

Vaccination in pregnancy

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If a woman had a pertussis vaccine in her previous pregnancy 16 months ago, does she need another one in this pregnancy?

A. Yes

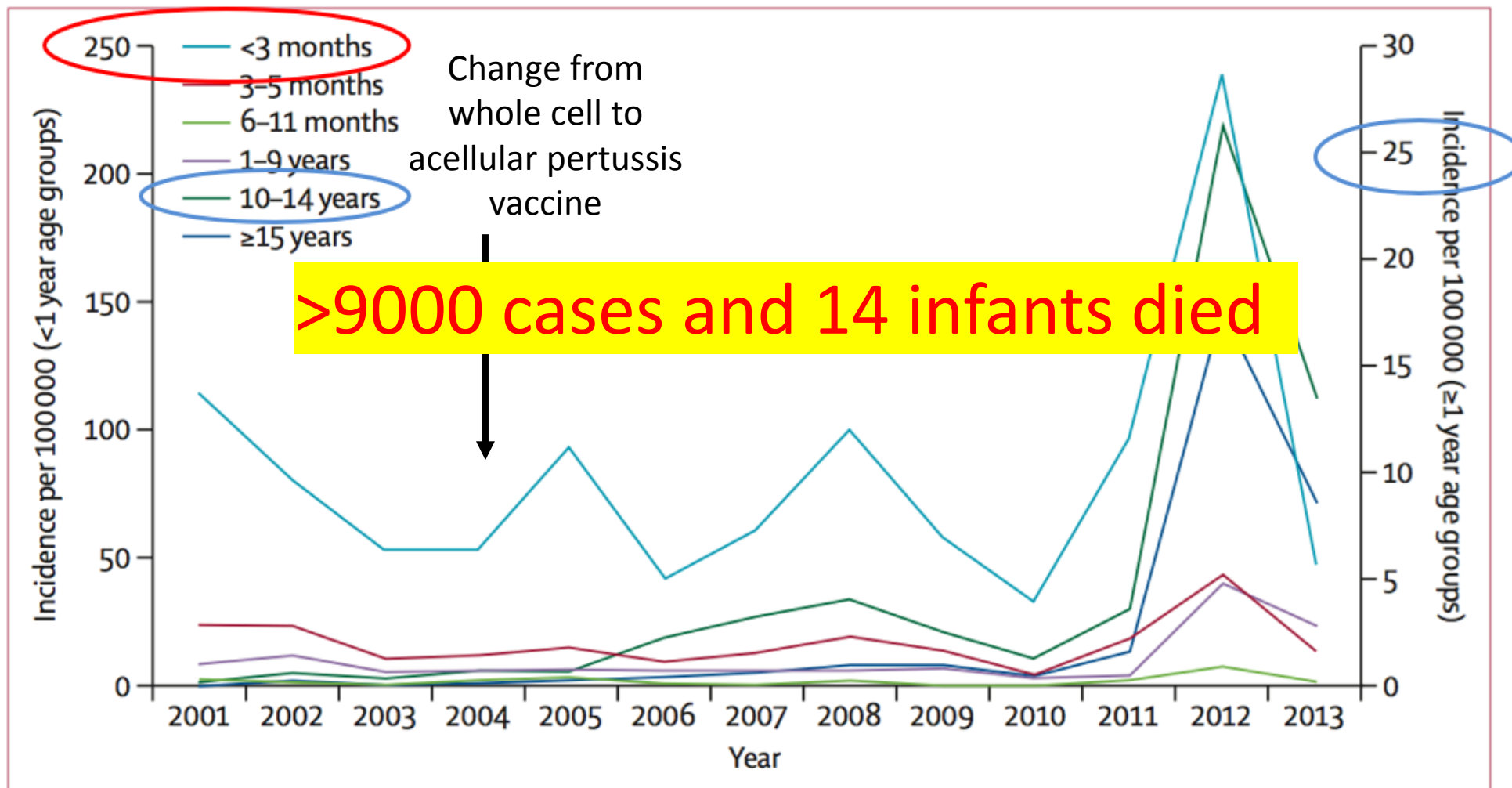
B. No



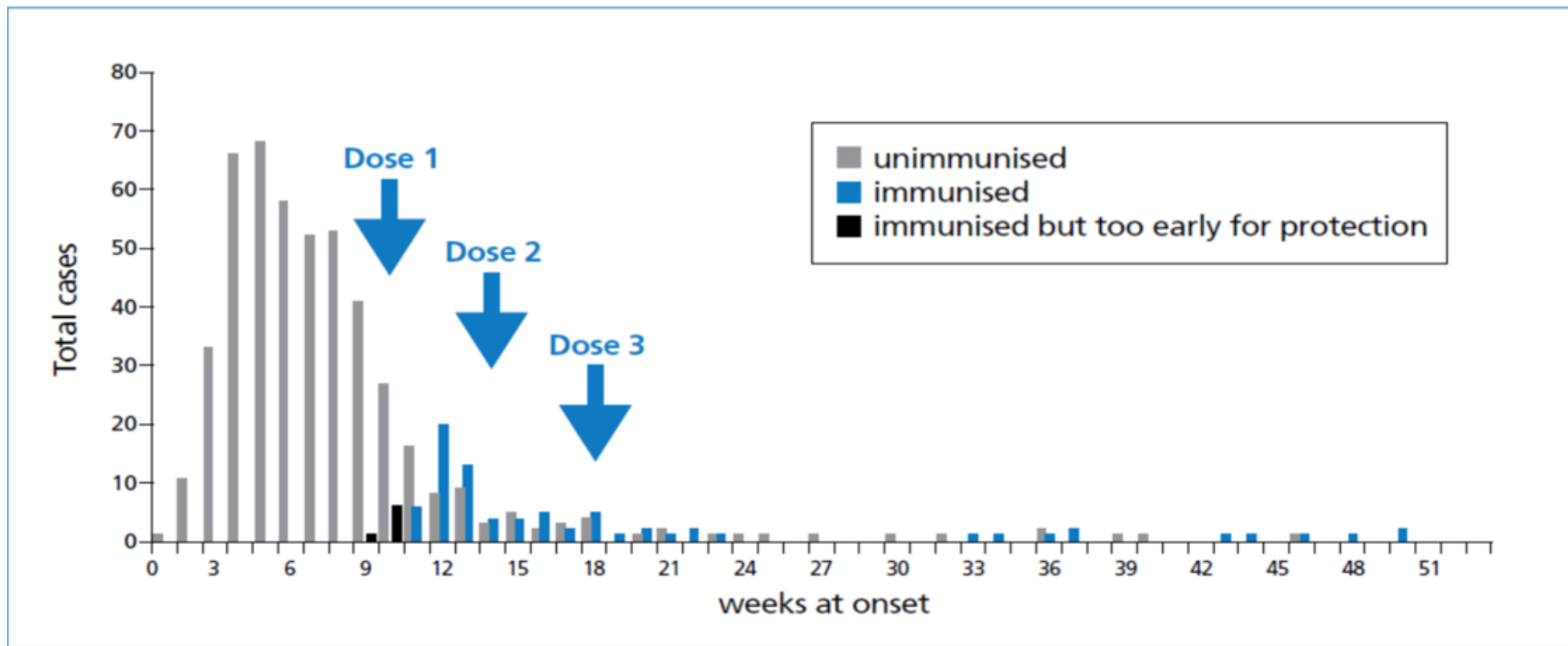
Response
Counter

UK pertussis epidemiology

Annual incidence of laboratory-confirmed cases of pertussis by age group in England



UK pertussis epidemiology 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 vaccine offered to pregnant women - 2012

- Recommendation: From 1st October 2012:
 - Tdap (+/- IPV)
 - Tetanus
 - Diphtheria (low dose)
 - Pertussis (acellular)
 - Poliomyelitis (inactivated)
- 28-32 weeks, but up to 38 weeks
- Repeated in each pregnancy





Public Health
England

Mother of baby who died from whooping cough 'was not offered life-saving vaccine'



Violet Herdman died on May 1st 2014

Her mother Emma Sharp said it was when her daughter suffered a cardiac arrest – that she and her partner were told their daughter had whooping cough.

By that time Ms Sharp said the couple were told nothing more could be done for Violet.

“I learnt that the best time to get the injection was between 28 and 32 weeks and with Violet being born at over 33 weeks”

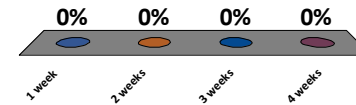
“I cannot understand why I slipped through the net.”

Read more: <http://www.dailymail.co.uk/health/article-2704366/Mother-baby-girl-died-whooping-cough-not-offered-life-saving-vaccine-pregnant.html#ixzz38ULZgb2g>

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How long does it take after vaccination for the mother to generate protective Ab levels?

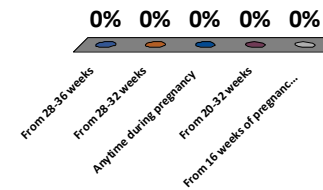
- A. 1 week
- B. 2 weeks
- C. 3 weeks
- D. 4 weeks



Response
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When is the pertussis vaccine recommended in pregnancy?

- A. From 28-36 weeks
- B. From 28-32 weeks
- C. Anytime during pregnancy
- D. From 20-32 weeks
- E. From 16 weeks-32 weeks



Response
Counter

Pertussis: current advice

From 1 April 2016:

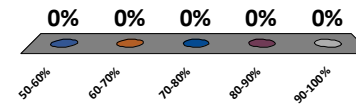
“immunisation can take place from week 16 of pregnancy. In practice, after the foetal anomaly scanbetween 18 and 20 weeks gestation.

This change offers more opportunity for pregnant women to be offered the pertussis vaccine during pregnancy.”



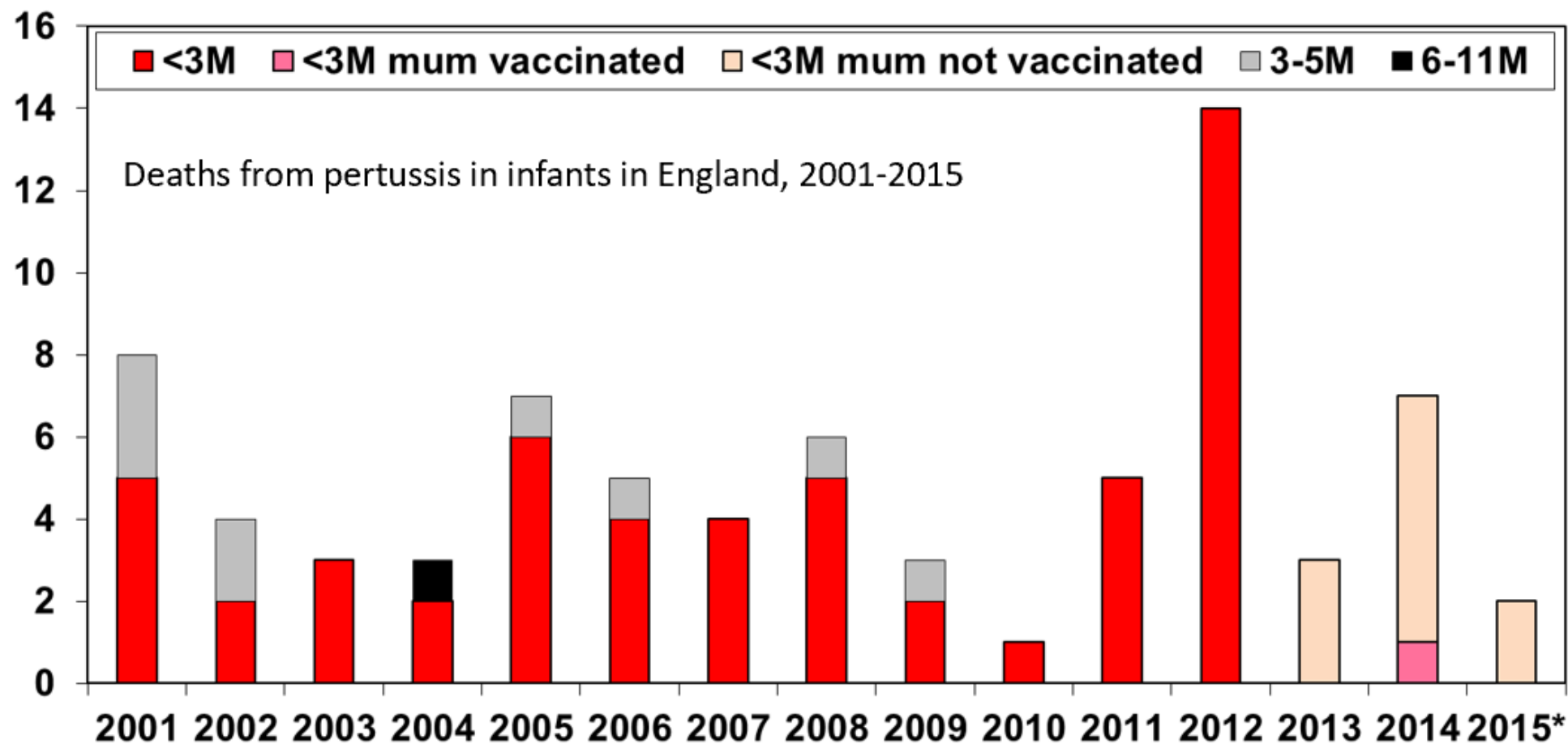
How effective is the pertussis vaccine in pregnancy (in terms of protecting the baby?)

- A. 50-60%
- B. 60-70%
- C. 70-80%
- D. 80-90%
- E. 90-100%



Response
Counter

Efficacy of pertussis vaccination in pregnancy



Sources: lab confirmed cases, certified deaths, Hospital episode statistics, GP registration details, HPZone. England only. *reported by 21/9/2015

Pertussis vaccination: efficacy

Analysis <2M age	Cases vaccinated / total	Matched control coverage	Vaccine effectiveness (95% CI)
Screening method (1)	11/71 (15%)	61%	90% (82% to 95%)
Case-control study (2)	10/58 (17%)	39/55 (71%)	93% (81% to 97%)
Latest data (3)	35/243 (14.4%)	64.8%	91% (88-94%)

- (1) [Amirthalingam G, 2014 Lancet monitorin](#)
 (2) [Dabrera G et al. Clinical Infectious Disease 2014](#)
 (3) [Amirthalingam G, 2016, CID](#)

Does the pertussis vaccine contain mercury?

A. Yes

B. No



Response
Counter

Does the pertussis vaccine contain aluminium?

- A. Yes
- B. No



Response
Counter

“But is the vaccine safe?”

- What are pregnant women worried about?
- How do you reassure them?
- Role-modelling?
- **Where would you signpost them to reinforce what you have said?**

Pertussis: Safety



- 10 studies, covering over 90,000 vaccinated pregnancies
- Largely retrospective observational studies from Europe and North America
- The findings were consistent with reassuring evidence of similar risks of maternal, fetal and infant outcomes (e.g. pre-eclampsia, preterm delivery, still birth or congenital anomalies) in vaccinated & unvaccinated pregnancies.

Donegan 2014; Hoang 2016; Kharbanda 2014; Kharbanda 2016; Maertens 2016; Morgan 2015;
Munoz 2014; Shakib 2013; Walls 2016; Zheteveva 2012

Safety of pertussis vaccination in pregnancy



- No difference in stillbirths
 - Five stillbirths within 14 days of vaccination, Observed vs. expected: 0.69 (95% CI 0.23-1.62)
- No difference in births within 14 days of vaccination
 - Live and stillbirths within 14 days, Observed vs. expected: 1.02 (95% CI 0.96-1.08)
- No difference in the time to delivery
 - Median gestation: 40 weeks, HR=1.00, 95% CI: 0.97-1.02
- No difference in birth weight
 - Vaccinated median 3.5kg (IQR 3.1-3.8kg) vs. unvaccinated median 3.5kg (3.2-3.8kg), $p=0.81$

Donegan K, King B, Bryan P. Safety of pertussis vaccination in pregnant women in UK: observational study. BMJ. 2014

Safety of pertussis vaccination in pregnancy

Event	Number (%) of events in vaccinated women		RR (95% CI) for comparison with matched unvaccinated cohort	
Neonatal death	2	(0.03)	1.00	(0.20-4.95)
Pre-eclampsia / Eclampsia	22	(0.36)	1.22	(0.74-2.01)
Placenta praevia	2	(0.03)	0.40	(0.09-1.75)
Intrauterine growth retardation / Low birth weight / Weight <2500g	126	(2.04)	1.20	(0.98-1.48)
Caesarean section	1,238	(20.02)	0.99	(0.93-1.06)
Premature labour (without delivery)	5	(0.08)	0.71	(0.27-1.89)
Postpartum haemorrhage	59	(0.95)	0.98	(0.73-1.31)

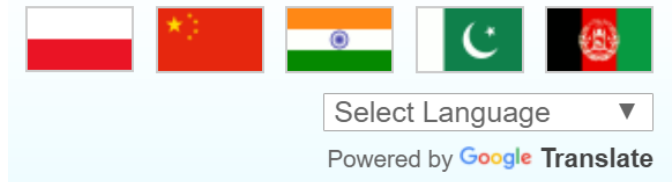
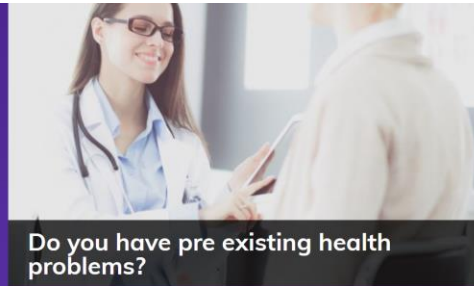
Signposting pregnancy women to trusted resources



Pregnant Women

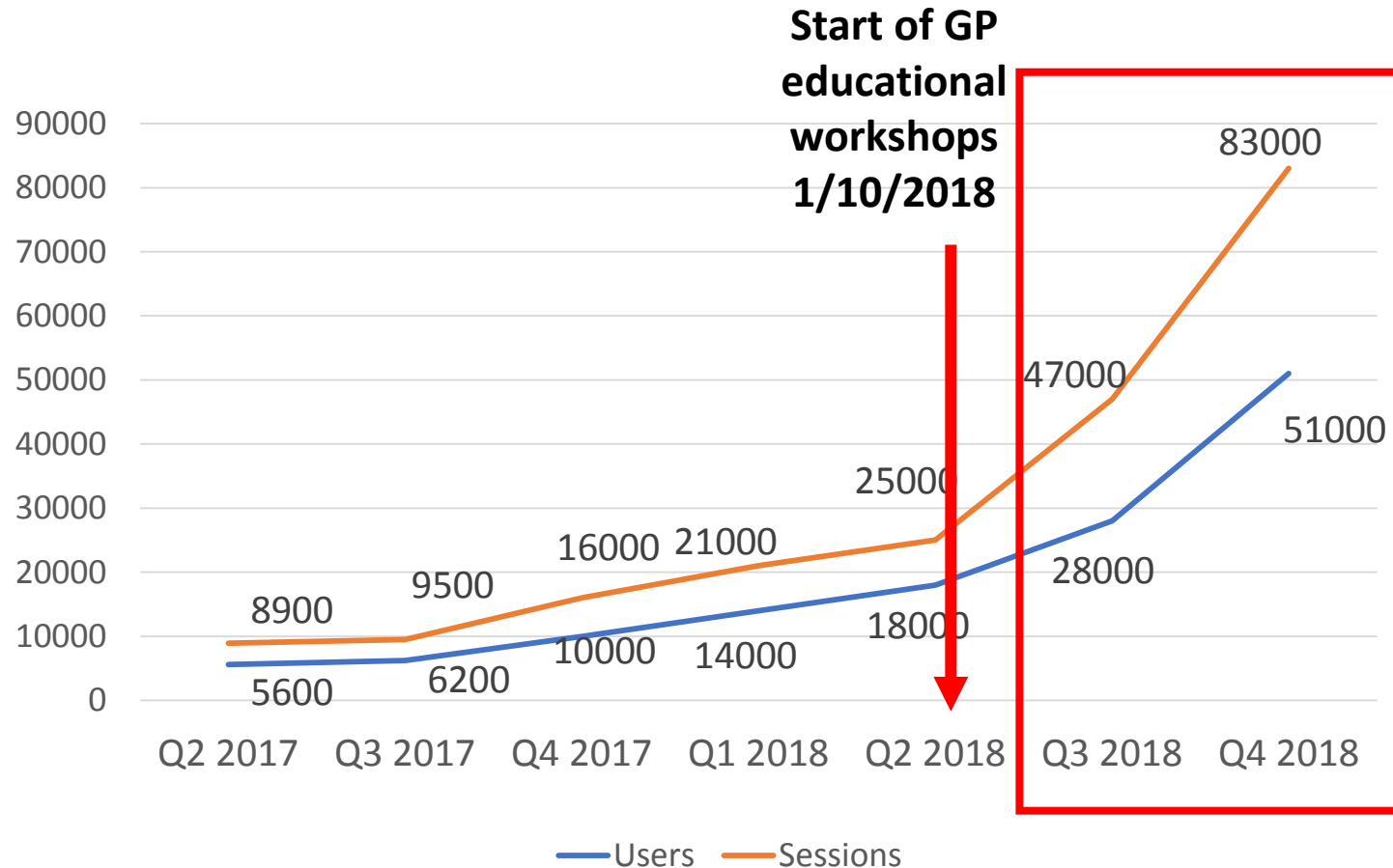


Public Health
England



SMS Share

Healthier Together website hits



Q1 = Apr-Jun, Q2 = Jul-Sept, Q3 = Oct-Dec, Q4 = Jan-Mar

Protect your baby - vaccinate yourself during pregnancy

Why are vaccines important for pregnant women?

- Vaccines can help keep you and your growing family healthy.
- Some vaccine-preventable diseases, such as rubella, can pose a serious risk to your health and that of your developing baby. For this reason, you should make sure that your immunizations are up to date **before** you become pregnant.
- The antibodies produced when you get vaccinated cross the placenta. This means that when your baby is born, they are already protected against infections, even before they are old enough to get vaccinated themselves. This is one of the only ways of protecting extremely young babies against vaccine preventable infections.
- [Click here for common myths about vaccines.](#)



Are vaccines safe before and during pregnancy? ▼

Flu (influenza) ▼

Whooping cough (pertussis) ▼

Show accessibility tools

Can the pertussis and influenza vaccines be given on the same day?

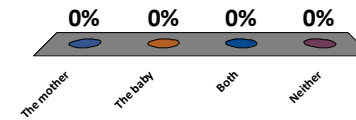
- A. Yes
- B. No



Response
Counter

Who does the influenza vaccine benefit?

- A. The mother
- B. The baby
- C. Both



Response
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Mother's heartfelt plea after her Newton Aycliffe daughter dies of swine flu - days after giving birth



Exclusive By Lizzie
Anderson

Mobile site

E-Newsletters



Wednesday, 26 February 2014

The Northern Echo



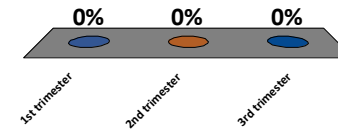
21-year-old, Nikki Westgarth, who died on February 8 – four days after her daughter, Eva-Rose Westgarth-Burrell, was delivered prematurely

Her mother said:

“I had to watch my daughter die, please don’t put your loved ones through that, flu is not just a mild seasonal illness, it’s a killer.”

During which trimester is the highest risk of hospitalisations with influenza?

- A. 1st trimester
- B. 2nd trimester
- C. 3rd trimester



Response
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Seasonal influenza: risks for mother

- Incidence comparable to age-matched non-pregnant women
- Higher burden of severe disease

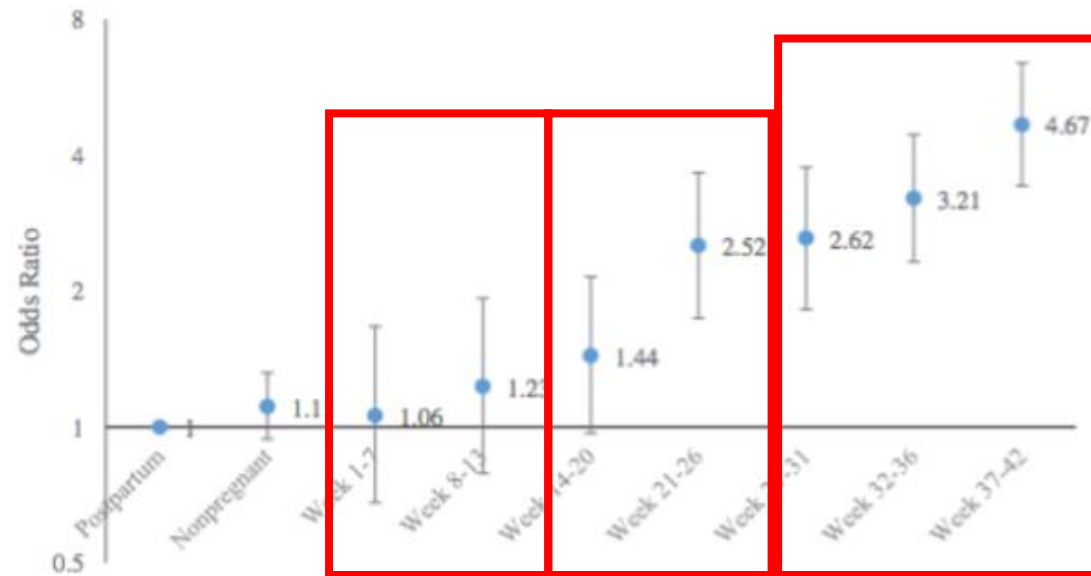
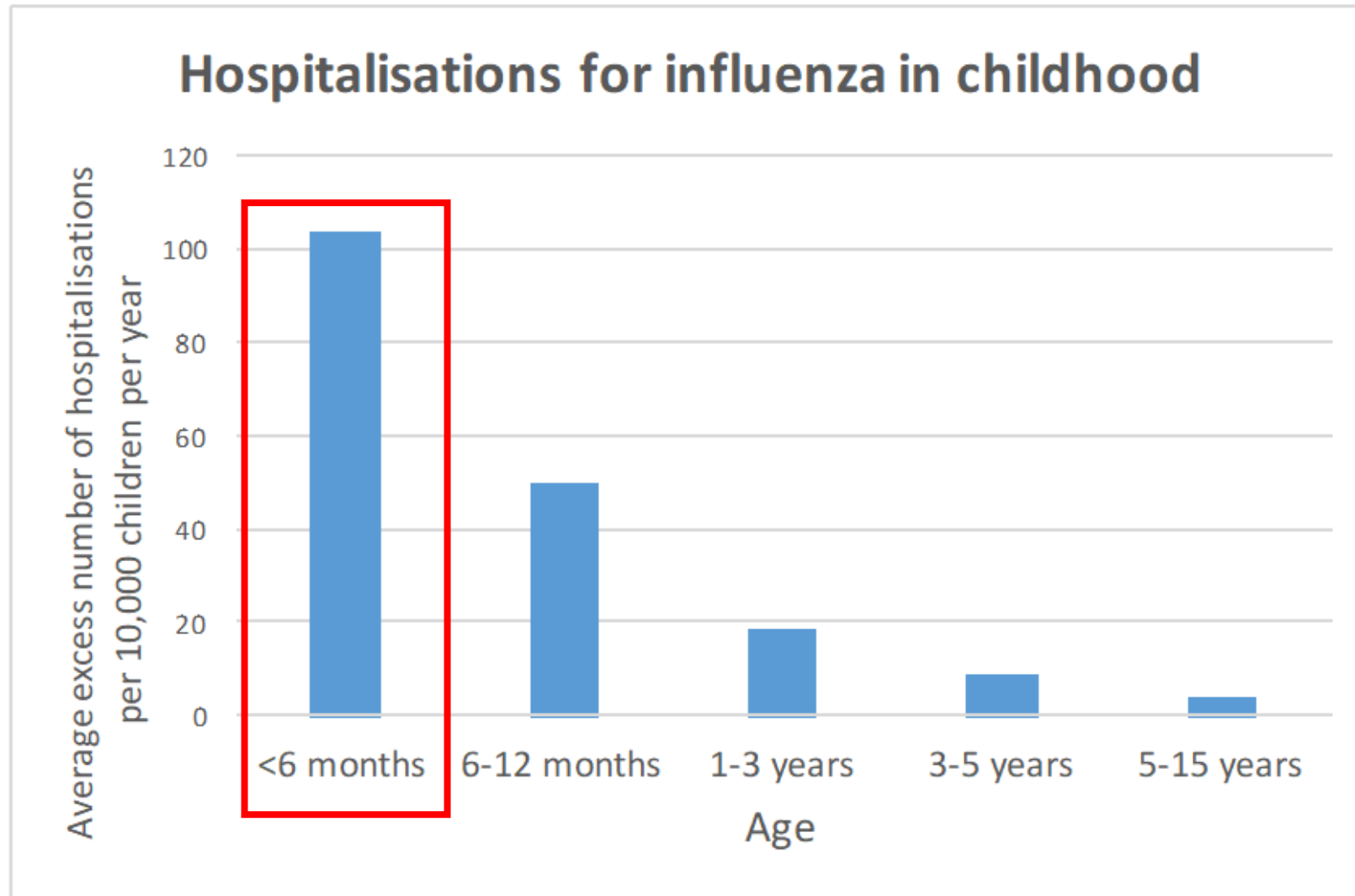


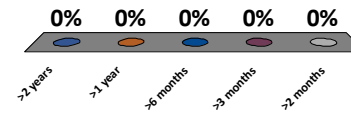
Figure 1. Odds ratios for any cardiopulmonary event during influenza season among women aged 15–44 years in the Tennessee Medicaid program, by pregnancy status and stage of gestation (by week), 1974–1993. Error bars represent 95% confidence intervals. Figure adapted from data in Table 2 in Neuzil et al. [34].

Influenza in infants



From what age can children receive the influenza vaccine?

- A. >2 years
- B. >1 year
- C. >6 months
- D. >3 months
- E. >2 months



Response
Counter



Inactivated vaccine licenced from 6 months of age



Live attenuated vaccine licenced from 2 years of age

No influenza vaccine licenced below 6 months of age

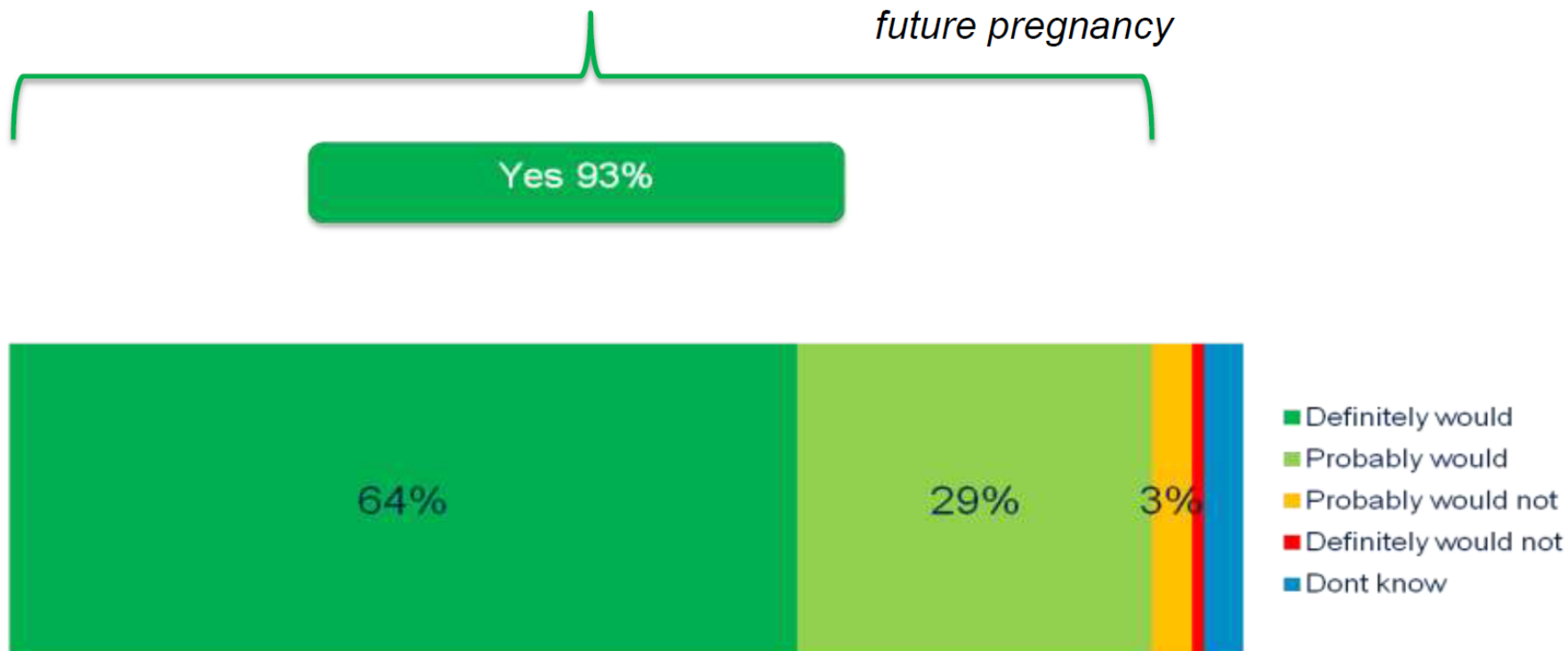
Which vaccine has the higher uptake in pregnancy?

- Influenza
- Pertussis
- Both have the same uptake



The vast majority of mums are in favour of future whooping cough immunisation

Q How likely would you be to choose to have whooping cough vaccine in this or a future pregnancy



Influenza vaccine uptake in pregnancy

Year	England (%)	Scotland (%)	Wales (%)	Northern Ireland (%)
2010-11	38.0	65.6*	39.6	N/A
2011-12	27.4	41.1	31.7	58.4
2012-13	40.3	54.0	61.6	64.6
2013-14	39.8	49.2	43.8	58.0
2014-15	44.1	50.9	45.3**†	56.1

* Denominator incomplete **Provisional data †GP practice data, post natal survey uptake 72.4%

What strategies can you use to promote the influenza vaccine?





Recent attitudinal findings immunisation in pregnancy

- Seriousness of the disease important factor in deciding on vaccination
- Women are more concerned about potential risks to their infants' health before their own
 - see influenza as a disease affecting the mother
 - whereas pertussis as a threat to the baby
- The most common reason for choosing not to be immunised was vaccine safety concerns to the baby, and then to themselves
- Non-white British women appear more likely to say that they would not accept a vaccine offered in pregnancy

Influenza vaccine: effectiveness in mother and infant

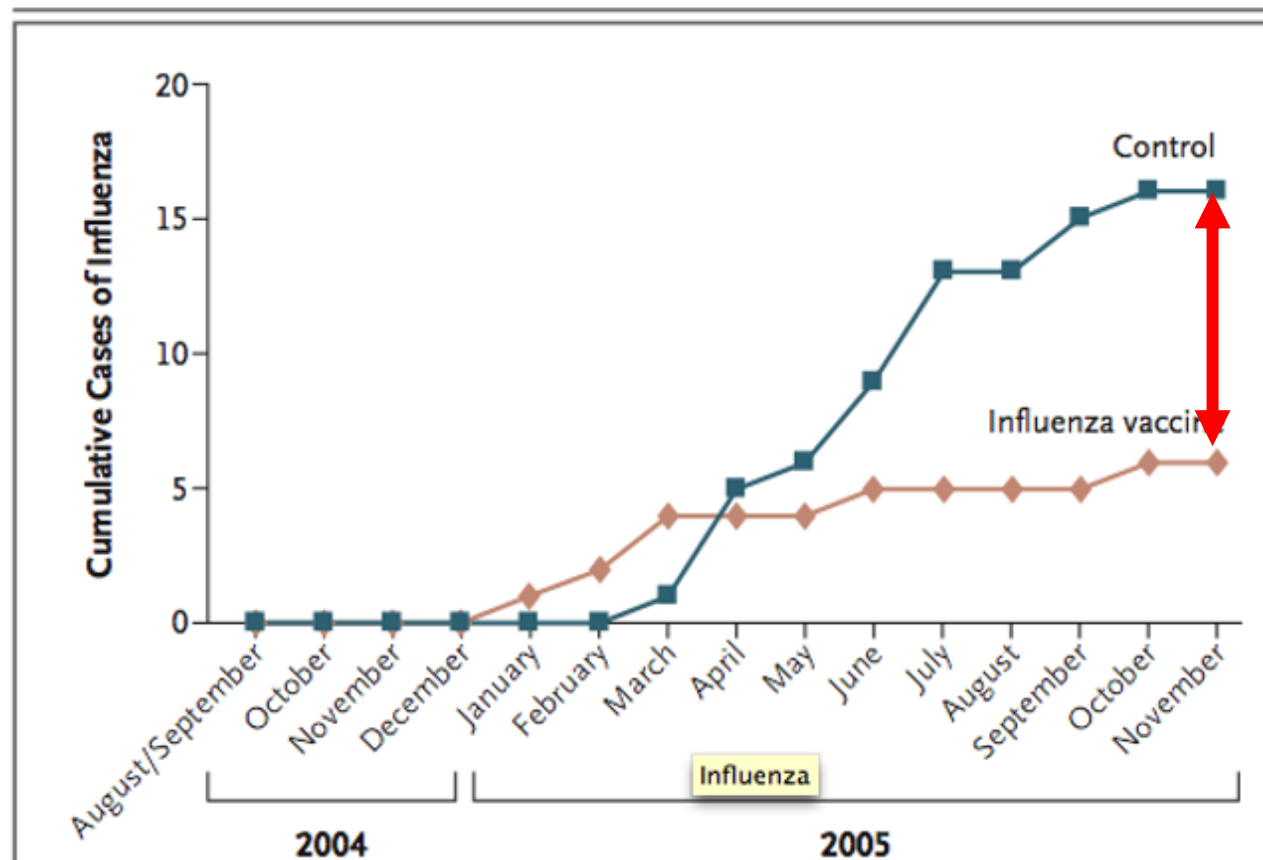


Figure 2. Cumulative Cases of Laboratory-Proven Influenza in Infants Whose Mothers Received Influenza Vaccine, as Compared with Control Subjects.

Testing for influenza antigen was performed from December 2004 to November 2005.

Mothers

- 36% reduction in respiratory illness with fever
- 25% reduction in clinic visits

Infants

- 63% reduction proven influenza illness
- 29% reduction in respiratory illness with fever
- 42% reduction in clinic visits

Influenza vaccine effectiveness: Fetus and neonate



- Low birth weight infant: 26% decreased risk in vaccinated women
 - RR 0.74 (95% CI 0.61-0.88)
- Stillbirth: 26% decreased risk in vaccinated women
 - RR 0.73 (95% CI 0.55-0.96)
- Preterm delivery: 13% decreased risk vaccinated women
 - OR 0.87 (95% CI 0.77- 0.98)

Influenza: safety



- Recent systematic reviews found no increased risk of:
- Spontaneous abortion
- Fetal Death or stillbirth
- Congenital anomalies
- Maternal adverse events up to 42 days post vaccination
- Medical attended adverse events



Safety of influenza vaccination

Extensive experience with use of inactivated influenza vaccine worldwide

From 1990 to 2009, 11.8 million pregnant women received the vaccine in the USA

- only 20 notifications of serious adverse events
- spontaneous abortion and stillbirth were the most common

The low reporting rate does not raise any concern

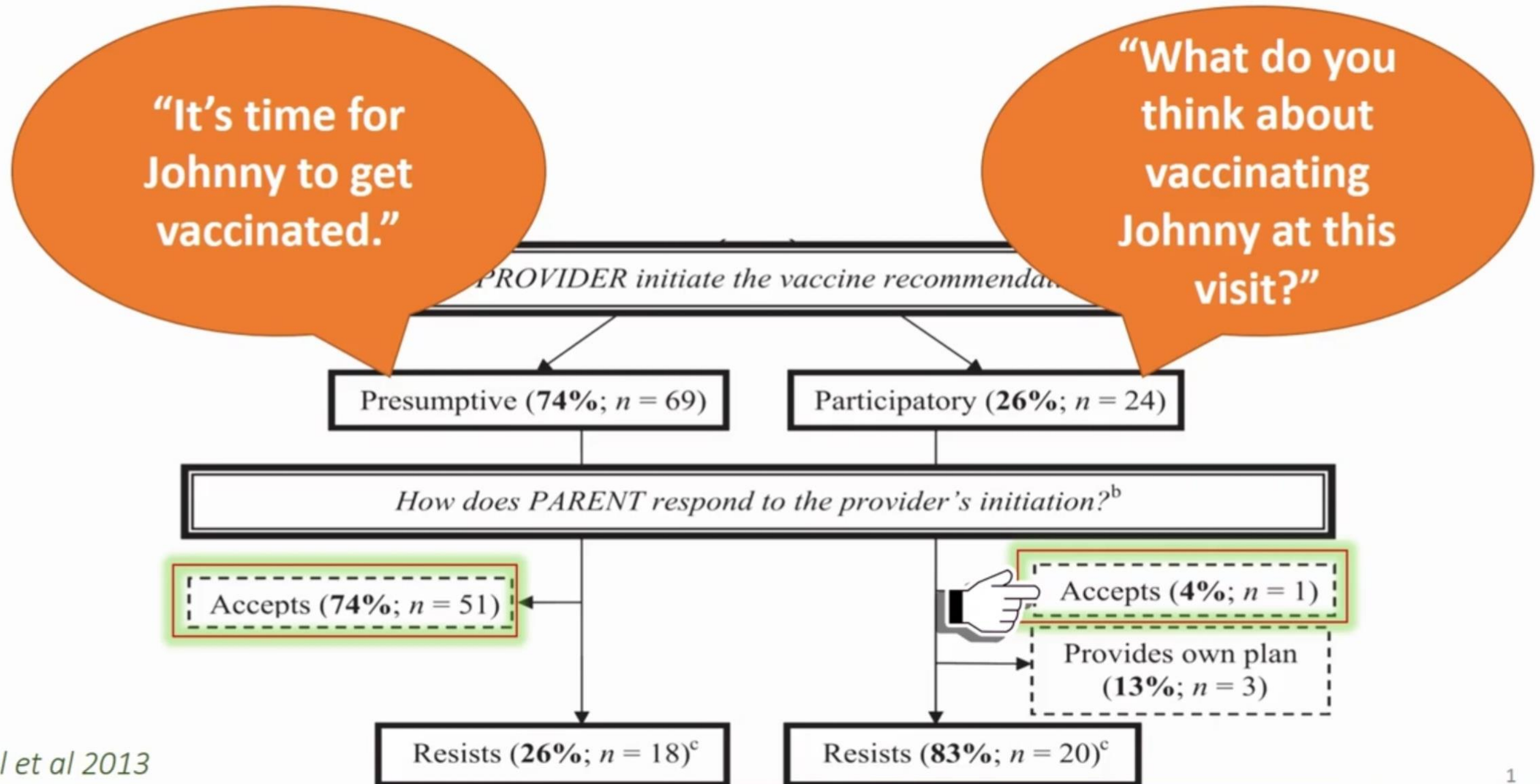


What behavioural strategies can you use to promote vaccines (in pregnancy)?

BEHAVIOUR CHANGE THEORY

- Understand the role of omission bias
 - the tendency to favour an act of **omission** over one of commission
 - Setting 'the norm' – ie the act of omission is having the vaccine, the act of commission is actively deciding NOT to have the vaccine
- Framing the question
- Promoting self-efficacy

Preliminary Data: How the vaccine conversation is started matters



Framing

Ending with Self-Efficacy



After you inform
parents of disease
risks, do not leave
them hanging



Provide parents /patients
with actions they can take
to protect themselves (self-
efficacy^{8,9})

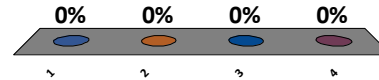


Now you should address the
vaccination again
The single best way to protect
yourself AND your baby

EXTRA SLIDES IS TIME ALLOWS!

How many MMR vaccines do you require prior to pregnancy to provide protection?

- A. 1
- B. 2
- C. 3
- D. 4



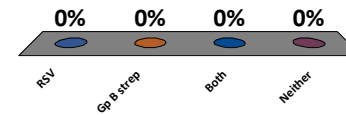
Response
Counter

Answer

- 2 prior MMR vaccines provides protection
- No need to perform confirmatory rubella serology – take a proper vaccine history (and get GP to confirm if required)

Which of these vaccines have undergone phase 3 trials in pregnant women?

- A. RSV
- B. Gp B strep
- C. Both
- D. Neither



Response
Counter

Answer

- RSV vaccine recently completed a phase 3 study (RCT)
- Reduced RSV vaccines in babies born to mothers immunised with novel RSV vaccine but no significant difference in primary endpoint (admissions with RSV)