



# Barriers to Tdap vaccination during pregnancy for mothers of pertussis cases <4 months of age in California, 2016

Rebeca Boyte<sup>1</sup>, Amber Christiansen<sup>1</sup>, Anya Gutman<sup>1</sup>, Sarah New<sup>1</sup>, Kathleen Winter<sup>1</sup>, Sarah Royce<sup>1</sup>  
<sup>1</sup>California Department of Public Health, Immunization Branch



## Background

- Pregnant women are recommended to receive tetanus, diphtheria, and pertussis (Tdap) vaccine at the earliest opportunity 27-36 weeks gestation during each pregnancy to protect their infants from pertussis through transplacental transfer of pertussis antibodies.<sup>1</sup>
- Prenatal Tdap has been shown to reduce the risk of pertussis among infants <8 weeks of age by over 91% and is 85% more effective than postpartum Tdap.<sup>2,3</sup> Among infants with pertussis, those born to women that received Tdap during pregnancy had less severe disease.<sup>4</sup>
- Tdap coverage among pregnant women in California is suboptimal, estimated at 49%, and lower among Hispanic women and women with Medicaid coverage.<sup>5</sup>

## Objectives

- Identify barriers to prenatal Tdap vaccination for mothers of infants <4 months of age reported with pertussis occurring from January 1 through December 31, 2016.
- Provide technical assistance to prenatal care providers to strengthen Tdap recommendation and referral practices.

## Methods

- CDPH developed a supplemental case-interview form for enhanced infant pertussis surveillance.\*
- Local health departments conducted interviews of case-mothers and their prenatal care providers to assess Tdap vaccination practices and completed the supplemental form.
- Retrospective data collection began in April 2016 and continued prospectively through the beginning of 2017.

### Definitions

- Recommended:** provider reported recommending prenatal Tdap
- Strong referral<sup>6</sup>** provider reported referral to a specific location and followed up with the mother on Tdap receipt.
- Refusal:** mother reported being offered Tdap but refused.
- Invalid contraindication:** reason that the case-mother provided for not being vaccinated was not consistent with ACIP recommendations.

\* <http://www.cdph.ca.gov/HealthInfo/discord/Documents/Supplemental%20pertussis%20form%20for%20infants%20under%204%20months%20of%20age.pdf>

## Results

- Of the 114 pertussis cases <4 months of age reported to CDPH in 2016, 66 (58%) case-mothers and their prenatal care providers were interviewed by local health departments using the supplemental form.
- Case-mothers' insurance: 36 (54%) Medicaid, 27 (41%) private, 3 (5%) unknown.

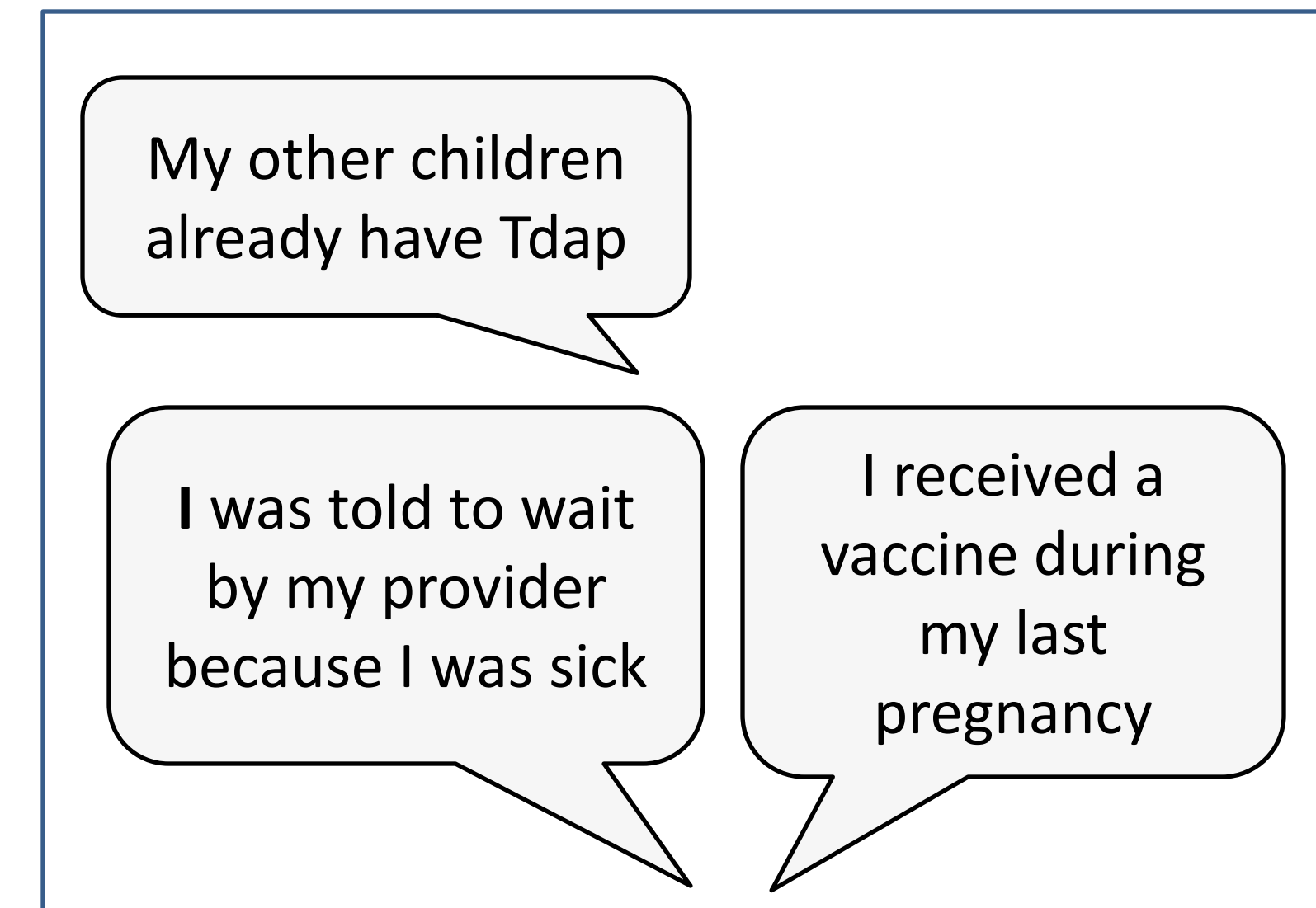
## Results continued

Among the 66 case-mothers

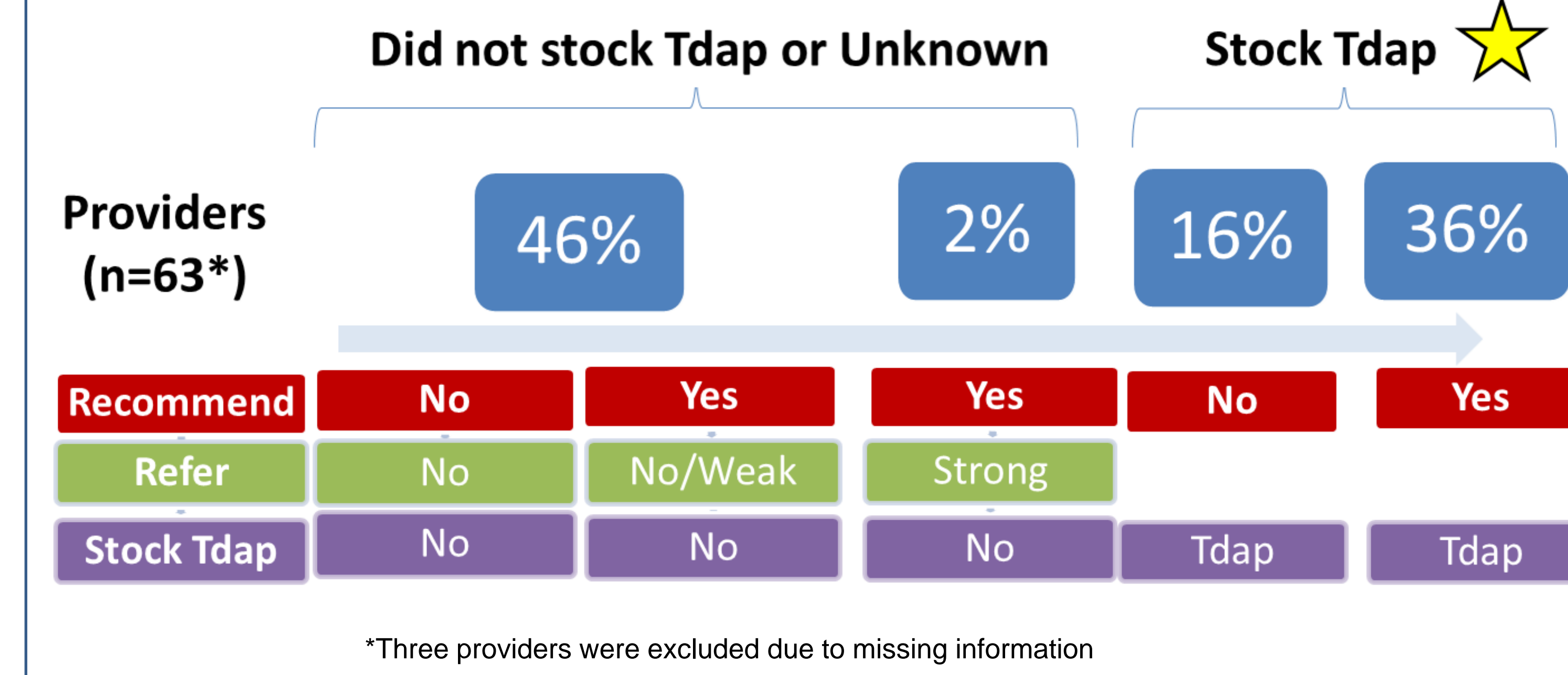
- 27 (41%) **received Tdap during pregnancy**  
Of these 27, 22 (81%) were vaccinated during a routine prenatal visit
- 39 (59%) **did not receive Tdap during pregnancy**  
Reasons for not receiving Tdap were reported for 18 (46%) unvaccinated case-mothers:
  - 9 (50%) mothers were offered Tdap but refused
  - 6 (33%) were not vaccinated due to an invalid contraindication (Figure 1)
  - For 3 (17%), their providers did not follow up on offsite referrals.

**Deaths:** Two infants died; one of their mothers was vaccinated at 39 weeks and the other refused vaccination.

**Fig. 1. Examples of invalid contraindications**



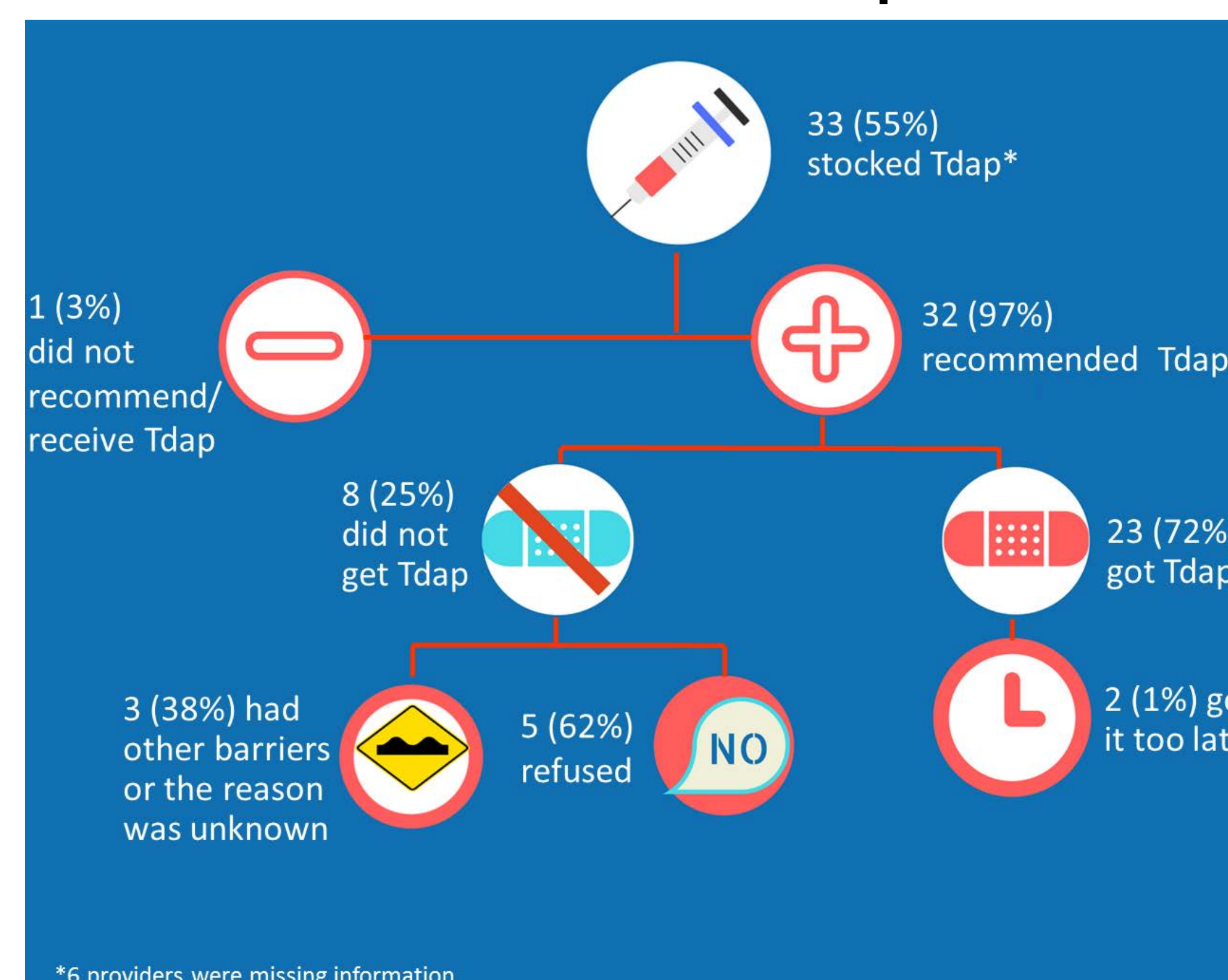
**Fig. 2. Characterizing Providers Along Path to Best Practice**



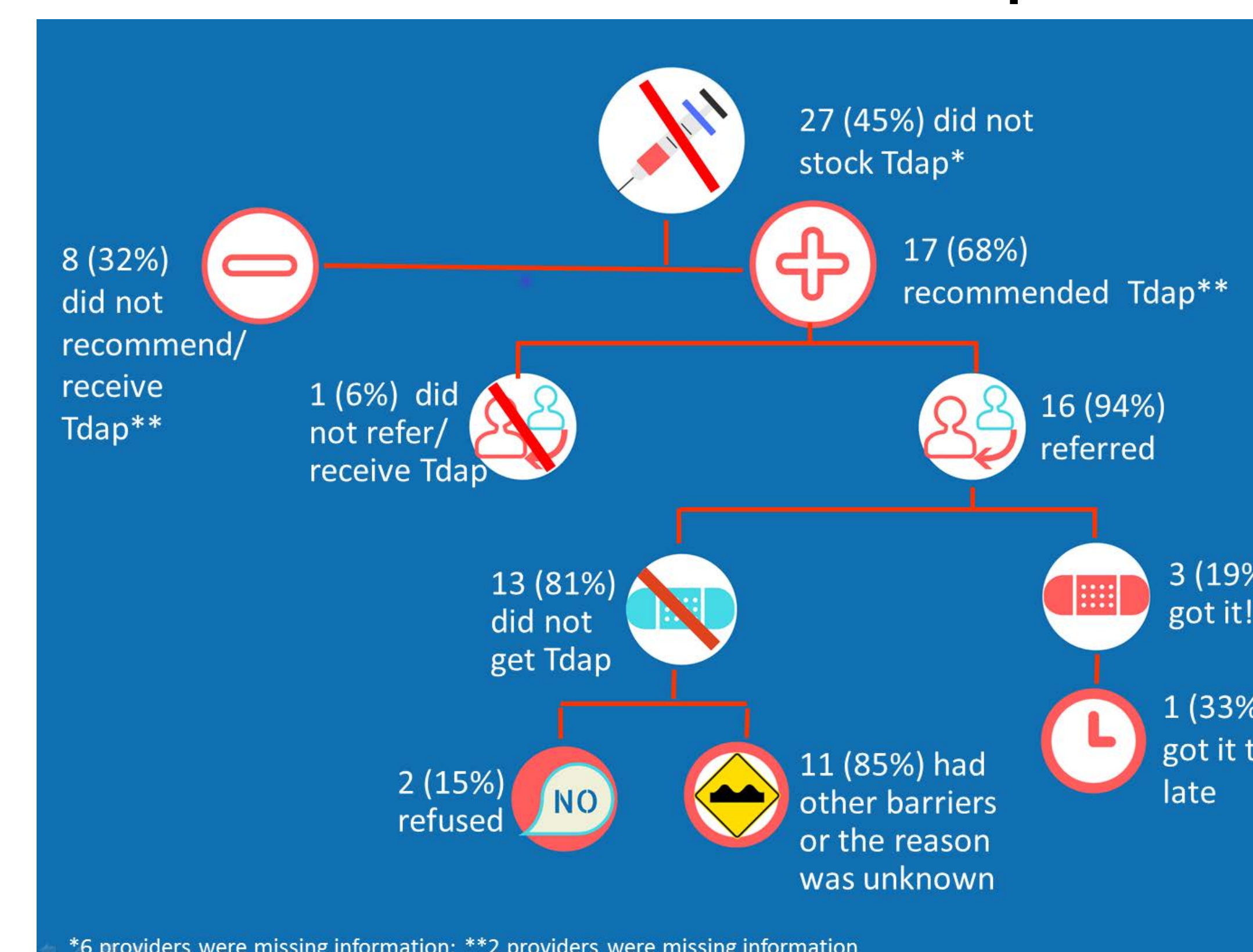
### To move providers along the path

- 36% reported "best practices" in place— stock and recommend;
- 16% stock but need to recommend; and the
- 46% that do not stock and make a strong referral, at least need to move down the path to join the 2% that recommend and make a strong referral.

**Fig. 3. Vaccination Outcomes among Providers who Stocked Tdap**



**Fig. 4. Vaccination Outcomes among Providers who did not Stock Tdap**



## Summary

- Not all providers recommended Tdap during pregnancy:** 9 (14%) providers\* did not recommend Tdap; none of these case-mothers were vaccinated.
- Current referrals are not working:** only 3 of 16 (19%) women who were referred off site received Tdap vaccine.
- Stocking Tdap onsite works:** case-mothers whose prenatal clinics stocked Tdap were nearly 3 times more likely to receive prenatal Tdap than case-mothers whose clinics did not stock Tdap [RR=2.9; 95% CI: 1.7-5.0].
- Insurance type makes a difference:** case-mothers with private insurance were 2 times more likely to receive prenatal Tdap than case-mothers with Medicaid coverage [RR=2.0; 95% CI: 1.1-3.3].
- Cost (44%) and reimbursement (41%)** were most often cited by providers as reasons for not stocking Tdap.
- Infants of case-mothers vaccinated within the recommended timeframe** were less likely to be admitted to a hospital or an intensive care unit than other infants (15.4% vs 84.6% and 0% vs. 100%, respectively).
- There are more opportunities for promoting prenatal Tdap for low-income women:** 61% of the providers participate in an enhanced Medicaid program and 44% of mothers participated in WIC during their pregnancies.

\*Three providers were excluded due to missing information

## Limitations

- This review included mothers of case-infants only and is not representative of overall prenatal care providers' immunization practices in California.
- Some interviews yielded incomplete data.
- Data from case-mothers and prenatal care providers were not validated by health department chart reviews.

## Recommendations

- Ensure providers make a plan to routinely recommend Tdap by educating staff on benefits, routinizing the offer to all pregnant women, and emphasizing benefits to baby.
- Reduce financial barriers to stocking Tdap in prenatal provider offices.
- "Low-hanging fruit" for intervention may be providers who stock but don't recommend prenatal Tdap.
- Strengthen referral and follow-up practices for providers who do not stock Tdap. Optimize referrals to pharmacies and use other "touch points" (such as WIC) to reach Medicaid recipients and other low-income women.

### References

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- <https://www.cdc.gov/pertussis/pregnant/hcp/strong-referral.html>

For more information, please contact; Rebeca Boyte, [Rebeca.Boyte@cdph.ca.gov](mailto:Rebeca.Boyte@cdph.ca.gov)

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