

Using social media engagement to address parents' concerns about childhood vaccines

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Vaccine Hesitancy Studies at Kaiser Permanente Colorado

Kaiser Permanente Colorado— ideal setting to evaluate vaccine hesitancy

- Integrated health care model, managed care organization
- Use an electronic health record to capture administrative and clinical data

Colorado Vaccine Social Media (VSM) Study—3 phases

1. Development
2. Randomized controlled trial
3. Comparison of vaccine content between VSM and public websites

Phase 1: Development of an interactive social media tool

Article



Development of an Interactive Social Media Tool for Parents With Concerns About Vaccines

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The SAGE logo, featuring a stylized 'S' inside a circle followed by the word 'SAGE' in a bold, sans-serif font.

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Phase 1: Development of an interactive social media tool

1. Conduct exploratory research using:
 - Survey
 - Focus groups
 - Usability testing
2. Incorporate results into design of tool:
 - Timing
 - Balance of information
 - Trusted, safe engagement
3. Revisions to content, design, functionality and “look and feel”

Site Expectations My Profile | Log out

Here for your child's health, day and night.



Home All About Vaccines Your Vaccine Visit Connect FAQs About Us Contact Us



Do you know what to expect at your visit?

Your Vaccine Visit

<p>Your Vaccine Visit</p> <ul style="list-style-type: none"> Your Vaccine Visit Vaccination Schedule Alternative Vaccination Schedules 	<p>Vaccines & Diseases they Prevent</p> <ul style="list-style-type: none"> Vaccines and Vaccine Preventable Diseases Vaccine Schedule 	<p>Vaccine Safety</p> <ul style="list-style-type: none"> Vaccine Safety Vaccine Ingredients FAQs
<p>Maternal Vaccination</p> <ul style="list-style-type: none"> Maternal Immunizations FAQs 	<p>School & Child Care Policies</p> <ul style="list-style-type: none"> Colorado School & Childcare Requirements Vaccine History 	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Ask a Question</p> </div> <div style="text-align: center;">  <p>Talk to Parents</p> </div> </div>

Latest From The Blog

 <p>Back to School: CO Vaccination Rates July 28th, 2016</p> <p>As summer winds down in CO and families get ready to send their child(ren) [...]</p>	 <p>New Colorado Vaccine Exemption Rule Took Effect 7/1/16 July 12th, 2016</p> <p>In April 2014, the Colorado House and Senate passed House Bill 1288 which changed [...]</p>	 <p>You Asked Us: How Effective is Rotavirus Vaccine? June 21st, 2016</p> <p>Q: Hi, I had a question about the rotavirus vaccine. In the description, it [...]</p>
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VSM Intervention:
vaccineresourcecenter.com

Users needed login and password to access website (not publicly available)

Interactive social media components:

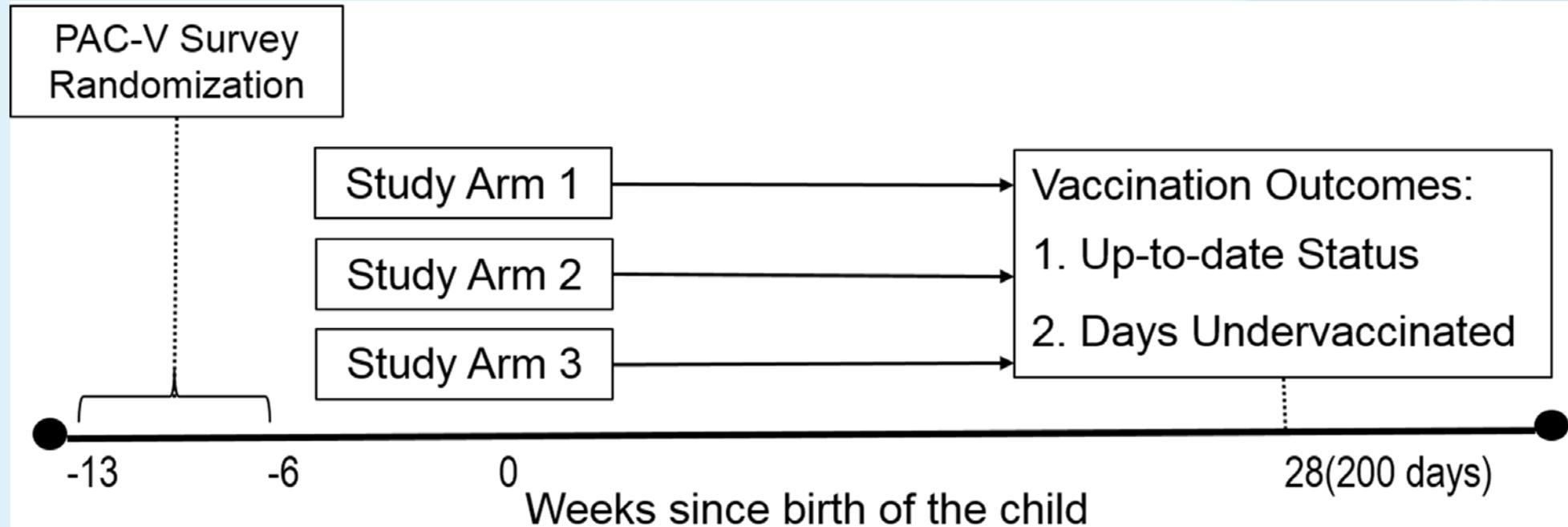
- Ask the experts
- Discussion forum with other parents
- Blogs
- Podcasts (audio)
- Online chat sessions

Phase 2: Colorado Vaccine Social Media (VSM) Study: a randomized controlled trial

Conducted at Kaiser Permanente Colorado: September 2013 through July 2016

- Parents recruited
 - During pregnancy (primary focus)
 - With children ≤ 9 months old (secondary)
- Screened for vaccine hesitancy
 - Parent Attitudes and Childhood Vaccines (PACV) survey
 - Grouped into 2 categories of hesitancy (yes/no)
- Three study arms:
 - Website, vaccine information and interactive social media (VSM)
 - Website, vaccine information only (VI)
 - Usual care (UC)

Phase 2: Study Design



Study Arm 1: Vaccine Social Media + Usual Care

Study Arm 2: Vaccine Information + Usual Care

Study Arm 3: Usual Care

PAC-V: Parent Attitudes and Childhood Vaccines

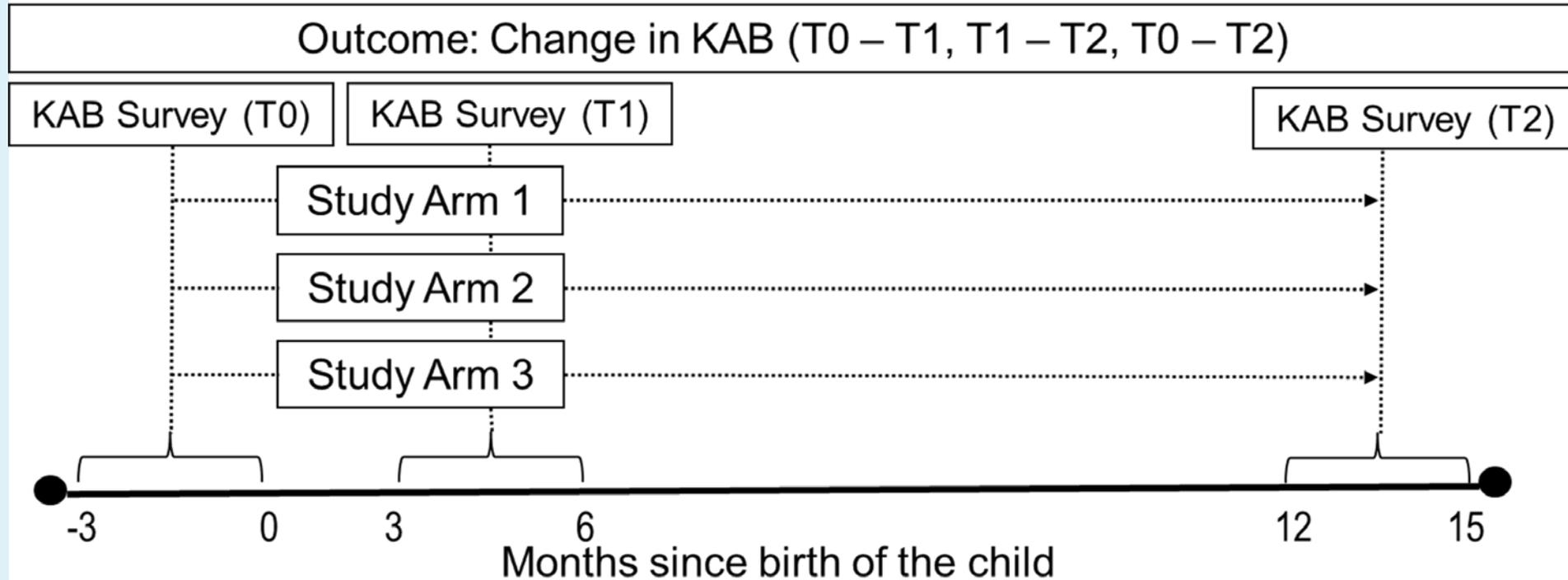
Vaccination Status

Study Arm	n	Proportion Up-to-Date (%)
VSM	442	92.5
VI	297	91.3
Usual Care	149	86.6

Comparisons	Odds Ratio for Up-to-Date	P
VSM versus Usual Care	1.92 (1.07-3.47)	.03
VI versus Usual Care	1.62 (0.87-3.00)	.13
VSM versus VI	1.19 (0.70-2.03)	.52

Glanz, J.M., et al. 2017. Web-based social media intervention to increase vaccine acceptance: a randomized controlled trial. *Pediatrics*, 140(6), p.e20171117.

Phase 2: Survey Design



Study Arm 1: Vaccine Social Media + Usual Care

Study Arm 2: Vaccine Information + Usual Care

Study Arm 3: Usual Care

KAB: Knowledge, Attitudes, and Beliefs

Vaccine Knowledge, Attitudes and Beliefs

	VSM vs. usual care	VI vs. usual care	VSM vs. VI
Benefits of vaccination			
Baseline to T1	0.23 (0.05, 0.40)	0.22 (0.04, 0.40)	0.01 (-0.14, 0.16)
Baseline to T2	0.12 (-0.07, 0.31)	0.09 (-0.11, 0.29)	0.03 (-0.13, 0.19)
Risks of vaccination			
Baseline to T1	-0.19 (-0.39, 0.002)	0.18 (-0.39, 0.02)	-0.01 (-0.18, 0.16)
Baseline to T2	-0.37 (-0.60, -0.14)	-0.31 (-0.55, -0.07)	-0.06 (-0.26, 0.14)
Perceived self-efficacy			
Baseline to T1	-0.12 (-0.40, 0.16)	0.01 (-0.28, 0.30)	-0.13 (-0.38, 0.12)
Baseline to T2	0.29 (-0.03, 0.60)	0.37 (0.04, 0.69)	-0.08 (-0.35, 0.19)

Phase 3: Tone and Content of the Social Interaction on Vaccine Websites

Vaccine Information From Health Care Providers and Social Media



Social Media Vaccine Websites: A Comparative Analysis of Public and Moderated Websites

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Phase 3: Methods

Step 1: Archive all interactive content from VSM

Step 2: Content from publicly available parenting and vaccine-focused blogs and discussion boards using key words on search engines

Step 3: Duplicates and ineligible sites were removed

Step 4: Interaction was randomly selected and archived from each eligible site

Step 5: Qualitative coding of vaccine tone, stance and accuracy of information as a study team

Step 6: Inter-rater reliability on sample with naïve coder

Social Interaction on Websites

Publicly available parenting and vaccine websites

- more contentious
- negative stance towards vaccines
- inaccurate and uncorrected information

The expert moderated website

- more civil tone
- minimal posting of inaccurate information
- very little participant-to-participant interaction

Tone

VSM Website

(Post 1, study participant): “My baby is 9 mo. old and I have a few questions about the flu vaccine. First, why does he need two? Can he just get one?”

(Reply to post 1, study team member): To answer your first question, children aged 6 months to 8 years old need two shots if it's the first time they are getting the flu vaccine...”

PUBLIC Website

(Post 2): “You are an idiot. People should have their kids get vaccinated.

(Reply to post 2): ...YOUR the (uneducated) idiot. Sorry, not sorry. I'm guessing you don't have children because you would have done your research just like most parents...

(Reply to reply of post 2): ...I do have a kid and you are still an idiot. You clearly are not doing research correctly.”

Accuracy of Information

VSM Website

(Post 7, study participant): “Babies are exposed to so many different things but they do not normally receive them directly into their muscles and blood stream.

(Reply to post 7, study team member): Vaccines are injected into muscle (or beneath the skin) but not into the blood stream...”

PUBLIC Website

(Post 6): “I am curious what you all do to support LO [Little One] before and after vaccines. My 7 week old has first vaccines in two weeks.

(Reply to post 6): Look into a charcoal poultice. I haven't done it...Charcoal draws out toxins, if you put a poultice over the kidneys it can draw out bad stuff. If the baby were older I'd give it orally...”

Conclusions and Next Steps

Parents concerns about vaccines can lead to vaccine hesitancy

- Allaying parents' concerns during pregnancy is important to achieving immunized children
- Tools that measure parents' concerns can assist provider communication and interventions to reduce hesitancy

Expert moderated social media is a promising step towards alleviating parents' concerns

Further research in vaccine hesitancy is needed

- to evaluate the role of social media in a rapidly changing technology environment
- to evaluate effective communication messaging
- to address the public's concerns

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