



Public Health
England

Maternity, Midwifery and Baby Forum 22nd September 2015

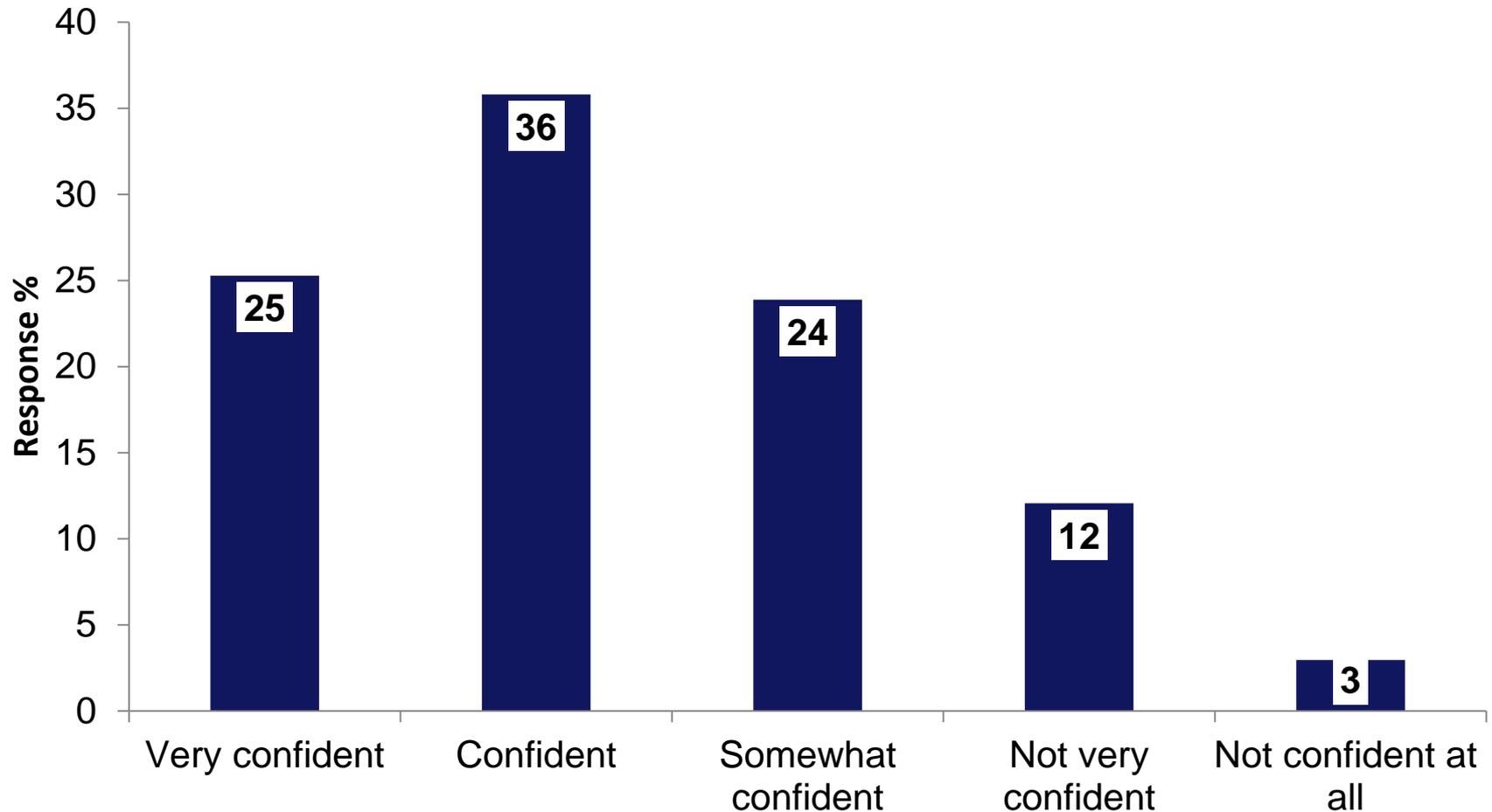
Why do we vaccinate in pregnancy?

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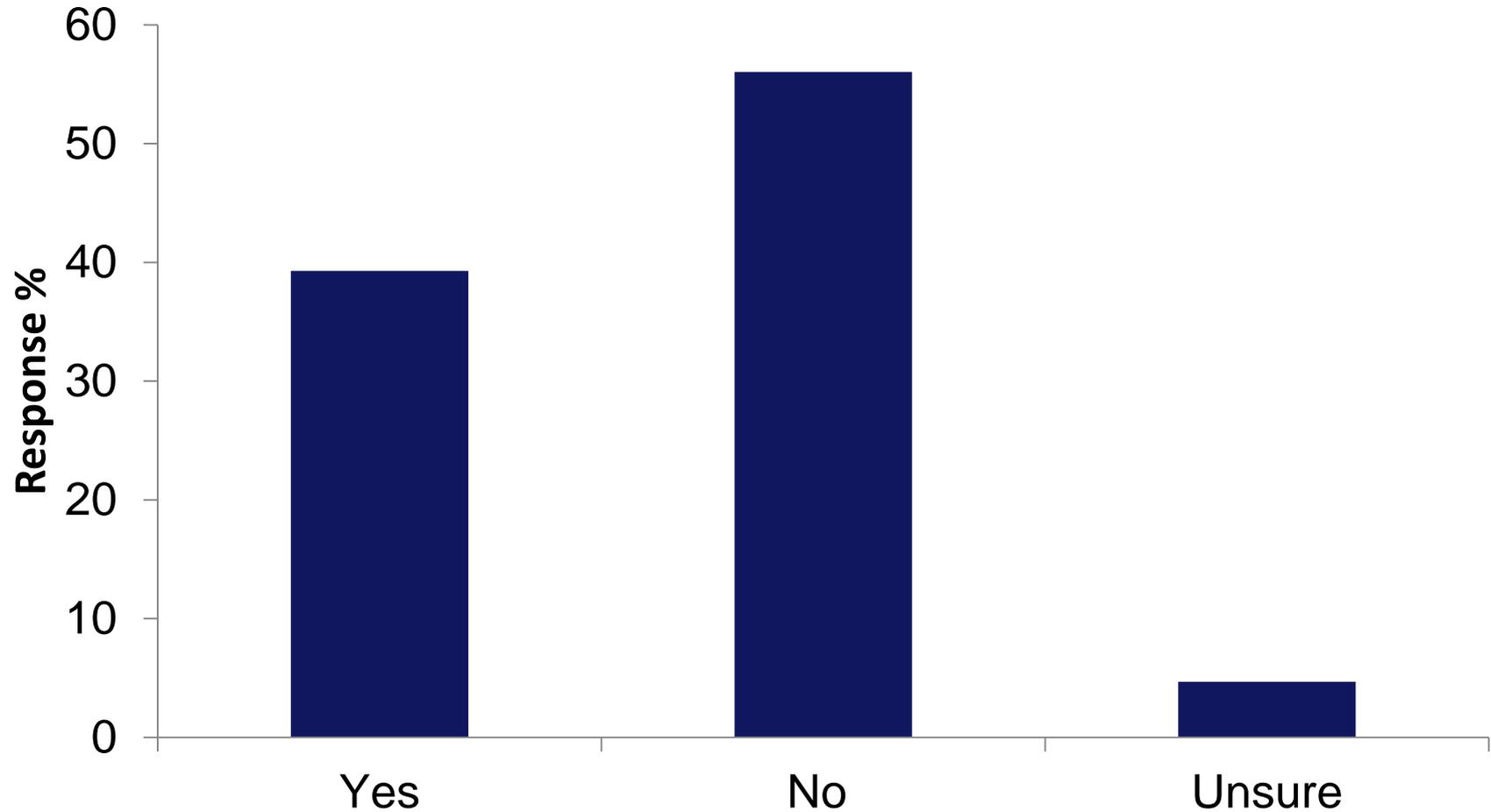


How confident do you feel about giving advice on vaccinations in pregnancy?





Have you received any training about vaccinations for pregnant women?





The pertussis childhood immunisation programme

• Routine schedule

- 3 doses of pertussis vaccine at 2, 3 and 4 months of age.
- A booster dose is offered 3 years after the third dose.
- Vaccine uptake has been >92%

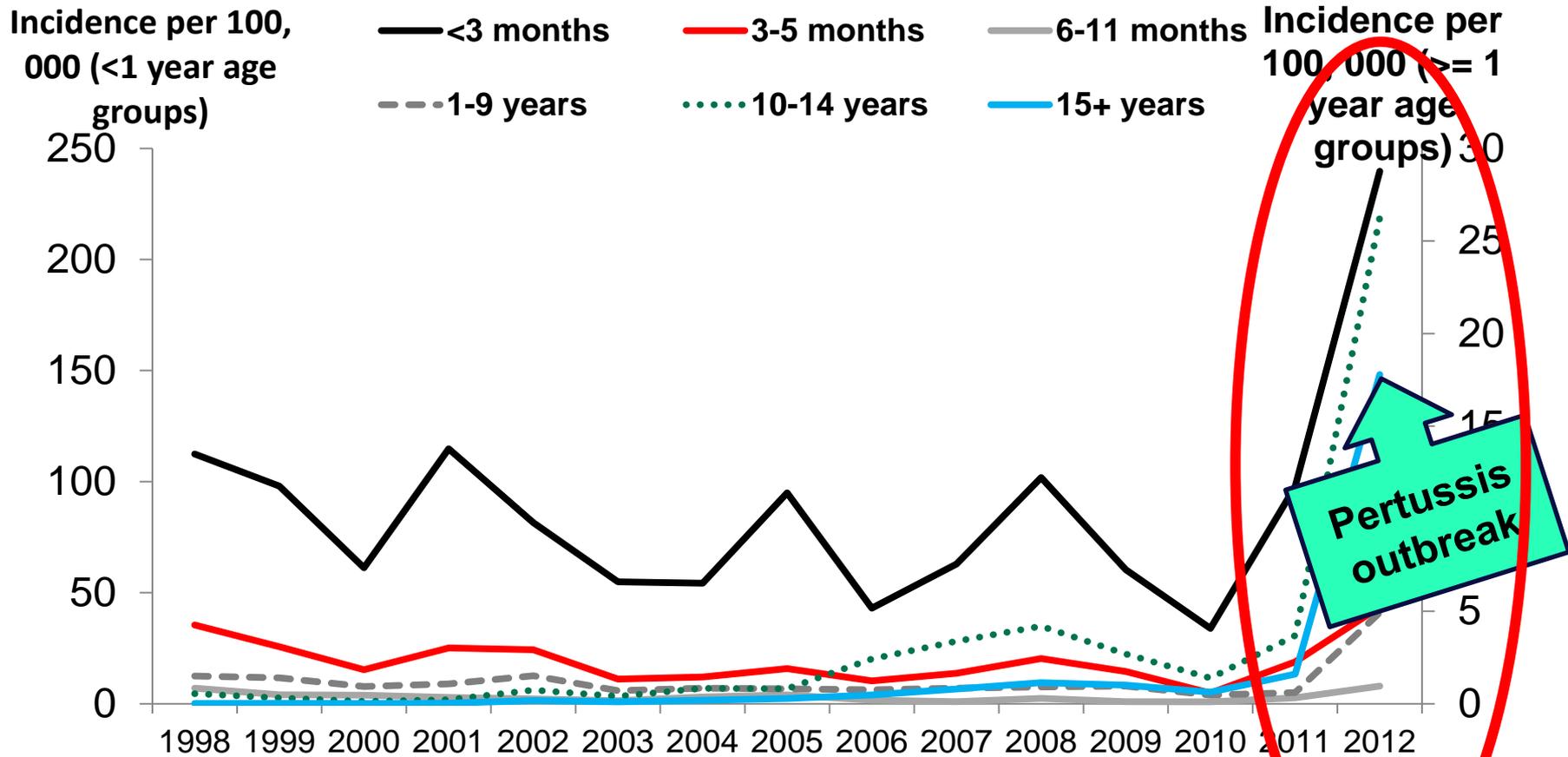
• Main aim

- To prevent pertussis illness and hospitalisation
 - 1-7 deaths in babies every year
 - Around 300 babies admitted to hospital every year





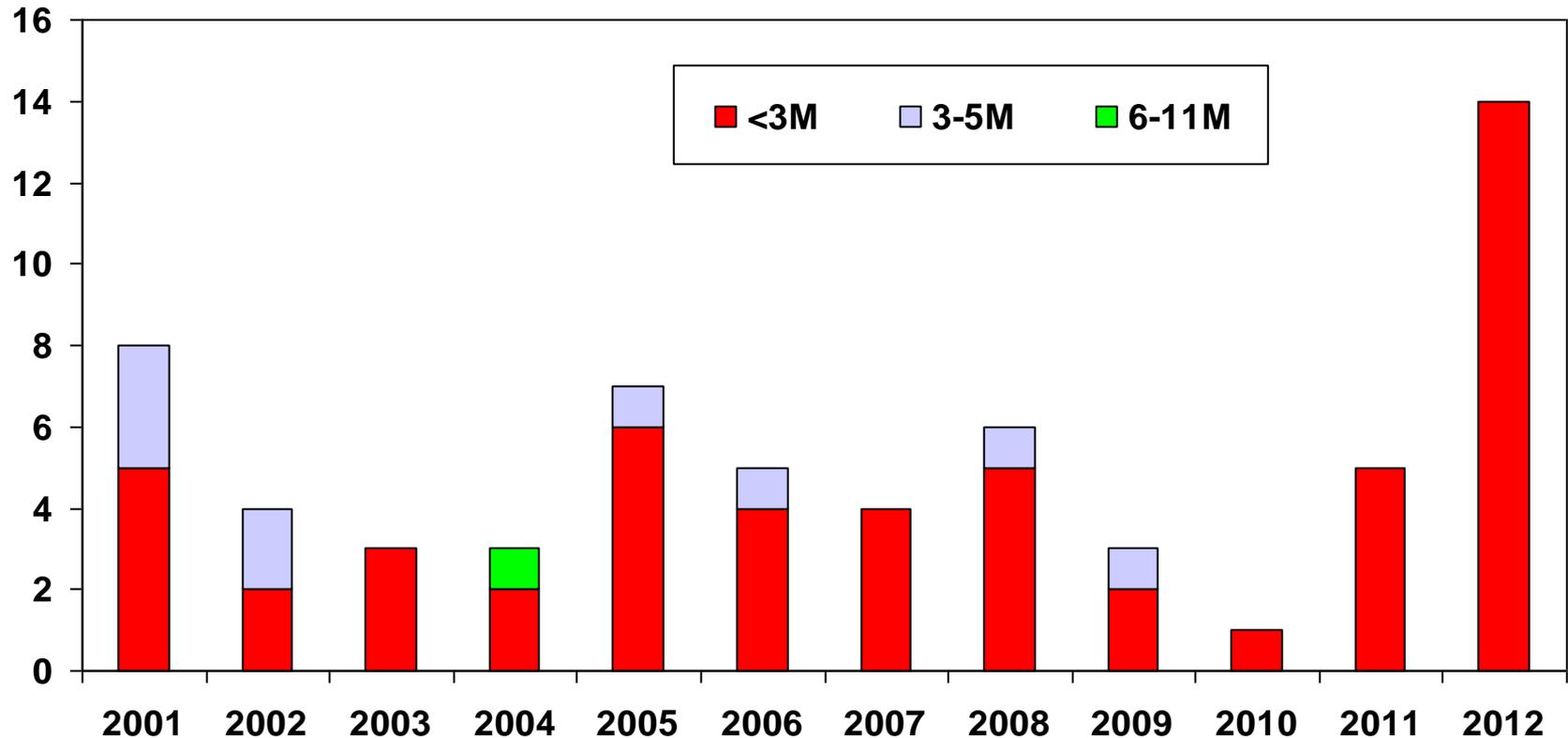
Annual laboratory confirmed pertussis incidence rates 1998 – 2012: England



Pertussis outbreak



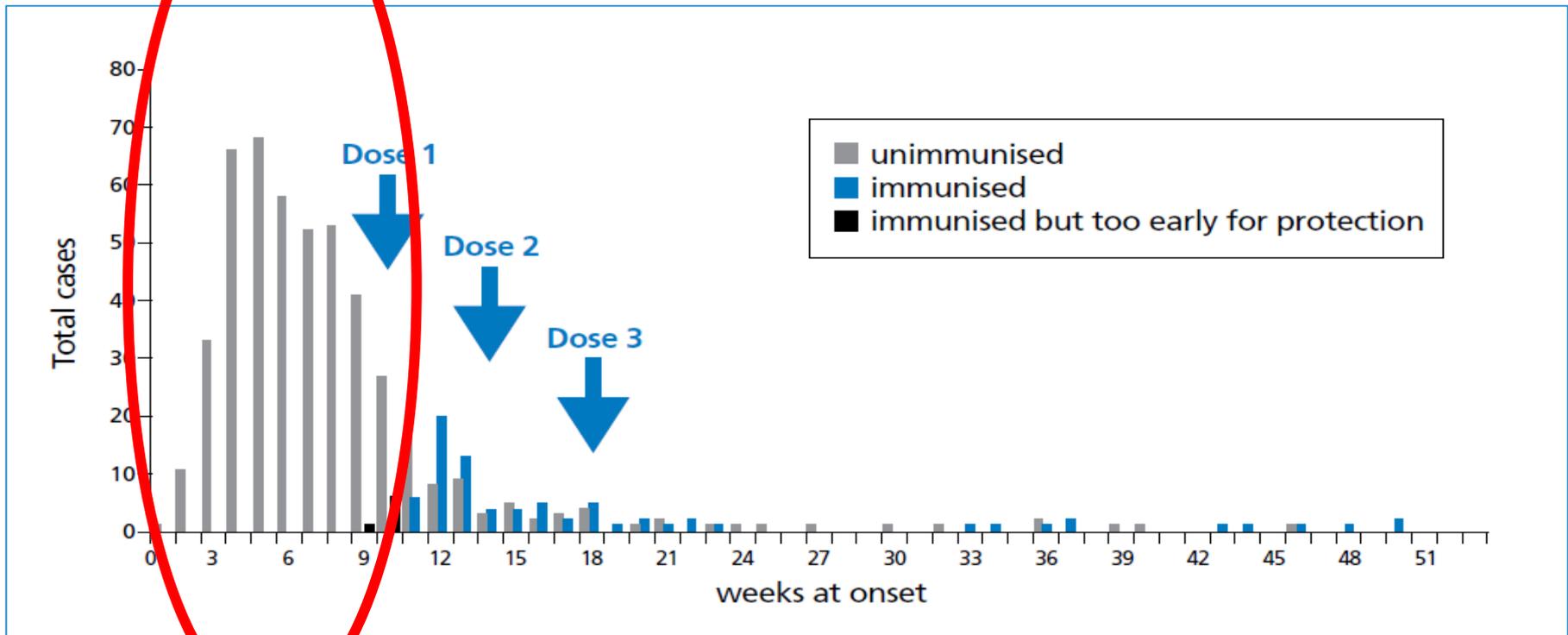
Reconciled deaths from pertussis in infants, England only



Sources: lab confirmed cases, certified deaths, Hospital episode statistics, GP registration details



Onset age of laboratory confirmed pertussis cases in infants



Confirmed cases in infants aged under one year, by week of age at onset (2011- August 2012). Protection is assumed to accrue within the two weeks following immunisation.



Pertussis Immunisation in Pregnancy

- Only potential way to protect infants from birth
 - Boost immunity in pregnant women
 - Optimise transplacental transfer of maternal Abs
 - Passive protection in infant until first dose of vaccine at 2 months
 - Evidence of pertussis antibodies in breast milk
- Additionally these women are then unlikely to be a source of infection for their babies



Pertussis Immunisation in Pregnancy cont.

Recommendation: From 1st October 2012

- Offer a single dose of Repevax® (dTaP/IPV) ideally between 28-32 weeks pregnancy, up to 38 weeks
- Offer in every pregnancy
- Outbreak response r



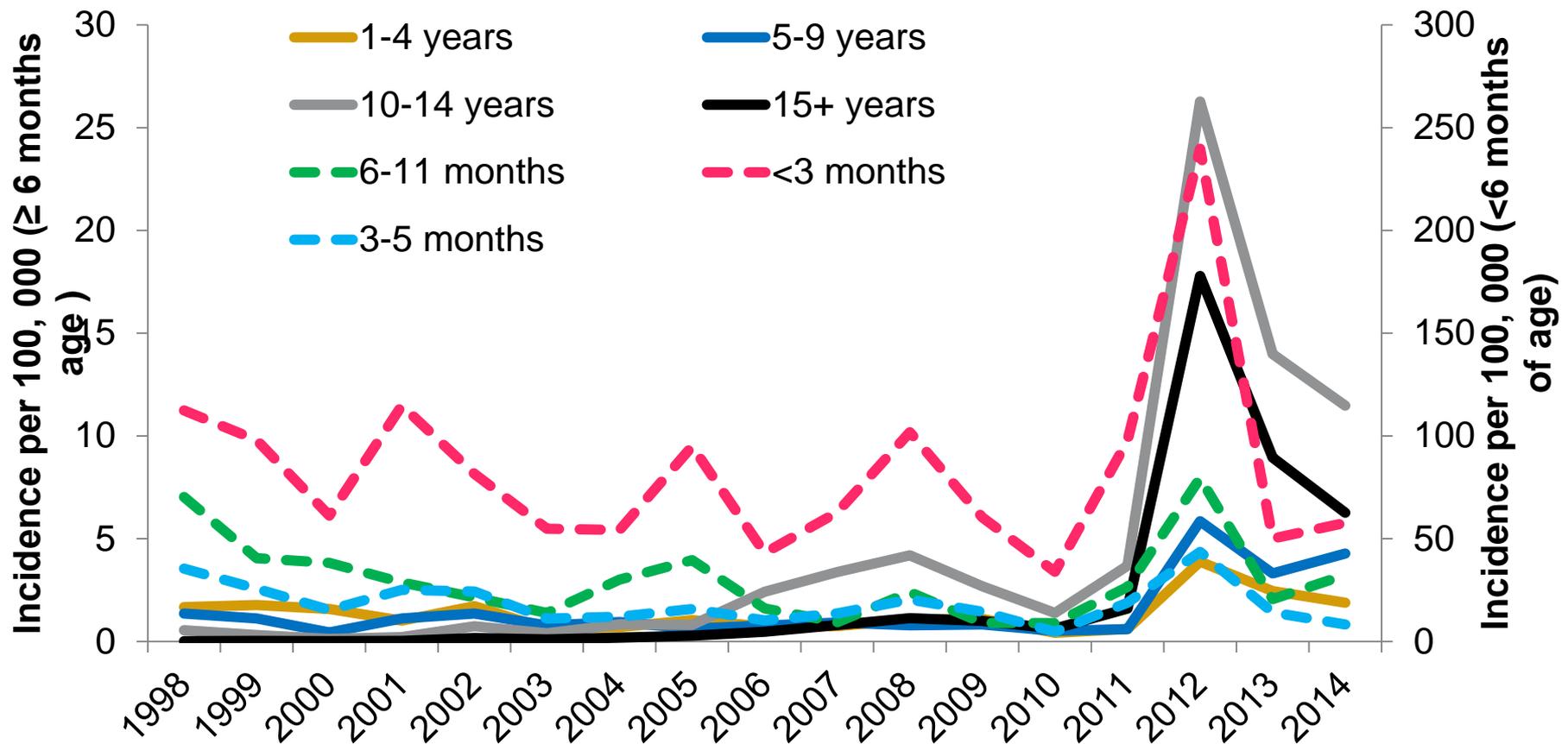


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Evaluation of the maternal pertussis immunisation programme

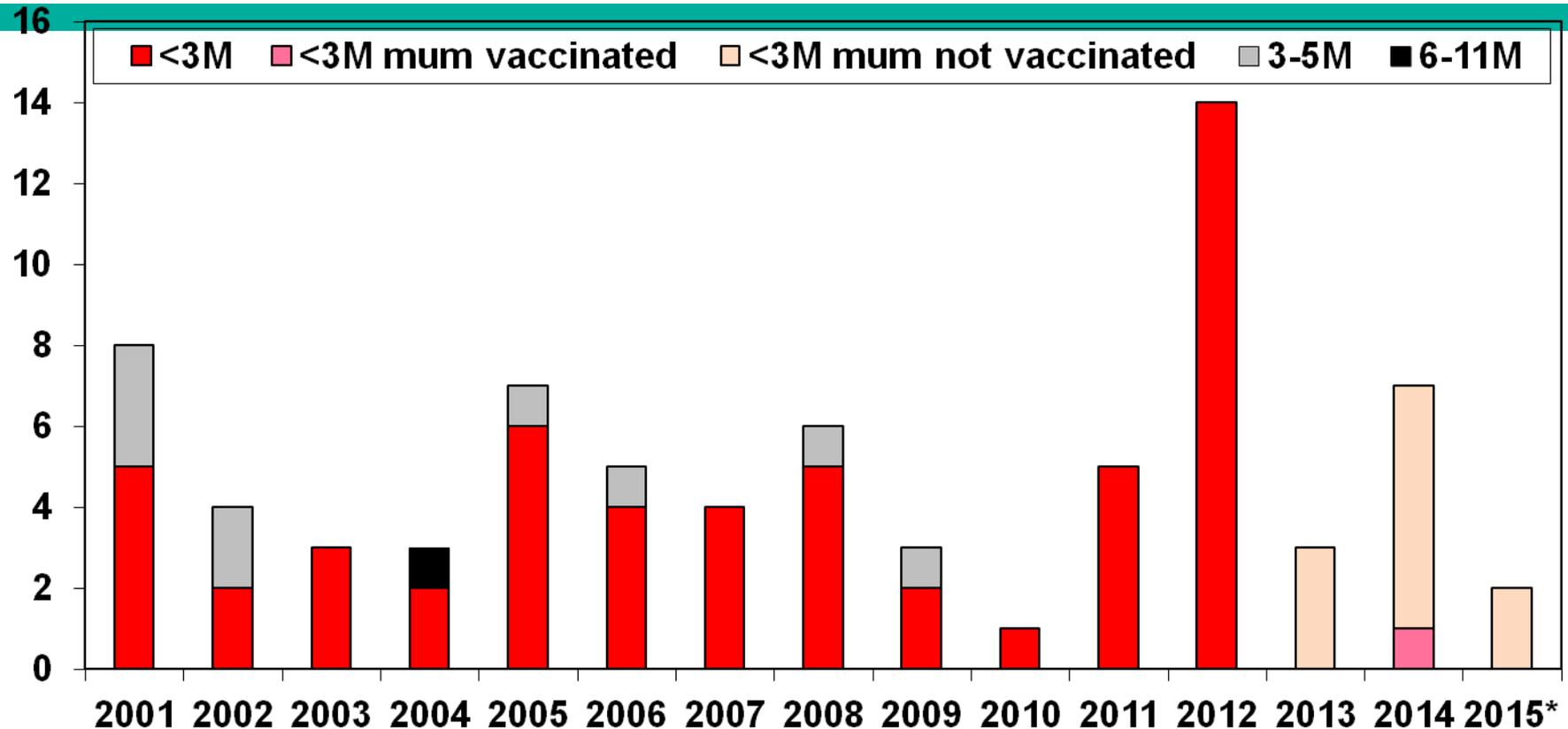


Annual pertussis incidence in England





Reconciled deaths from pertussis in infants, England only



Sources: lab confirmed cases, certified deaths, Hospital episode statistics, GP registration details, HPZone

*reported by 21/9/2015

Health chiefs slammed after baby girl died when doctors failed to offer whooping cough jab

22:53, 1 AUGUST 2015 | UPDATED 22:53, 1 AUGUST 2015 | BY DAN WARBURTON

The Doncaster coroner said that 'on the balance of probabilities' little Isabella Drew would have lived if her mum had been offered the vaccine

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Tragic: Hayley with Isabella

A coroner blasted health chiefs after a 29-day-old twin girl died of whooping cough when doctors and midwives failed repeatedly to offer her mum a vaccine.

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At the Doncaster inquest, senior coroner Nicola Mundy said: "On the balance of probabilities had Mrs Drew been given the vaccine Isabella would not have died at the time she did."

She added: "Isabella's mother had not been given the whooping cough vaccination during pregnancy."



Heartbreaking: Isabella died at just 29 days

"There were a number of missed opportunities on the part of health care professionals to advise Mrs Drew of the need for vaccination."



Pertussis programme effectiveness measured by two methods

Amirthalingam G et al. Lancet Infectious Disease 2014
Dabrera G et al. Clinical Infectious Disease 2014

Analysis	Cases vaccinated / total	Matched / control coverage	Adjusted VE (95% CI)
Screening method	12/82 (14.6%)	61.6%	91% (84% to 95%)
Case-control study	10/58 (17.2%)	39/55 (70.9%)	93% (81% to 97%)



Pertussis vaccine safety

Donegan K et al BMJ 2014

~18,000 vaccinated women followed by MHRA using Clinical Research Practice Datalink (CPRD)

No increased risk when compared to historical and unvaccinated controls for:

- **Stillbirth**
- **Pre-eclampsia/eclampsia**
- **IUGR/ LBW**
- **Postpartum haemorrhage**
- **Neonatal death**
- **Placenta praevia**
- **Caesarean section**
- **Premature labour**

No increase on expected rates for pregnancy outcomes within 14 days or across the whole pregnancy

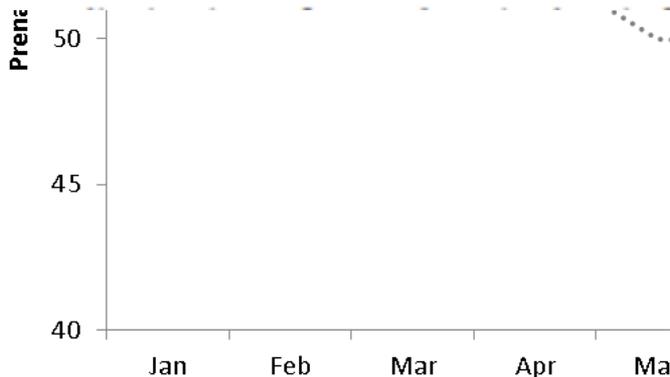
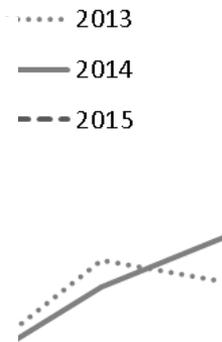
- **No difference in the time to delivery in the vaccinated and unvaccinated cohorts**



Prenatal pertussis vaccine coverage in England (2013, 2014, 2015)

2011. In addition, a survey of women delivering in California hospitals in October 2013 indicated that only 25% received Tdap during pregnancy (unpublished data, CDPH).

In contrast, the United Kingdom recommended Tdap for pregnant women in October 2012 and the percentage of pregnant women receiving Tdap increased steadily to a peak of 59.6% in February 2013, stabilizing at ~56% in July through September 2013 (Public Health England, 2013). Why wasn't the United States able to implement this strategy as effectively, even though it has been promoted by public health departments and the American College of Obstetrics and Gynecology?



Preventive Medicine 67 (2014) 320–321



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Commentary

Pertussis vaccine uptake during pregnancy: We need to do better in the U.S.

Kathleen Harriman*, Kathleen Winter

California Department of Public Health, 850 Marina Bay Parkway, Richmond, CA 94804, USA

Press release

Continuation of whooping cough vaccination programme in pregnancy advised

From: [Public Health England and Department of Health](#)
First published: 16 July 2014
Part of: [Public health](#)

New evidence on vaccine effectiveness and safety published alongside latest data on whooping cough cases.



Public Health England (PHE) welcomes today's (16 July 2014) announcement from the Joint Committee on Vaccination and Immunisation (JCVI) advising the Department of Health (DH) that the whooping cough (pertussis) vaccination programme for pregnant women should continue for a further 5 years. The advice reflects new data on vaccine effectiveness and safety published by PHE and the Medicines and Healthcare Products Regulatory Agency (MHRA).



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Influenza vaccination in pregnancy



Influenza and pregnancy

Threat 1: to pregnant woman

- Increased risk of hospitalisations/ deaths from complications during pregnancy (compared to non-pregnant) (*World Health Organization, 2012*)
 - Hospitalisation 5 fold higher in 3rd trimester (8 fold higher for HR)
 - 7x higher risk of death compared to non-pregnant women of child bearing age in H1N1 pandemic
- The MBRRACE-UK report identified 36 maternal deaths from influenza between 2009 and 2012 accounting for 1 in 11 maternal deaths over that period (*Knight et al, 2014*).



Influenza and pregnancy Threat 2: to the unborn child

- Hospitalised pregnant women with respiratory illness have higher odds of foetal distress, and of requiring a C-section
- Influenza during pregnancy is also associated with:
 - Five fold higher risk of perinatal mortality (mainly stillbirth)
 - Four fold higher risk of prematurity
 - Increased risk of smaller neonatal size and low birth weight



Influenza and pregnancy

Threat 3: to the newborn child

- Children under six months have the highest rate of GP consultations and hospitalisations for influenza in the UK
 - 73.6 per 1,000 children visit GP
 - 3.30 per 1,000 children hospitalised

Children under six months cannot be vaccinated

- no licensed vaccine for this age group
- poor efficacy of inactivated flu vaccine in younger children





Influenza vaccination – the triple benefits

1. Protects the mother from severe influenza

- Recent S. African & US studies suggest vaccination halves the risk of infection with confirmed flu

2. Reduces the risk to the unborn child

- It reduces the likelihood of perinatal death (Omer et al, 2011)
- 60-70% reduction in risk of prematurity
- Prevents low birthweight (mean bw 150g higher in vaccinated women)



Influenza vaccination – the triple benefits

3. Protects the newborn baby

- Prevents the mother being a source of transmission to the newborn child
- Seasonal influenza vaccination in pregnancy was 71% (95% CI: 24–89%) effective in preventing infant influenza
- 64% (95% CI: 6–86%) effective in preventing infant influenza hospitalisation

Dabrera G et al. Effectiveness of seasonal influenza vaccination during pregnancy in preventing influenza infection in infants, England, 2013/14. Euro Surveill. 2014;19(45).



Studies of influenza vaccination safety in pregnancy

Review: Brigitte Keller-Stanislowski et al Vaccine

Volume 32, Issue 52, 12 December 2014, Pages 7057–7064

- Follow up of 3160 infants and controls showed no difference
- “In summary, the effectiveness of influenza vaccine in pregnant women has been demonstrated, with transfer of maternally derived antibodies providing additional protection to the infant. The excellent and robust safety profile of multiple inactivated non-adjuvanted influenza vaccine preparations over many decades, and the potential complications of influenza disease during pregnancy, support WHO recommendations that pregnant women should be vaccinated.”
- From 1990 to 2009, 11.8 million pregnant women received the vaccine in the USA:
- only 20 notifications of serious adverse events



Influenza Vaccine Uptake

PROVISIONAL end of cumulative uptake data for England on influenza vaccinations given from 1 September to 31 January

	2014/15	2013/14
Pregnant women	44%	40%
Pregnant women at risk	59%	
Pregnant women not at risk	38%	
Healthcare Workers	55%	55%

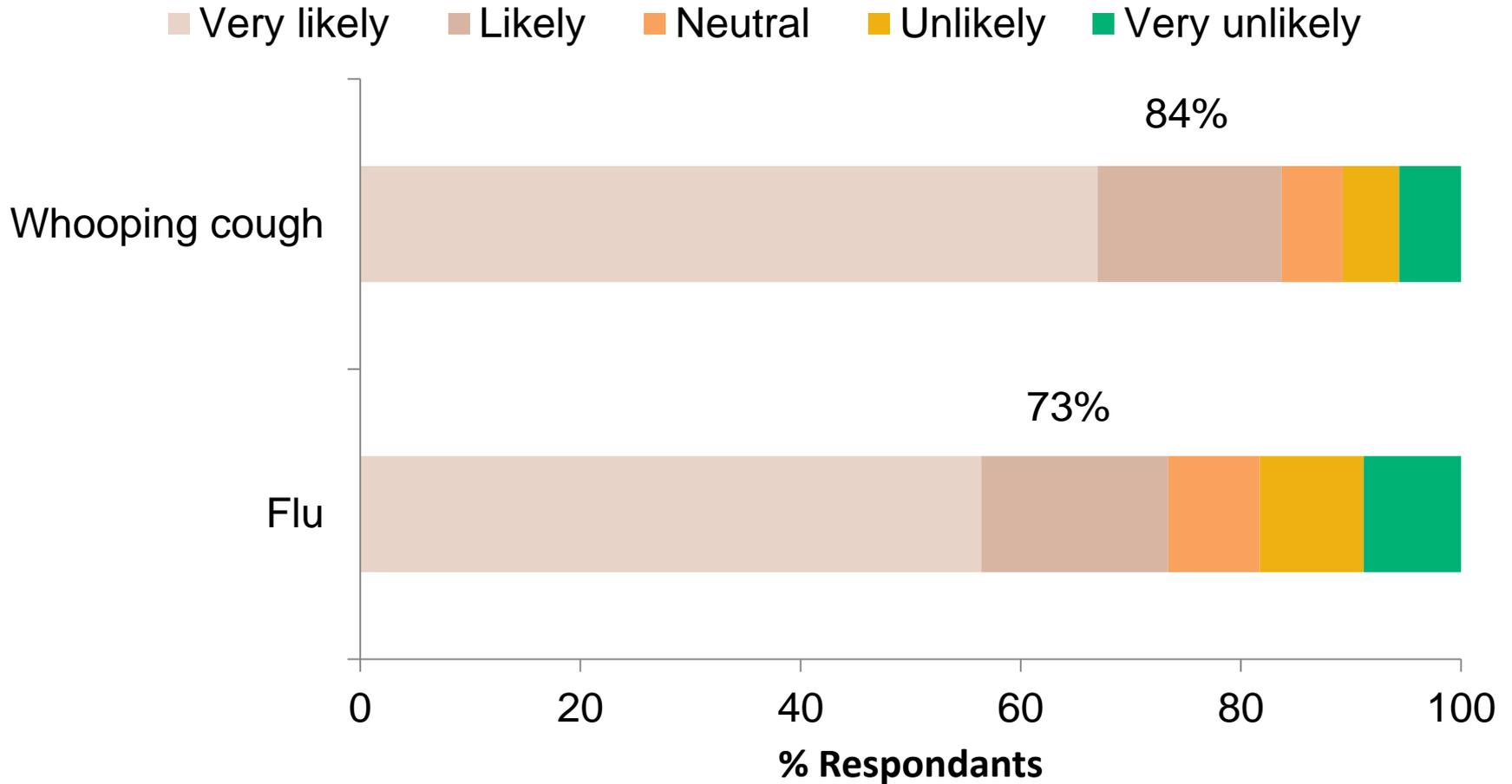


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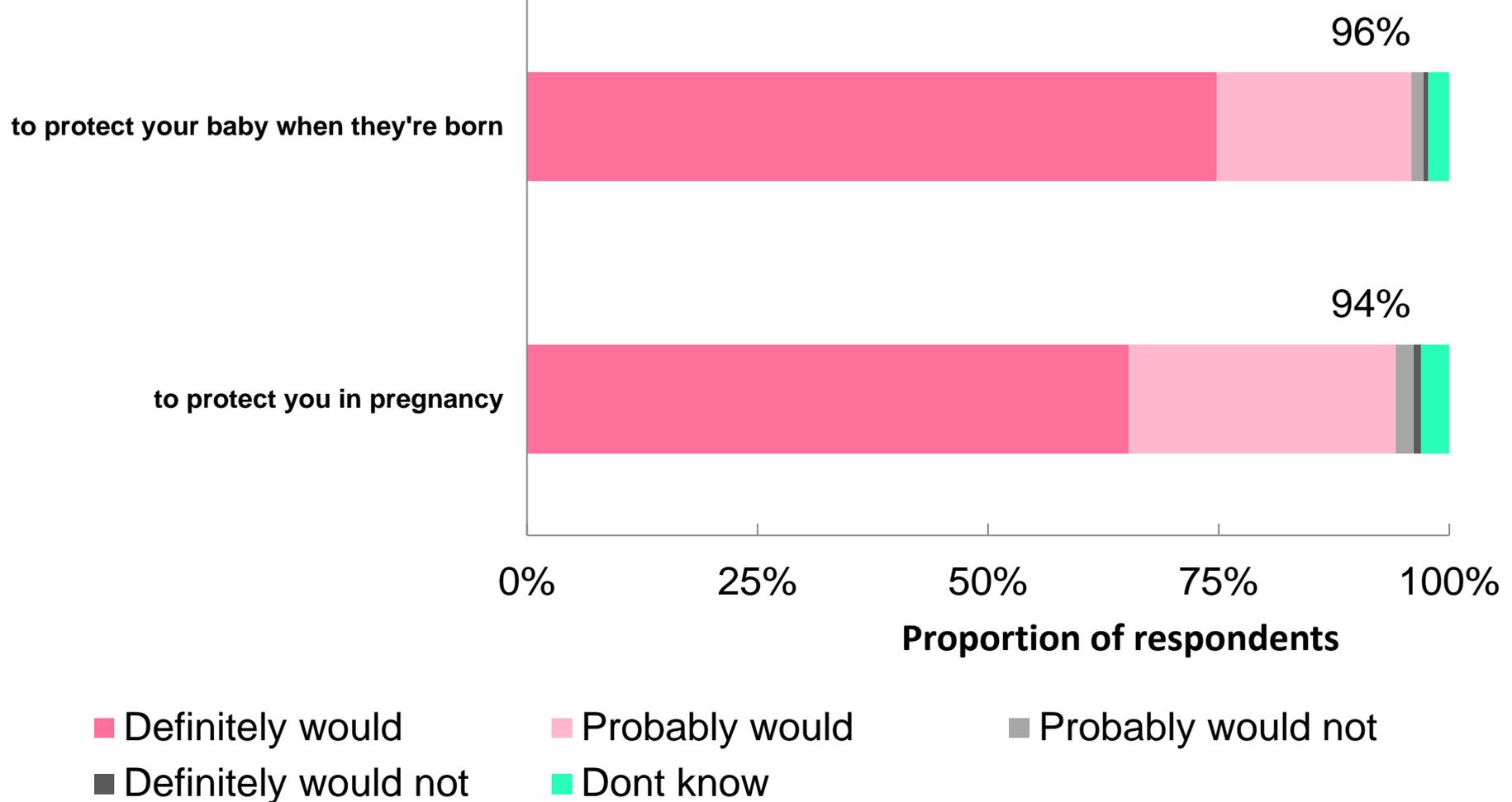
How do women and health professionals view vaccination in pregnancy?



If you, or your partner, were pregnant now, how likely is it that you would accept the flu/whooping cough vaccine in that pregnancy?



Respondents likelihood to accept a vaccine in pregnancy to protect them or their baby against a potentially life-threatening disease.

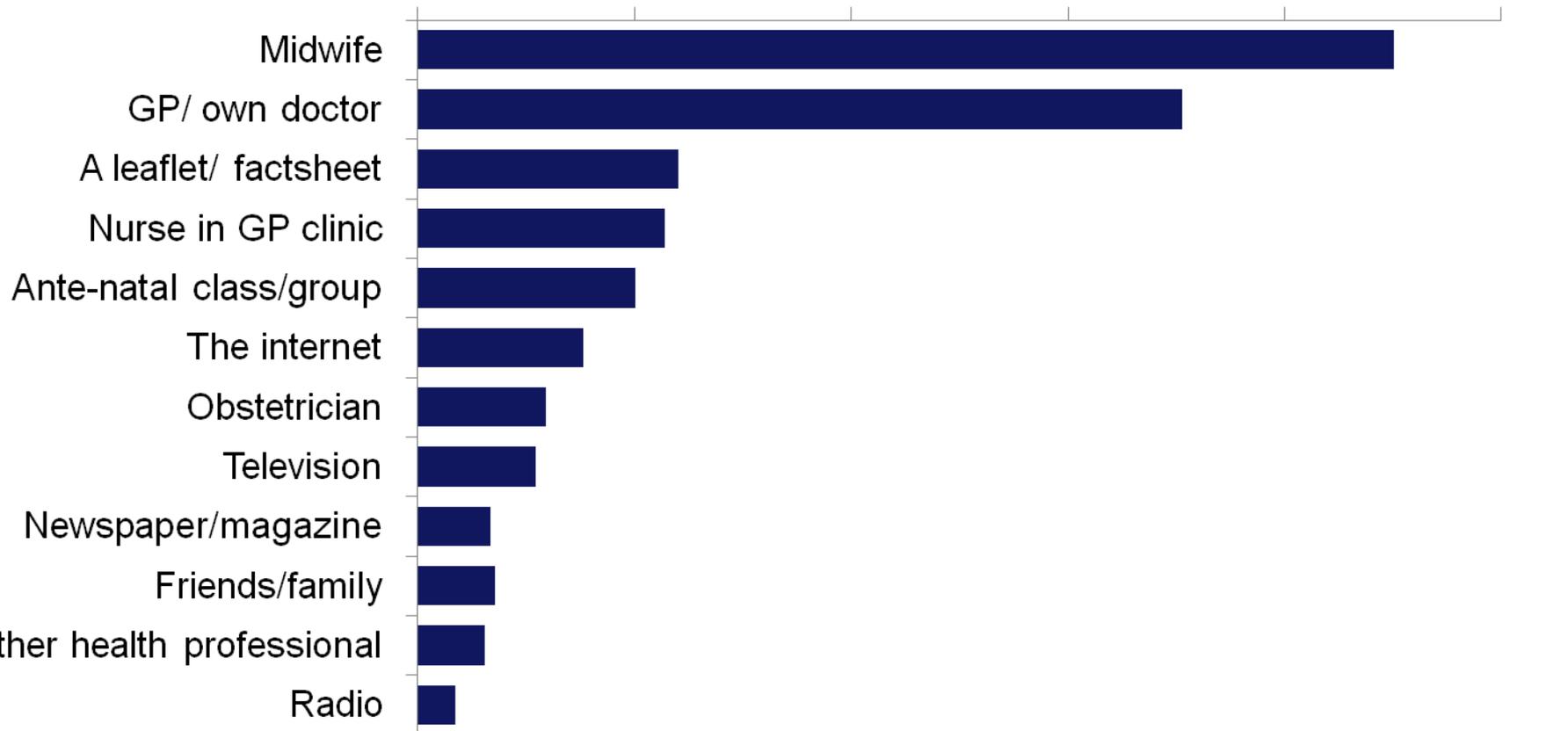


Q. Would you accept a nationally approved vaccine offered by your midwife or GP surgery in pregnancy if it would help protect a) you against a disease that is potentially life-threatening for pregnant women b) your baby against a life-threatening disease when they're born?



Women's ideal source of information if being offered a vaccine in pregnancy

0% 20% 40% 60% 80% 100%



Q. Ideally, where would you like to get information from if you are being offered a vaccine in pregnancy?

Base: All respondents (1,892)



Other immunisation issues

- Hepatitis B (HBV) vaccine is offered to babies born to mothers who screened positive for this virus in pregnancy.
- An accelerated immunisation schedule of 0, 1 2 and 12 months is effective in preventing 90% of such babies developing the infection following perinatal exposure.
- Rubella immunity screening is due to change from testing of antibody levels to documented history of 2 doses of a rubella-containing vaccine.
- MMR vaccine should be given as soon as possible after delivery;
- If MMR vaccine is given inadvertently in pregnancy or just before conception this should be reported to PHE Immunisation Team but full reassurance about no additional risk can be given



Clear messages from the immunisation in pregnancy programmes

- Pertussis programme has demonstrated reduced risk of disease in infants – first evidence globally
- Flu vaccination has clear benefits to both mother and child
- Flu & pertussis vaccinations are safe
- Coverage in UK compares favourably internationally
- Vaccination in pregnancy is well-received

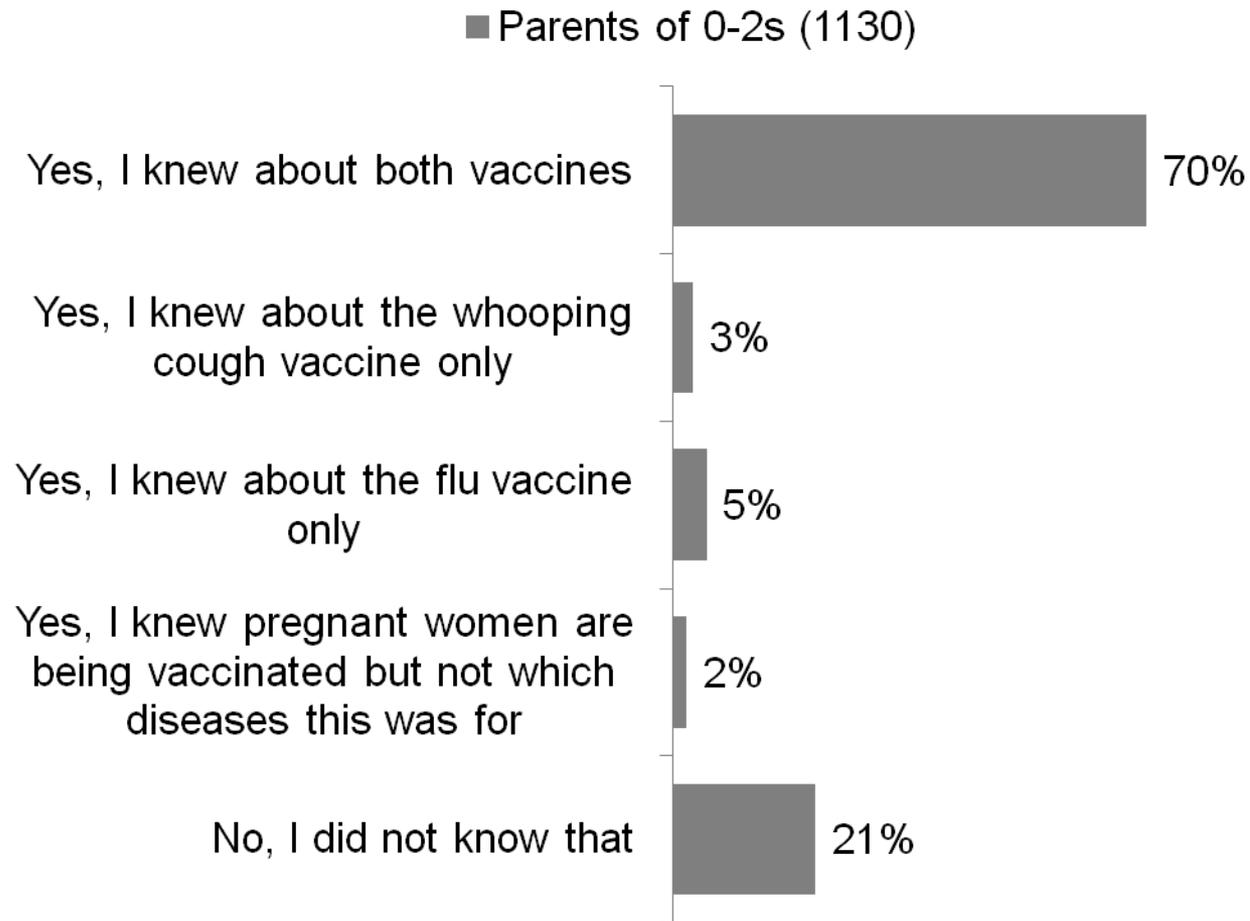


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Awareness of vaccinations offered during pregnancy





VE of a maternal dose at least 7 days before birth with different primary infant doses

Primary dose	Vaccinated mother/ total cases	Average matched coverage	VE (95% CI)
Exactly 1D	6/30 (20%)	62.6%	86% (68 to 94)
At least 2D	5/9 (57%)	63.6%	28% (-158 to 80)

- Cases were included if sample/date of onset was ≤ 365 days.
- VE was assessed for the following infant groups:
 - Those with onset/sample aged > 62 days AND vaccinated with 1D+ DTaP;
 - Those with onset/sample aged > 62 days AND vaccinated with 2D+ DTaP

VE calculated based on matched coverage on each individual



Reasons for not taking up whooping cough vaccination during pregnancy

