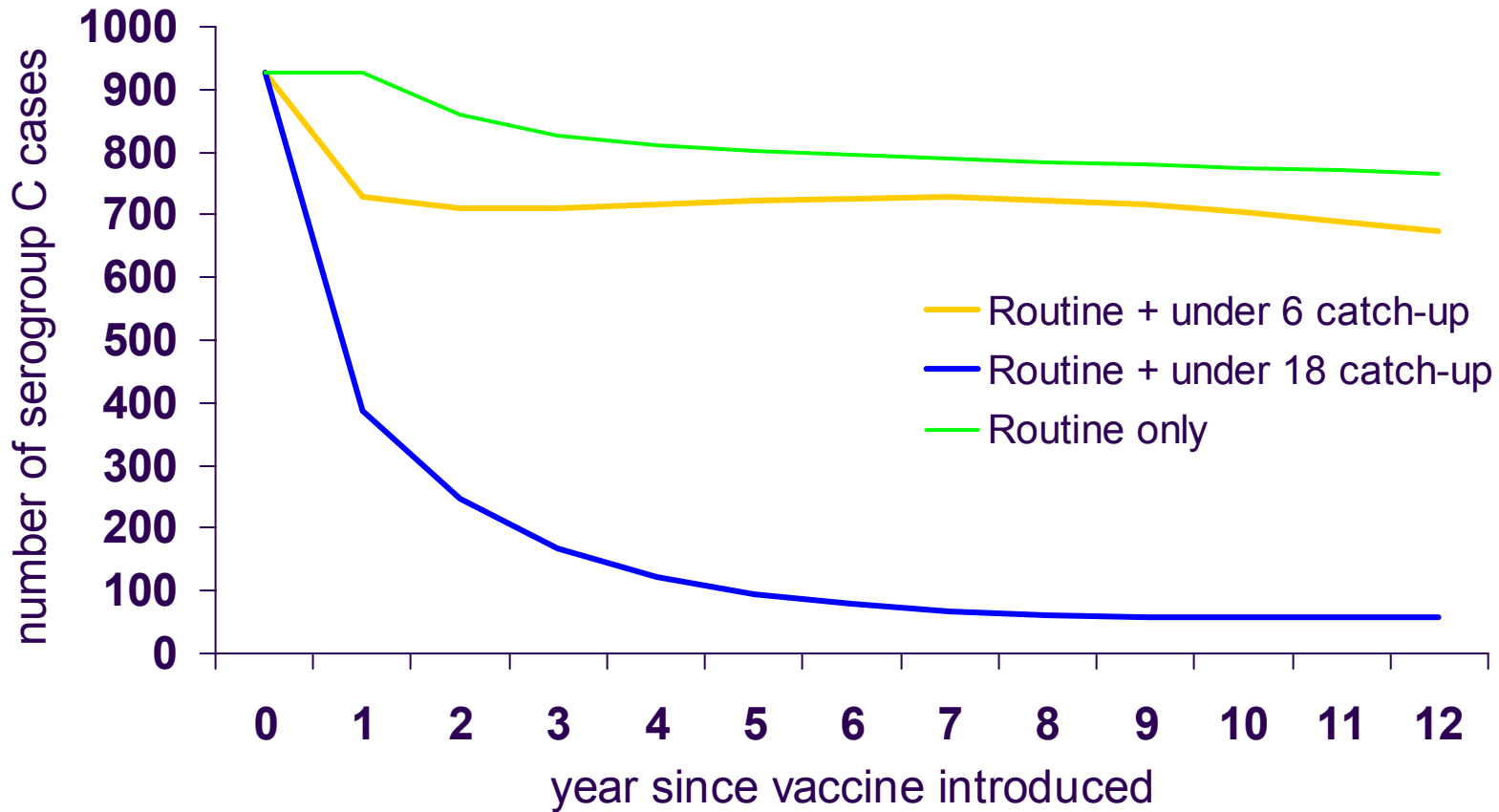
Modelling the impact of MCC vaccination in England & Wales



Modelling the impact of MCC vaccination in England & Wales



Comparison of vaccine strategies



Cost-effectiveness of MCC vaccines



Cost-effectiveness of MCC vaccination reviewed recently

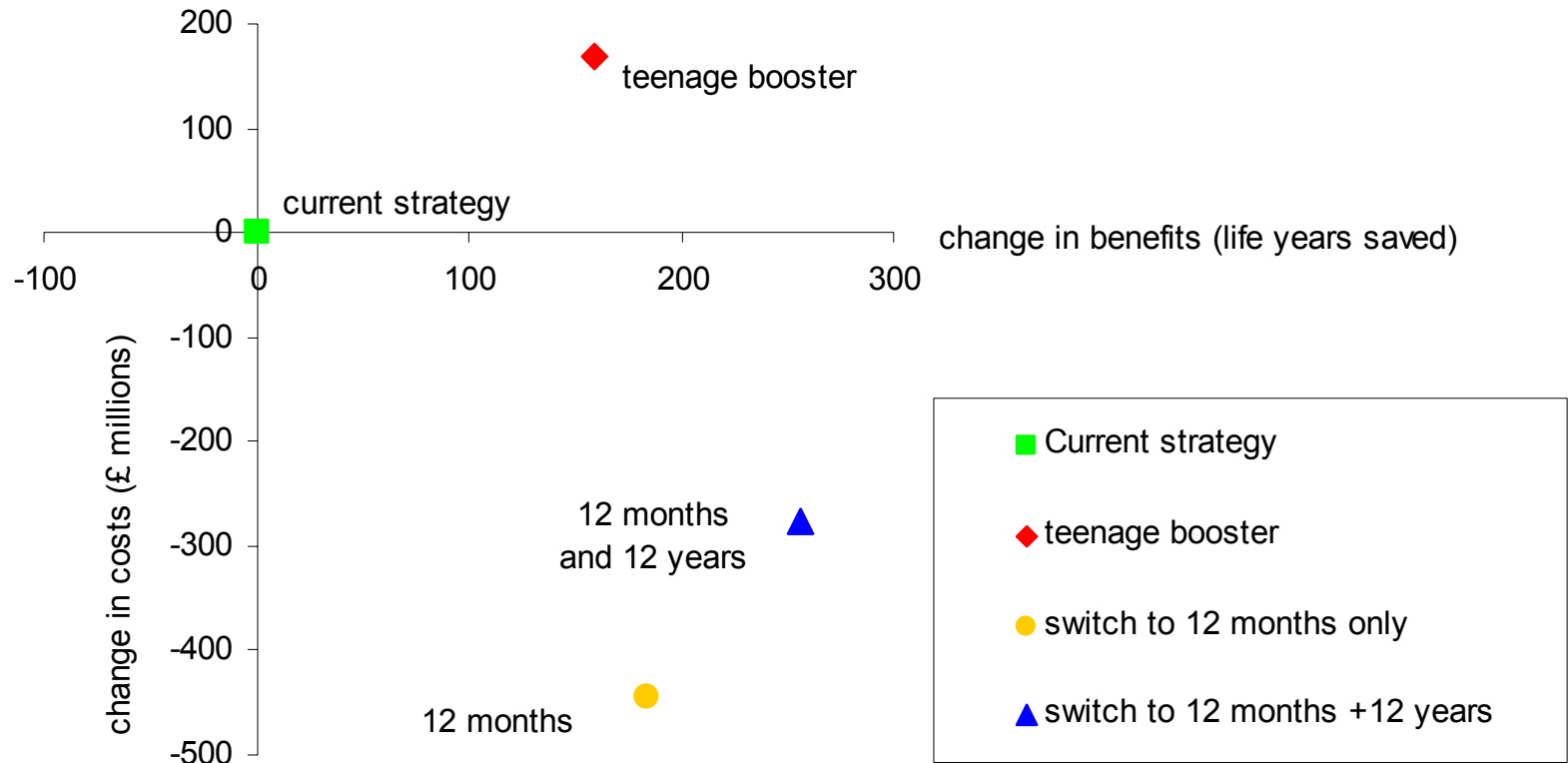
Welte et al. Pharmacoeconomics. In press

Economic analysis influenced decision makers, to some extent

Number of doses important

Switch now in UK to one dose at 13 months would be economically attractive

Cost-effectiveness of future MCC vaccine strategies in the UK



Summary



- MCC vaccine has had major impact on disease control in all countries
- Schedules with doses at older ages give better direct protection
- Catch-up campaign in adolescents has major indirect effect
- Schedule used in Netherlands and Belgium likely to be more cost-effective
- Models can be used to predict impact of alternative schedules including herd immunity

Acknowledgements



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