Colorado Children's Immunization Coalition

Coalition Meeting
November 7, 2013
Children's Hospital Colorado
2nd Floor, Mt. Princeton Conference Room
9:00 - 10:30 AM

Welcome & Introductions	All	9:00 – 9:15 a.m.
CCIC Updates	CCIC Staff	9:15 – 9:30 a.m.
Vaccine Hesitancy & What to do About It	Amanda Dempsey, MD, PhD, MPH Children's Outcomes Research Program	9:30 – 10:30 a.m.

Participate via Phone and Webinar:

Dial 1-866-740-1260

Enter Access Code 7775340

Web Login in:

https://cc.readytalk.com/r/4q1hirykti7z&eom

Save the Date!

Stay tuned for more details and registration for these events and others as we work to schedule 2014 provider education and coalition meeting presentations.

December 5, 2013	Provider Ed: *The Ethics of Vaccines*, Robert Brayden, MD
January 2014	**No CCIC Coalition Meeting**
February 6, 2014	Joint CCIC/CAIC Coalition Meeting
September 25, 2014	Save the Date! *S.O.U.P.*

VACCINE HESITANCY AND WHAT TO DO ABOUT IT

CCIC meeting, November 2013
Amanda Dempsey, MD, PhD, MPH
Child Outcomes Research Program, UC Denver

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Conflict of Interest

- Dr. Dempsey serves on advisory boards for Pfizer and Merck.
- Neither had any role in this research
- Dr. Dempsey's research is not funded by these companies.

Lets talk…

- Brief Background on Vaccine Hesitancy
- Data from National Study of Parents
- Intervention Pilot Studies
- New Study in Planning Phase

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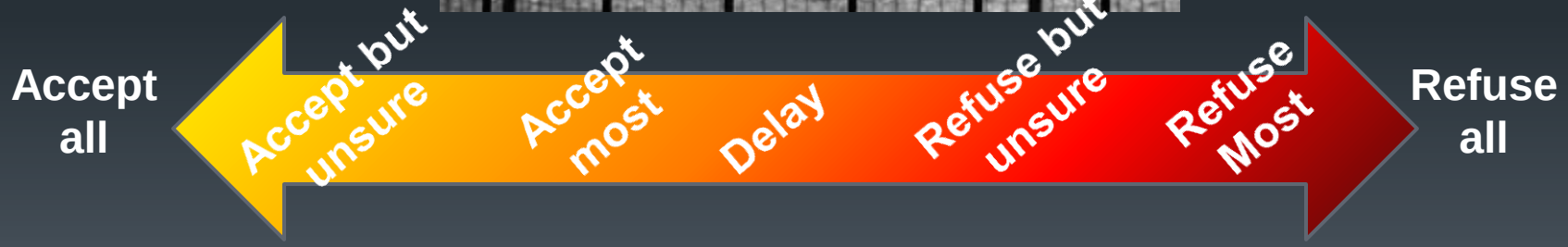
Vaccine Hesitancy

- Parents with significant concerns about safety and/or necessity of vaccines
- Growing over last decade – 19% → 50%
- Leads to delay and refusal of vaccines → disease outbreaks

Gellin B, Maibach E, Marcuse E. Do parents understand immunizations? A national telephone survey. *Pediatrics.* 2000;106(5):1097-1102; Freed G, Clark, SJ, Butchart, AT, Singer, DC, Davis, MM. Parental Vaccine Safety Concerns in 2009. *Pediatrics.* 2010;125(4):654-659.

A Spectrum of Beliefs and Behaviors



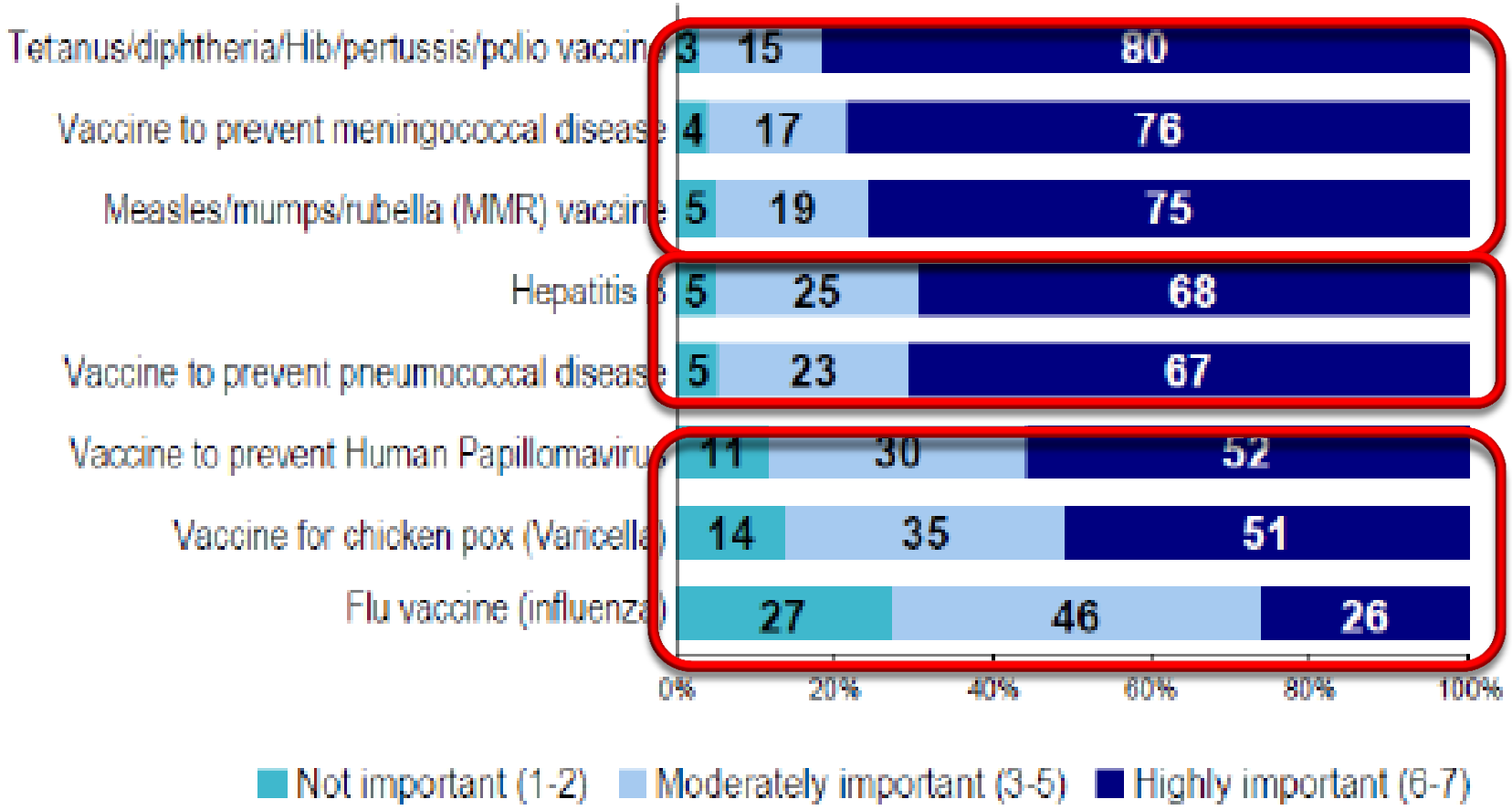
WHO SAGE Working Group on Vaccine Hesitancy, 2012
*Slide provided by R. Herlihy, CDPHE

What else is decreasing coverage rates?

*Slide adapted from R. Herlihy, CDPHE

Relative Importance of Different Vaccines

"How important do you think the following vaccines are in preventing disease in children?"



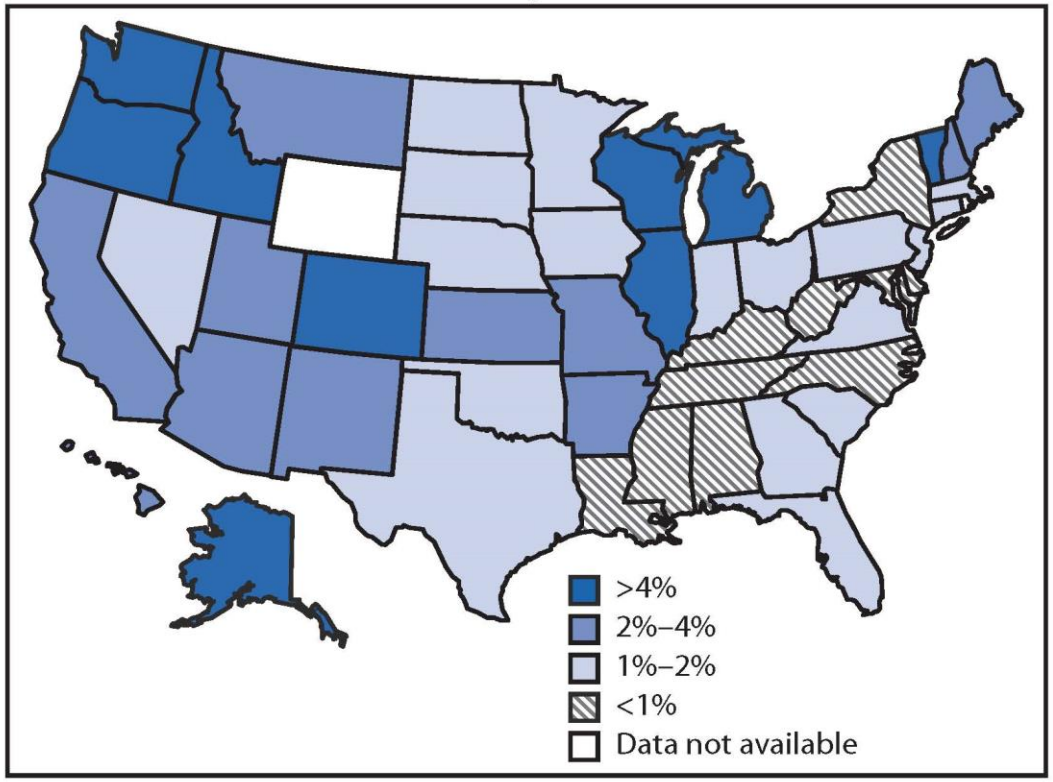
EKOS Research Associates Inc.

n=1745

Vaccine Safety Survey, 2011

Exemption Rates

FIGURE. Estimated percentage of children enrolled in kindergarten who have been exempted from receiving one or more vaccines* — United States, 2011–12 school year



* Exemptions might not reflect a child's vaccination status. Children with an exemption who did not receive any vaccines are indistinguishable from those who have an exemption but are up-to-date for one or more vaccines.

Vaccination coverage among children in kindergarten--United States, 2011-12 school year. *MMWR Morb Mortal Wkly Rep.* Aug 24 2012;61(33):647-652.

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National Study of Parents - 2010

- Web-based survey of parents
- Nationally representative
- Understand use of alternative schedules and underlying attitudes

Dempsey et al, *Pediatrics* (2011) 128:5

Study Sample

- 771 parents with child age 6mo-6 yr
- 63% white
- 57% female
- 95% of children had regular HCP
- 73% had >1 child

Definition of Alternative Schedule

- "Most doctors provide childhood vaccines according to a schedule recommended by the CDC and major organizations of doctors. That schedule (the 'CDC vaccination schedule') specifies the ages at which children should receive different vaccines.
- Does your child get all of the recommended vaccines at the specific ages outlined by the CDC vaccination schedule?"
- Alternative vaccination = No

Use of Alternative Schedule

- 13% of parents used alternative schedule
- 80% have >1 schedule alteration

Alteration	% of Alternative Vaccinators
No Vaccines	17%
Refuse certain vaccines	53%
Delay some vaccines	55%
Allow longer time between doses	36%
Separate antigens	22%

Specific Vaccine Alternations

Vaccine	Refuse	Delay	Prolong Interval
H1N1	88%	34%	13%
Seasonal Flu	76%	35%	13%
Varicella	46%	44%	22%
Rotavirus	44%	16%	17%
PCV	31%	10%	33%
HBV	28%	31%	29%
MMR	26%	54%	45%
HAV	24%	24%	13%
Hib	15%	17%	21%
DTaP	6%	24%	43%
IPV	6%	16%	32%

Types of Alternative Schedules

Type	% of Alt Vax
Sears	8%
Miller	2%
Self-made	41%
Friend	15%
Other	36%*
*Many indicated they had “worked with their child’s doctor” to set the schedule	

Physician Support of Alt Vax

	% of Alt Vax
Doctor “seemed supportive”	44%
Doctor “seemed hesitant”	30%
Doctor suggested alt schedule	22%
Had to change providers to accommodate preferences	8%

Fidelity to Schedule

Schedule	% Alt Vac
Always followed alt. schedule	59%
Initially followed alt schedule but changed to recommended	11%
Initially followed recommended schedule but changed to alt schedule	30%
Why?	
Seemed safer	61%
Less distress for child	20%
Thought would be more effective	12%

Opinions underlying schedule preferences

	% Alternative Vax	% Recommended Vax
Delaying doses is safer than providing according to the recommended schedule	82%	18%
Allowing parents to delay or skip certain vaccines lets them avoid vaccines that aren't necessary	76%	29%
If vaccination experts recommend a certain schedule, this is the best schedule to follow	25%	78%

Opinions underlying schedule preferences 2

	% Alternative Vax	% Recommended Vax
When parents skip vaccine doses, these children are more likely to get sick and spread disease to others	28%	77%
When parents delay vaccine doses, these children are more likely to get sick and spread disease to others	19%	35%
Parents who skip doses are relying on others in the community being vaccinated to protect their children	30%	66%

Conclusions from Study

- >1 out of 10 parents nationally follow alternative schedule, though vaccine refusal overall is low (1%)
- A large proportion of parents currently following the recommended schedule have attitudes that suggest they may be at risk for changing to an alternative schedule in the future

In keeping with prior studies

- Glanz (2013, *Pediatrics)*
  - 2004 – 2010 – 13% parents choosing alt vax schedule in 8 MCOs
- Robinson (2012, *Pediatrics)*
  - % of “shot limiters” in OR increased from 2.5% to 9.5% between 2006 and 2009

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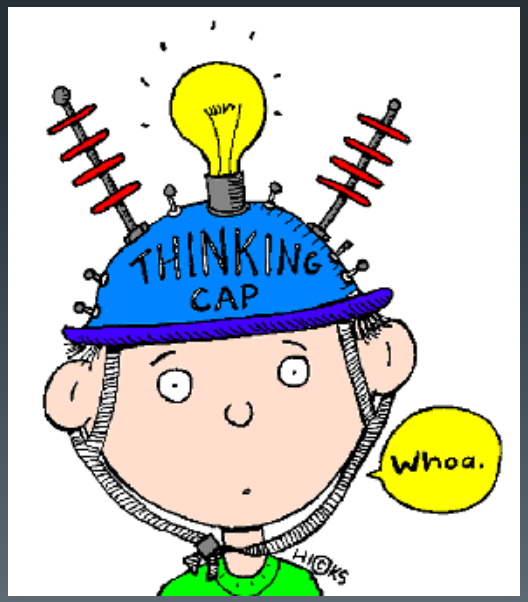
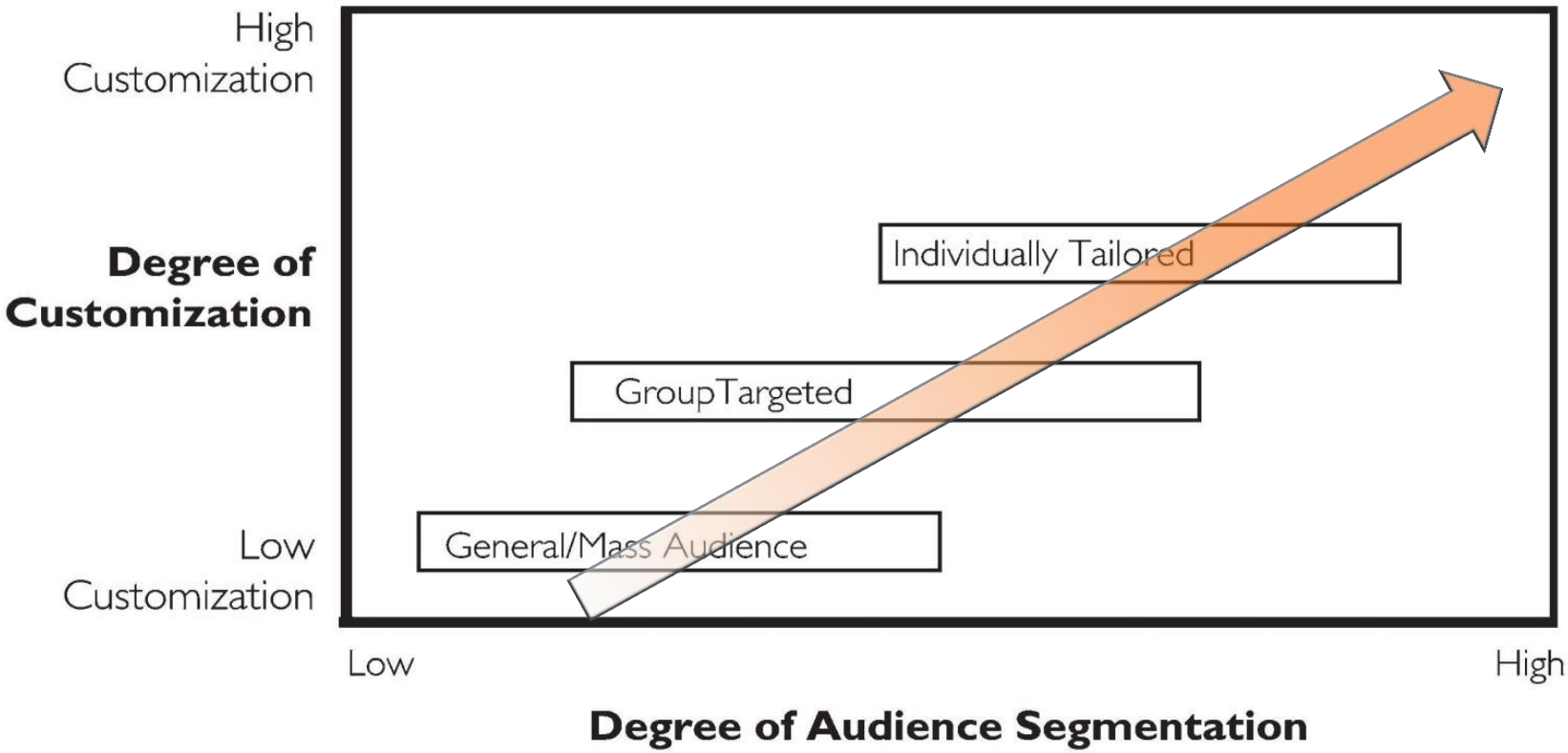


Targeted and Tailored Messaging

- Targeted – provides information specific to *subpopulations*
  - *"Infants are at highest risk of dying from pertussis"*

- Tailoring – provides information specific to *individuals*
  - *"Judy, did you know that infants Jeremy's age are 10 times more likely to die of pertussis than any other age group?"*

Tailoring Continua



Hawkins RP, Kreuter M, Resnicow K, Fishbein M, Dijkstra A. Understanding tailoring in communicating about health. *Health education research.* Jun 2008;23(3):454-466.

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Components of Tailoring 1

- Personalization
  - Use person's name
    - "*Jen, it seems like you are worried about vaccine side effects*"
  - Point out information is customized
    - *"Based on the information you provided, it sounds like your son is really scared of shots…"*
  - Contextualization
    - *Pictures*

Hawkins RP, Kreuter M, Resnicow K, Fishbein M, Dijkstra A. Understanding tailoring in communicating about health. *Health education research.* Jun 2008;23(3):454-466.

Components of Tailoring 2

- Feedback
  - Descriptive - *"You indicated you have concerns about all vaccines"*
  - Comparative – "*Compared to other mothers, you have very strong concerns about vaccines causing autism."*

Hawkins RP, Kreuter M, Resnicow K, Fishbein M, Dijkstra A. Understanding tailoring in communicating about health. *Health education research.* Jun 2008;23(3):454-466.

Components of Tailoring 3

- Content Matching
  - Assesses the most important issues for each person and produces messages around these particular topics

Hawkins RP, Kreuter M, Resnicow K, Fishbein M, Dijkstra A. Understanding tailoring in communicating about health. *Health education research.* Jun 2008;23(3):454-466.

Effectiveness of Tailoring

- Meta-analysis of printed materials
  - Better than untailored in most cases
  - Impacts females > males
  - No differential effect based on age, race, or education
- Specific Studies
  - Asthma, diabetes, exercise, Pap screening

Noar SM, Benac CN, Harris MS. *Psychological bulletin.* Jul 2007;133(4):673-693.

2 Pilot Projects of Interventions

1. Vax Facts HPV
2. Vax Facts MMR

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Message Tailoring for Vaccination

- **VaxFacts HPV –**
  - 2-page written brochure for mothers
  - Focused on HPV exclusively
  - Pilot study (72 mothers)
  - Focused on change in vaccination intention

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Dempsey et al. *27th International Papillomavirus Society Meeting.* Berlin, Germany 2011:Abstract P-01.19, pg 15.

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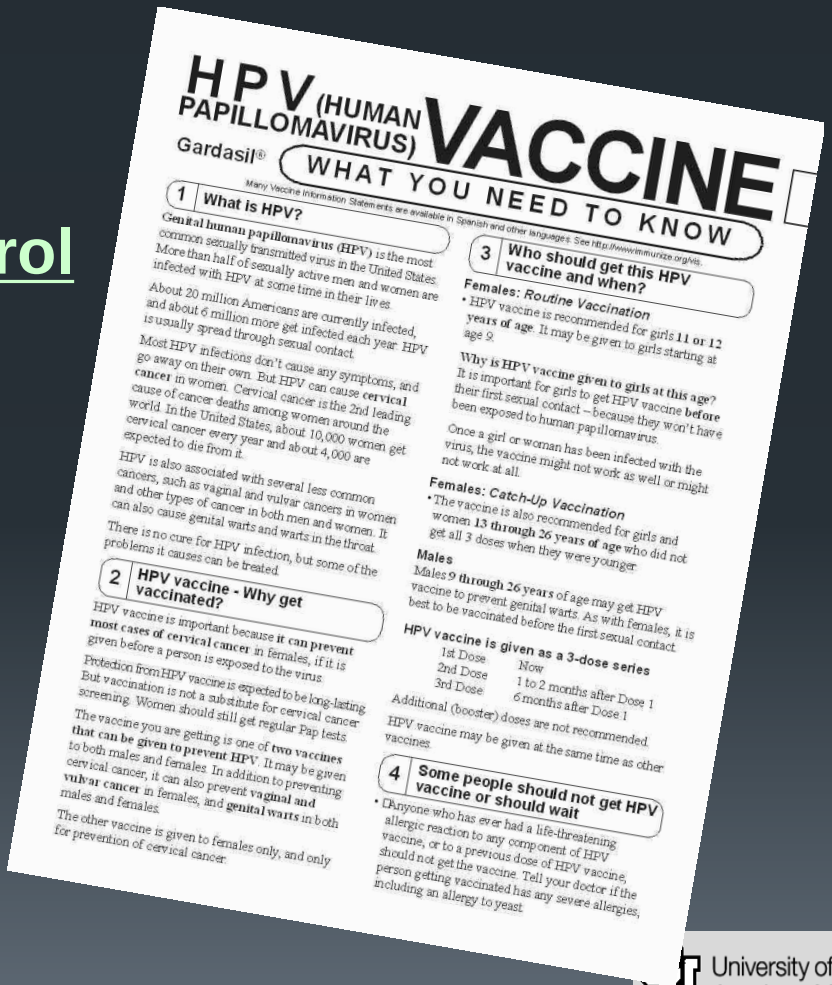
Vax Facts HPV Study

RCT

Intervention → 2-page tailored brochure

Control



HPV (HUMAN PAPILLOMAVIRUS) VACCINE

Gardasil®

WHAT YOU NEED TO KNOW

Many Vaccine Information Statements are available in Spanish and other languages. See http://www.immunize.org/vis

1 What is HPV?

Genital human papillomavirus (HPV) is the most common sexually transmitted virus in the United States. More than half of sexually active men and women are infected with HPV at some time in their lives.

About 20 million Americans are currently infected, and about 6 million more get infected each year. HPV is usually spread through sexual contact.

Most HPV infections don't cause any symptoms, and go away on their own. But HPV can cause **cervical cancer** in women. Cervical cancer is the 2nd leading cause of cancer deaths among women around the world. In the United States, about 10,000 women get cervical cancer every year and about 4,000 are expected to die from it.

HPV is also associated with several less common cancers, such as vaginal and vulvar cancers in women and other types of cancer in both men and women. It can also cause genital warts and warts in the throat.

There is no cure for HPV infection, but some of the problems it causes can be treated.

2 HPV vaccine - Why get vaccinated?

HPV vaccine is important because **it can prevent most cases of cervical cancer** in females, if it is given before a person is exposed to the virus.

Protection from HPV vaccine is expected to be long-lasting. But vaccination is not a substitute for cervical cancer screening. Women should still get regular Pap tests.

The vaccine you are getting is one of **two vaccines that can be given to prevent HPV**. It may be given to both males and females. In addition to preventing cervical cancer, it can also prevent **vaginal and vulvar cancer** in females, and **genital warts** in both males and females.

The other vaccine is given to females only, and only for prevention of cervical cancer.

3 Who should get this HPV vaccine and when?

Females: *Routine Vaccination*

- HPV vaccine is recommended for girls **11 or 12 years of age**. It may be given to girls starting at age 9.

Why is HPV vaccine given to girls at this age?

It is important for girls to get HPV vaccine **before** their first sexual contact – because they won't have been exposed to human papillomavirus.

Once a girl or woman has been infected with the virus, the vaccine might not work as well or might not work at all.

Females: *Catch-Up Vaccination*

- The vaccine is also recommended for girls and women **13 through 26 years of age** who did not get all 3 doses when they were younger.

Males

Males **9 through 26 years** of age may get HPV vaccine to prevent genital warts. As with females, it is best to be vaccinated before the first sexual contact.

HPV vaccine is given as a 3-dose series

1st Dose	Now
2nd Dose	1 to 2 months after Dose 1
3rd Dose	6 months after Dose 1

Additional (booster) doses are not recommended.

HPV vaccine may be given at the same time as other vaccines.

4 Some people should not get HPV vaccine or should wait

- Anyone who has ever had a life-threatening allergic reaction to any component of HPV vaccine, or to a previous dose of HPV vaccine, should not get the vaccine. Tell your doctor if the person getting vaccinated has any severe allergies, including an allergy to yeast.

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Pre-Intervention Questionnaire

- 21 items covering barriers to HPV vaccination
- Demographics
  - Age
  - Marital status
  - Race
  - Ages/genders of children
- Past history
  - Vaccine refusal
  - Abnormal Pap smear
  - Genital warts
  - Cervical cancer

Tailoring Variables

- Barriers → top 3 → message library

- Race (pictorial)
- Past vaccination behavior
- Past HPV history
- Daughter’s name
- Number of children

Message Library Examples

- HPV vaccines are not safe
  - “Vaccines and short term health effects”
- Giving the HPV vaccine would encourage my daughter to have sex
  - “Giving the wrong message about sex”
- My daughter is too young for her to need a vaccine against an STD
  - “Too young for the vaccine?”

Example Brochures

Common Concerns About HPV Vaccines

Making decisions about new vaccines like the HPV vaccine can be difficult.

Like any mother, you want to do what is best for your daughter. Based on your responses, it sounds like you have many concerns about the HPV vaccine and are not planning to have your daughter vaccinated against HPV in the future.

This brochure has information that might help you decide whether the HPV vaccine is right for Olivia.

Too Young for the Vaccine?

You told us you think Olivia is too young to receive the HPV vaccine since it prevents a sexually transmitted infection.

Did you know that 20-40% of girls around Olivia's age have had sex? This can happen either by consent and also, sadly, because of rape or abuse.

The risk of HPV infection is high, even with just one partner. For example, after becoming sexually active, the chances of a girl being infected with HPV are:

- More than 1 out of 5 girls infected within 6 months.
- More than 1 out of 3 girls infected within a year.

The best time to protect Olivia against HPV is before she has sex. That is why it is recommended for all 11-12 year old girls and older females who have not already been vaccinated against HPV. Even girls who are sexually active can still reduce their chances of cervical cancer with the HPV vaccine.

Common Concerns About HPV Vaccines

Making decisions about new vaccines like the HPV vaccine can be difficult.

Like any mother, you want to do what is best for your daughter. Based on your responses, it sounds like you have many concerns about the HPV vaccine and are not sure whether to have your daughter vaccinated against HPV in the future.

This brochure has information that might help you decide whether the HPV vaccine is right for melissa.

How Effective is the HPV Vaccine?

You told us you don't think HPV vaccines are very effective at preventing cervical cancer and genital warts.

There has been a lot of confusing information in the media about how well the HPV vaccine works. Here's what we know from scientific studies:

- The HPV vaccine offered at the University of Michigan protects against 4 strains of HPV.
  - *These strains cause most cases of cervical cancer and genital warts.*
- The vaccine is more than 99% effective in preventing cervical pre-cancers and genital warts caused by these 4 strains of HPV.
  - *This vaccine works better than most childhood vaccines.*

The HPV vaccine doesn't protect against ALL strains of HPV. This means that the vaccine cannot prevent ALL cases of cervical cancer. However, getting melissa vaccinated will reduce her risk of cervical cancer by 70%!

Impact of the Intervention

	Control	Intervention	p-value
Mean Change Today	1.79	1.31	0.13
Mean Change 6 months	1.00	1.44	0.27
Mean Change 1 Year	1.09	1.83	0.04

Limitations

- Sample size
  - Would need 134 per arm to detect a ~0.5 change in vaccination intention
- Low proportion of mothers from minority backgrounds
- Unclear how intention correlates with vaccine receipt

VaxFacts MMR

- Web-based intervention for mothers of younger children
- Focused exclusively on MMR Vaccine
- Pilot study (80 mothers)
- Focused on change in vaccination intention

Dempsey et al. *Hum Vacc & Immuno* (2013);9(2).

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Web-based Tailored Intervention

Teen VaxScene Study

- Web or kiosk-based intervention for parents of adolescents
- Targets 4 vaccines (HPV, Flu, MCV4, Tdap)
- Large RCT design (200/arm)
- Assesses vaccination intention AND vaccine receipt over a 2 year time period

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TeenVaxScene Website

TAP FOR MENU

- Home
- General Information
- Flu (Influenza)
- HPV (Human Papillomavirus)
- MCV (Meningococcal)
- dap (Tetanus-diphtheria-pertussis)

What do you think?

- My Family
- Get Help
- Logout

TEEN VAXSCENE

Welcome to Teen VaxScene!

This program is designed to help parents like you learn about the vaccines that are recommended for preteen and teenage children.
Based on your survey answers, Mary Lee is up to date on the following vaccines:

- Tdap (Tetanus-diphtheria-pertussis)

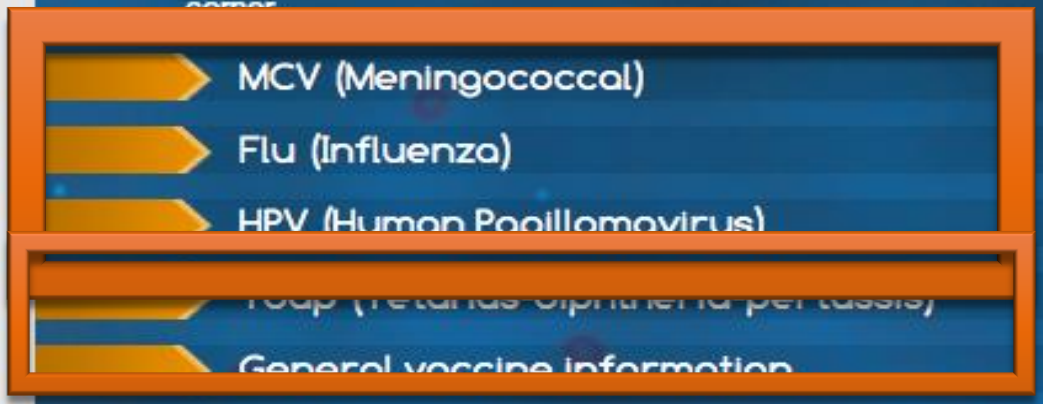
Based on your survey answers, it looks like Mary Lee is not up to date on these vaccines:

- HPV (Human Papillomavirus)
- Flu (Influenza)

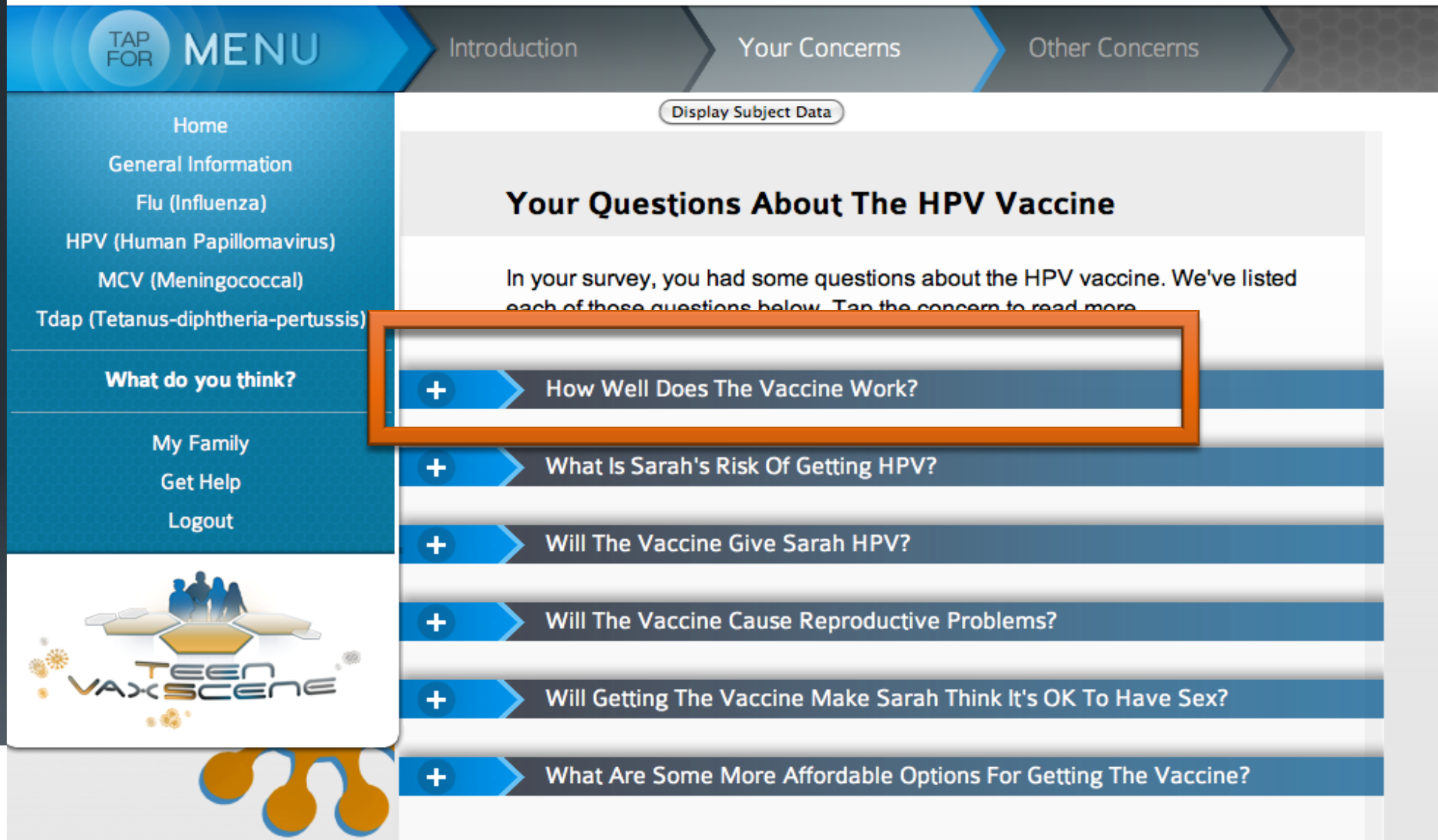
Based on your survey answers, it sounds like you're not sure if Mary Lee is up to date on these vaccines:

- MCV (Meningococcal)

Click on any of the buttons below to get started. If you want to read about a different vaccine later, you can select it from the "Menu" in the upper left corner.



Tailored Material



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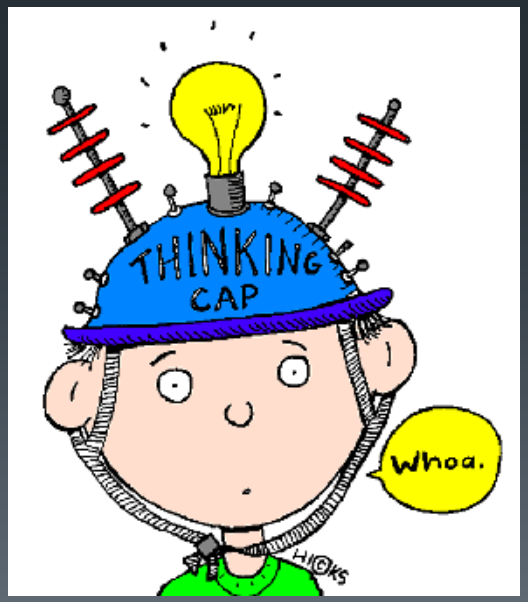

REDIVAC Project

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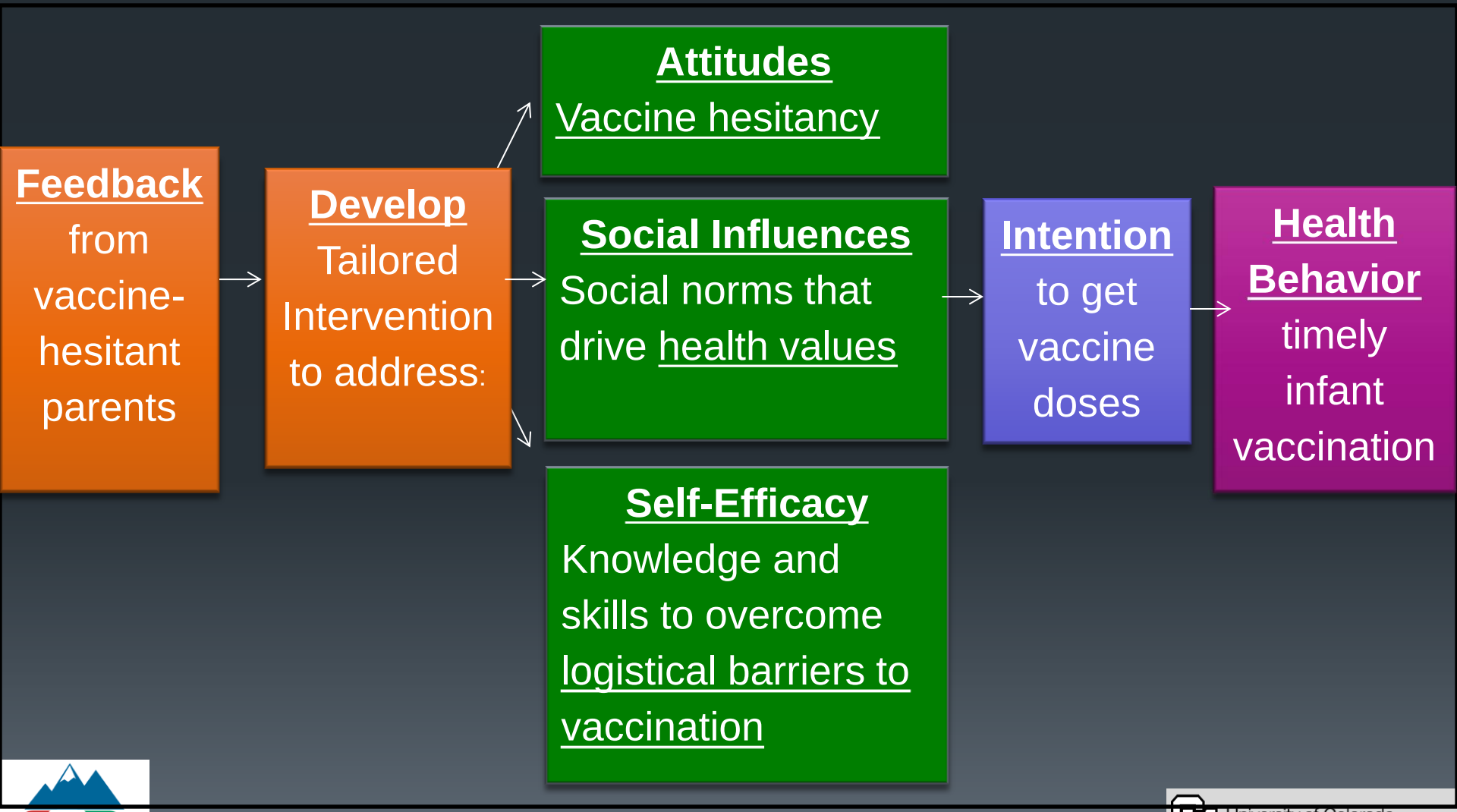
Background

- Data from Kaiser suggests that a high proportion (20%) of parents are vaccine hesitant and follow an alternative schedule
- However, vaccine hesitancy accounts for only about 25% of infant underimmunization in the KPCO population
- Most mothers start making vaccination decisions during *pregnancy*

Glanz J, Wagner, NM, Narwaney, KJ et al. A mixed methods study of parental decision making and parent-provider trust. *Acad Pediatric.* in press

REDIVAC Project – Attitude-Social Influence-Efficacy (ASE) model



Project Focus

- Can tailored messaging delivered during pregnancy and the first year of life be an effective way to mitigate infant under immunization?
- Can tailored messaging effectively address the different “kinds” of barriers to immunization?
  - Vaccine hesitancy/Vaccination attitudes/Health Values
  - Logistical barriers
  - Knowledge barriers → self efficacy for vaccination

Study Design

Enrolled at 20+ weeks

Gets first intervention

Randomized by website to tailored versus untailored information

Each intervention time has optional physician discussion portal

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Outcomes to Be Assessed

- Primary Outcome – days under-immunized
- Secondary Outcomes:
  - Changes over time in vaccination attitudes/intention
  - Changes in time of how maternal values related to immunization correlate with the recommended schedule
  - Changes in self efficacy for getting recommended vaccines

Outcomes to Be Assessed

- Secondary Outcomes cont'd:
  - Paradata on website utilization
  - Data on chat room utilization
  - Vaccination timing between doses

Current Status

- Competitive score
- Will know more in January

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Summary

- Parental vaccine hesitancy appears to be a growing public health problem
- Vaccine Hesitant Parents have heterogeneous attitudes – there is no “one size fits all” intervention
- Tailored messaging may be one effective method for helping parents make better choices about recommended vaccines

Future Directions

- PCORI tailored-messaging project
  - CAB
  - Focus groups
  - Decision Aid
- CDC physician recommendation project
- AAAS Meeting

THANKS!

amanda.dempsey@ucdenver.edu

"Mr. Osborne, may I be excused? My brain is full."