

iVACCINATE

BEHAVIORAL INSIGHTS FOR VACCINATION



Yale Institute for Global Health



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WELCOME

On behalf of the Yale Institute for Global Health and the Behavioral Interventions Team, I would like to welcome you all to the **iVaccinate Booklet**.

The iVaccinate Booklet provides strategies and tools to implement behavioral interventions to improve vaccine uptake. The booklet can be consulted to address specific barriers or challenges, or it can be used as a guide to scale up proven interventions for a larger population in any setting.

We look forward to seeing you apply these interventions in your own settings and contexts and learning from your experiences. Our team has created a substantial collection of resources to serve as a guide to you as you utilize this booklet.

This work and booklet was made possible through a grant from the Bill & Melinda Gates Foundation.

Please feel free to reach out to our team with any questions!

Here's to Vaccination Nations!



Saad B. Omer
Director
Yale Institute for Global Health

This booklet will highlight the findings from the behavioral interventions identified in a review by Yale University and present the audience with insights, tools and practical steps to promoting vaccine knowledge, motivation, intent and uptake.

INTRODUCTION

Information about behavioral interventions

Vaccines are a fundamental piece to control the spread of infectious diseases. However, the underutilization of vaccines globally is concerning. There are multiple determinants of under vaccination including inadequate supply of vaccines, and lack of awareness and education about vaccination. While some of the barriers to vaccine uptake are structural, others are related to individual behavior with human behavior at the center of vaccine coverage. Behavioral science, which uses an interdisciplinary approach to systematically study human behavior, offers promise in designing interventions that use the behavioral and social determinants of vaccination to increase vaccine uptake. While behavioral science as a field has advanced significantly in the past decade, behavioral insights (BI) have been applied unevenly to immunization efforts.

We have completed a systematic review and meta-analysis of different behavioral interventions used to improve vaccine uptake. During the review process, we started with over **57,000** articles published between 1990 and March 2020. The search was narrowed with help from a medical librarian to over **15,000** articles that were included for title and abstract review. We reviewed full text of **872** studies and included **613** in our systematic review and meta-analysis. These studies were focused on populations ranging from healthcare workers to children to adults with pre-existing conditions.

Intended Audience

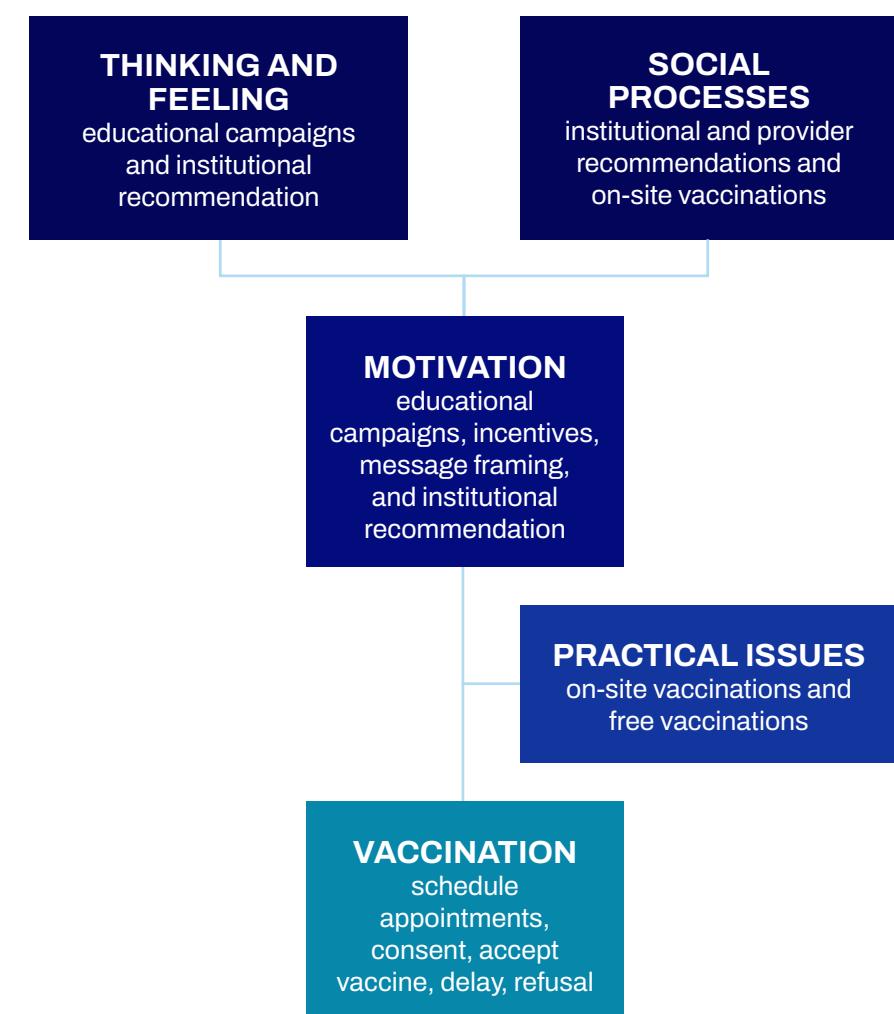
This booklet is intended to be used as a tool for improving vaccine uptake in various communities in high- and low-income countries. The target users include communication and behavioral liaisons and program managers in regional, national, or sub-national/local vaccination programs, who are responsible for coordinating interventions for vaccine uptake. Other users can include those interested in learning more about behavioral interventions and how they relate to vaccine uptakes.

Preferred Citation

Yale Institute for Global Health. iVaccinate: Behavioral Insights for Vaccination. New Haven, CT, USA: Yale University; 2022

In this booklet, we summarize the findings of our review, present case studies, and effective next steps to roll out vaccine interventions in your community. We will further describe the behavioral interventions and domains in the following pages.

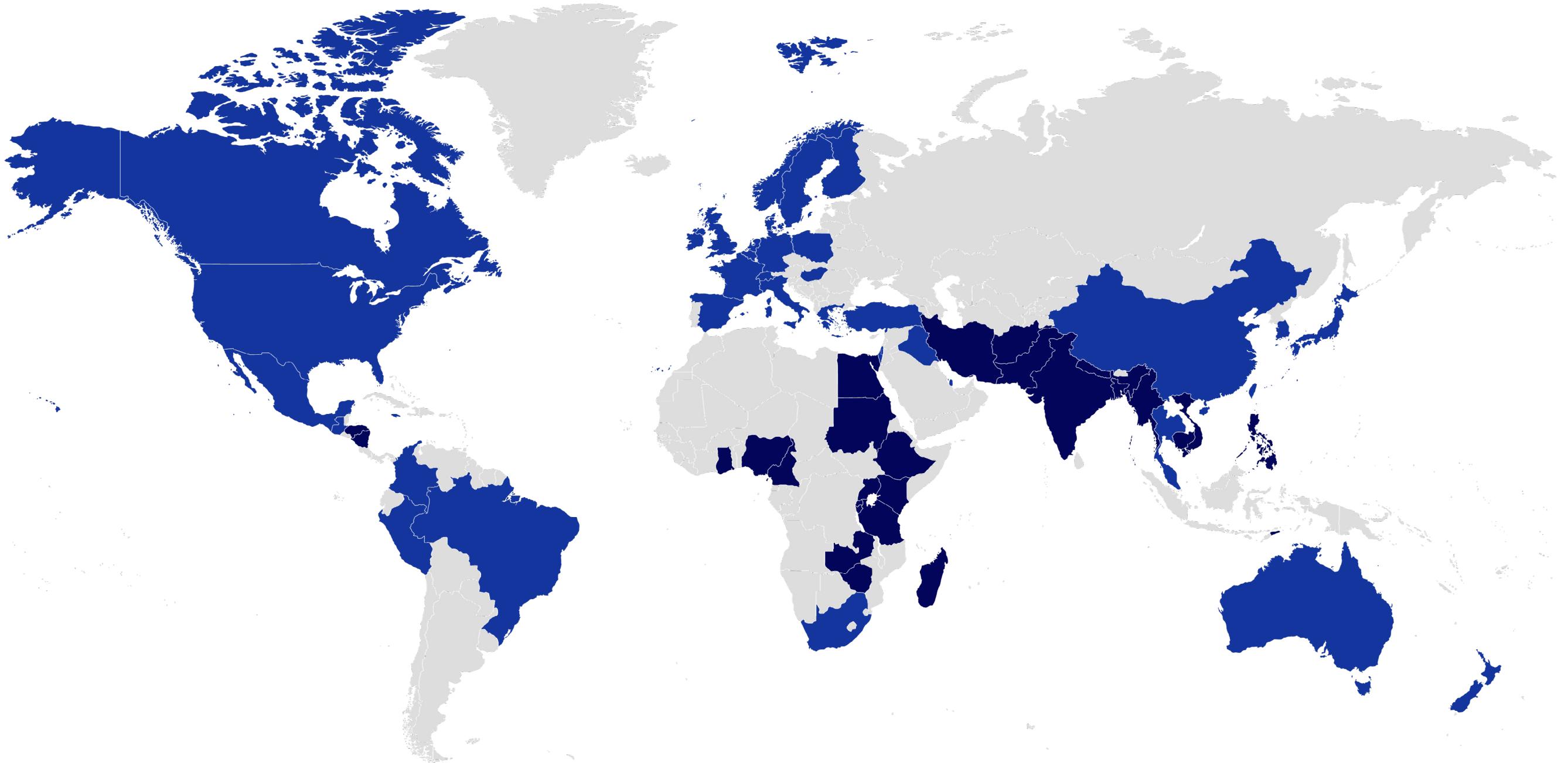
Behavioral interventions in the review are categorized into nine domains corresponding to The World Health Organization's (WHO) Behavioral and Social Drivers (BeSD) Framework.



GEOGRAPHICAL DISTRIBUTION

LOWER & MIDDLE INCOME COUNTRIES (LMIC) – 28

Afghanistan | Bangladesh | Burundi | Cambodia | Cameroon | Egypt | Ethiopia
Ghana | Honduras | India | Iran | Kenya | Laos | Madagascar | Myanmar | Nepal
Nicaragua | Nigeria | Pakistan | Philippines | Rwanda | Sudan | Tanzania
Timor-Leste | Uganda | Vietnam | Zambia | Zimbabwe



HIGHER INCOME COUNTRIES (HIC) – 38

Australia | Belgium | Brazil | Canada | China | Colombia | Denmark | Finland
France | Germany | Greece | Guatemala | Hungary | Iraq | Ireland | Israel | Italy
Jamaica | Japan | Mexico | The Netherlands | New Zealand | Norway | Peru
Poland | Qatar | Scotland | Singapore | South Africa | South Korea | Spain
Sweden | Switzerland | Taiwan | Thailand | Turkey | United Kingdom | USA

HIGHER INCOME COUNTRIES (HIC) 

LOWER & MIDDLE INCOME COUNTRIES (LMIC) 

DESCRIPTION OF DOMAINS AND POPULATION

Studies that evaluated multiple domains, we classified them under each domain that was addressed. In the following pages we have displayed our findings for each domain.

Quality of evidence was assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. The effect sizes provided are summary odds ratios (OR) and 95% confidence intervals (CI) from a random effect meta-analysis; overall and stratified by HICs and LMICs.

EDUCATIONAL CAMPAIGNS Providing education on vaccination, disease, and how vaccine work	REMINDER & RECALL Reminders for vaccination	INCENTIVES Offering financial incentives for vaccination
MESSAGE FRAMING Gain vs loss framing of the vaccine	ON-SITE VACCINATION Providing vaccine at workplace or places of worship	FREE VACCINATION Providing vaccination free of cost
PROVIDER RECOMMENDATION Recommendation by doctor/nurse	INSTITUTIONAL RECOMMENDATION Recommendation made by the institution that person works at especially for healthcare providers	VACCINE CHAMPION Institutional appointed champion that encouraged vaccination



DOMAINS



EDUCATIONAL CAMPAIGN

315 NUMBER OF STUDIES

273
STUDIES
IN HIC

42
STUDIES
IN LMIC

HIGH INCOME COUNTRIES

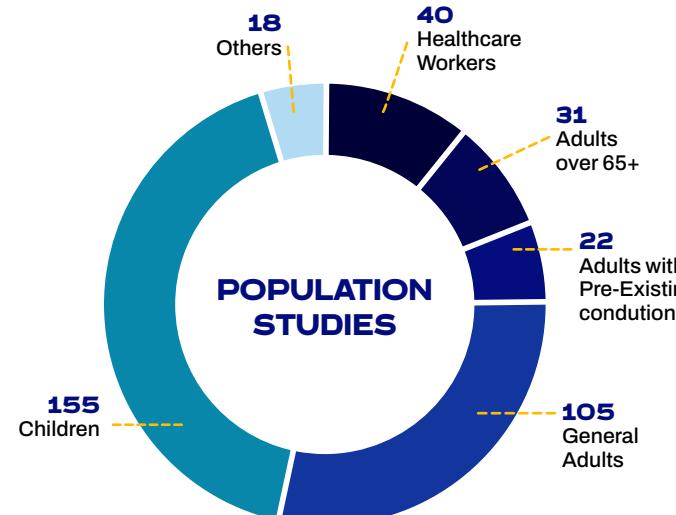
Australia, Belgium, Brazil, Canada, China, England, France, Germany, Greece, Hungary, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Mexico, New Zealand, Peru, Poland, Qatar, Scotland, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, The Netherlands, Turkey, United Kingdom, USA.

LOWER MIDDLE INCOME COUNTRIES

Bangladesh, Cambodia, Cameroon, Egypt, Ethiopia, Madagascar, Tanzania, Uganda, Zambia, Zimbabwe, India, Iran, Kenya, Laos, Nepal, Nigeria, Pakistan, Philippines, Myanmar, Vietnam.

TECHNIQUES USED FOR EDUCATIONAL CAMPAIGN

Handouts
Classes/Sessions
Workshops
Lectures
Online Training



EXPERT INSIGHT

One possibility is to have educational interventions meant to affect risk perceptions or persuasion interventions meant to change people's confidence in vaccines that leverage social networks and leverage social space.

EFFECT SIZE FOR VACCINE UPTAKE

GRADE
High

ODDS RATIO [CI]
2.3 (2.0-2.5)

HIC - OR [CI]
2.3 (2.0-2.6)

LMIC - OR [CI]
2.1 (1.7-2.7)

ILLUSTRATIVE CASE STUDIES

1 A randomized controlled trial in Pakistan implemented three structured discussions with (population) the first discussion focused on vaccine uptake, the second focused on cost and benefits of childhood vaccination and the last discussion was on local action plans. A baseline survey of random census areas was selected, then assigned intervention and control clusters. The intervention clusters separated their discussions by gender and the groups were encouraged to spread this dialogue amongst the community. Both intervention and cluster groups went through the district-wide health promotion program, and they all received a follow-up survey after one year to assess the uptake of DPT and measles vaccinations in the community. (Andersson et al., 2009)

2 A school-based randomized controlled trial in Sweden placed students in intervention and control groups where the intervention group had school nurses deliver one 30 min face-to-face structured information about HPV cancer risks, prevention, and HPV vaccination. The students in both intervention and control groups completed questionnaires at the base level as well as three months after the intervention period. (Grandahl et al., 2016)

NEXT STEPS

- 1 There is enough evidence that educational campaigns are effective in both high- and low-income countries, allowing them to be scaled up.
- 2 Determine and test for the most appropriate educational outlets/campaigns for the population or community.
- 3 Establish a sustainable model for educational campaigns associated with vaccine promotion.
- 4 Periodically reassess and update as needed.

REMINDER & RECALL

155 NUMBER OF STUDIES

136 STUDIES IN HIC

19 STUDIES IN LMIC

HIGH INCOME COUNTRIES

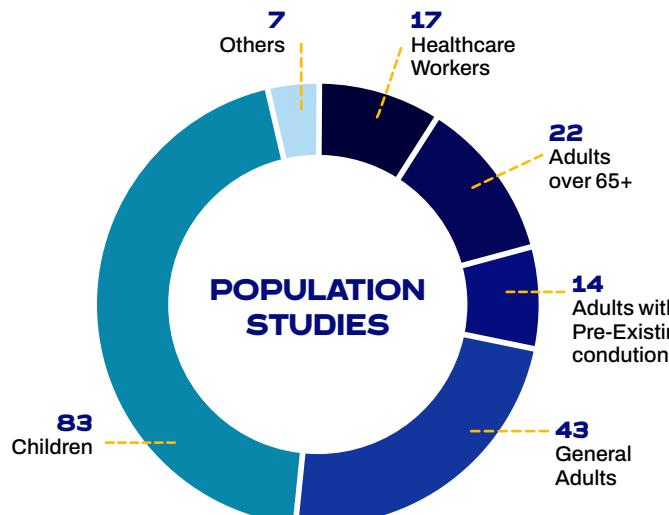
Australia, Canada, China, England, Finland, France, Germany, Guatemala, Israel, Italy, Japan, New Zealand, South Korea, Spain, United Kingdom, USA.

LOWER MIDDLE INCOME COUNTRIES

Bangladesh, Ethiopia, India, Kenya, Nigeria, Pakistan, Tanzania, Uganda, Zimbabwe

TECHNIQUES USED FOR REMINDER & RECALL

Reminder services/apps
Letters
Text messages
Telephone calls
Appointment cards



EXPERT INSIGHT

Often in LMICs, who's due is really known only by the parent because they have the vaccination card. There may be ways of setting up those vaccination cards to do some kind of a parent reminder/recall that triggers action by the parent. That's what I mean by trying to locally adapt some of these ideas. You really have to get into the actual systems and set up of vaccination in each country to understand what leverage we can use.

EFFECT SIZE FOR VACCINE UPTAKE

GRADE

High

ODDS RATIO [CI]

1.7 (1.5-1.9)

HIC - OR [CI]

1.7 (1.5-1.9)

LMIC - OR [CI]

2.0 (1.5-2.7)

ILLUSTRATIVE CASE STUDIES

1 This randomized controlled trial from Kenya utilized cell phones (a tool available to more than 80% of their population) to provide reminders to families to get immunized. The villages were assigned into one of four groups: control, SMS reminders for pentavalent and measles immunizations only, SMS plus a 75 Kenya Shilling (KES) incentive, and SMS plus 200 KES. (Gibson, et al., 2017)

2 This randomized controlled trial from Pakistan focused on utilizing both reminder and recall (with a reminder card) and education practices for the mothers to create a significant effect on vaccine uptake among children. Mother-child dyads were enrolled at DTP1 vaccination stage and randomly placed into four study groups: redesigned card, center-based education, combined intervention, and standard care. Each child received follow-ups for 90 days to record the dates of the DTP2 and DTP3 vaccinations. The study outcome was the completion of the DTP3 vaccination in each study group. (Usman, et al., 2011)

NEXT STEPS

- 1 There is enough evidence that reminder and recall interventions are effective in both high- and low-income countries, allowing them to be scaled up.
- 2 Determine preferred methods of contact for medical attention and collect contact data.
- 3 Establish sustainable systems which distribute reminders to the community for vaccines based on local context (phone calls, texts, emails, mailing services, etc).
- 4 Periodically reassess methods of contact and distribution and update information as needed.

INCENTIVES

102 NUMBER OF STUDIES

80
STUDIES
IN HIC

22
STUDIES
IN LMIC

HIGH INCOME COUNTRIES

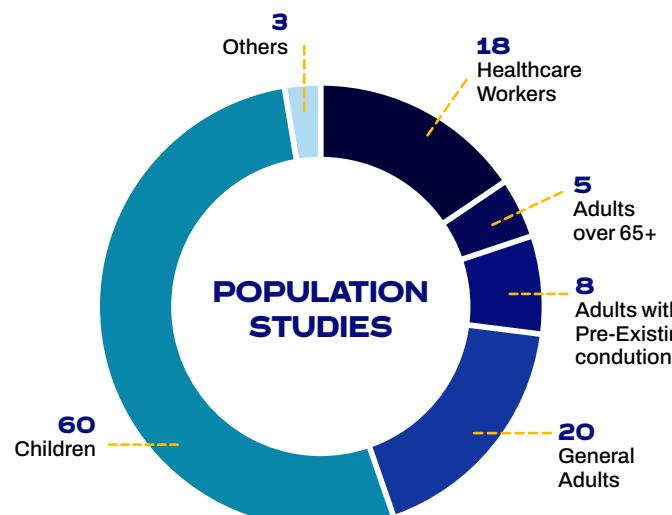
Australia, Belgium, Canada, France, Germany, Japan, The Netherlands, Qatar, Singapore, Spain, United Kingdom, USA.

LOWER MIDDLE INCOME COUNTRIES

Afghanistan, Bangladesh, Burundi, Honduras, India, Kenya, Nicaragua, Nigeria, Pakistan, Phillipines, Rwanda, Tanzania, Zambia, Zimbabwe.

TECHNIQUES USED FOR INCENTIVES

Financial
Food Vouchers/Packages
Transportation
In-Kind Incentives



EXPERT INSIGHT

An intervention that employs some kind of behavioral science above and beyond the classic economic theory interventions of providing information, or providing incentives, or regulating.

EFFECT SIZE FOR VACCINE UPTAKE

GRADE

High

ODDS RATIO [CI]

2.3 (1.9-2.8)

HIC - OR [CI]

2.4 (2.0-3.0)

LMIC - OR [CI]

1.8 (1.0-3.2)

ILLUSTRATIVE CASE STUDIES

1 A study from rural Nigeria randomized women to receive cash incentives if they completed their tetanus toxoid vaccination. The study authors randomized the amount of cash incentives to be provided to see if the providing larger cash incentives increases the uptake of tetanus toxoid vaccination among women of childbearing age. (Sato et al., 2020)

2 A randomized controlled trial in Sydney, Australia randomly allocated participants in two inner-city health services to receive \$30 Australian Dollars following proof of vaccine doses two and three or they received standard care. The primary outcome observed was completion of vaccine completion. (Topp et al., 2013)

NEXT STEPS

- 1 Incentive interventions are effective in both high income and low income countries and can be scaled up.
- 2 Determine the appropriate amount and method of delivery (ex. cash transfers, transportation vouchers or food baskets).
- 3 Establish a sustainable flow of resources aligned with vaccine practices (be mindful of gaps and incentive practices).
- 4 Periodically reassess the amount and methods of delivery and update information as needed.

MESSAGE FRAMING

99 **NUMBER OF STUDIES**

94
STUDIES
IN HIC

5
STUDIES
IN LMIC

HIGH INCOME COUNTRIES

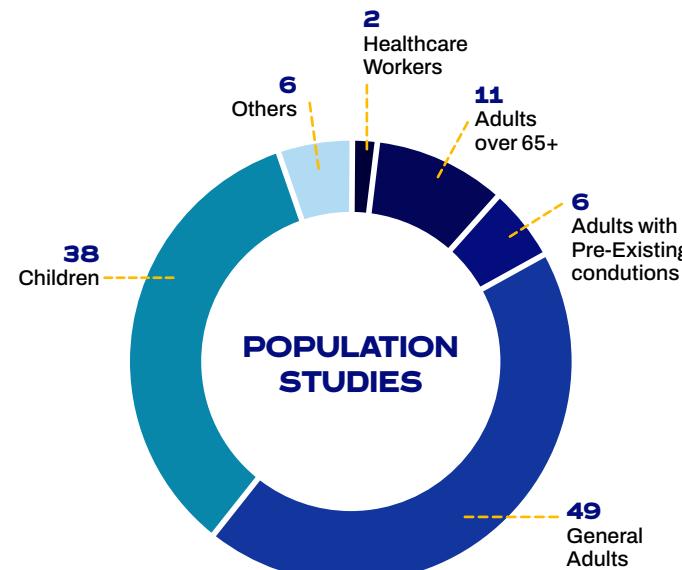
Australia, Brazil, Canada, China, France, Germany, Israel, Italy, Japan, Mexico, The Netherlands, New Zealand, Norway, South Africa, South Korea, Sweden, Taiwan, Turkey, United Kingdom, USA.

LOWER MIDDLE INCOME COUNTRIES

India, Kenya, Vietnam.

TECHNIQUES USED FOR MESSAGE FRAMING

Persuasive Messages
Gain vs. Loss Frame
Assertive Messages
Self Affirmations



EXPERT INSIGHT

You have to start thinking about more like framing effects, mental models – how do we understand what's going on in a parent's mind, about how vaccines work, or how they might be dangerous, or risky, or whether the disease is going to be dangerous, or risky.

EFFECT SIZE FOR VACCINE UPTAKE

GRADE

High

ODDS RATIO [CI]

1.9 (1.5-2.4)

HIC – OR [CI]

1.9 (1.5-2.4)

LMIC – OR [CI]

N/A

ILLUSTRATIVE CASE STUDIES

1 In rural India, a randomized controlled trial found that providing health information messages targeted to mothers with children who are not vaccinated/partially vaccinated. The intervention provided mothers face-to-face information on the benefits of the tetanus vaccine. Mothers were randomly assigned to 1 of 3 study arms: the first treatment group received information framed as a gain, the second treatment group received information in a loss frame, and the third arm served as a control group, with no information given to the mother. Surveys were conducted at baseline and after the intervention and the analysis was by intention to treat. (Powell-Jackson et al., 2018)

2 This randomized controlled trial in Taiwan evaluated the use of online flu-vaccination promotional banners with either a gain or loss message framing focus on college campuses. The study team used a 2 x 3 between-subjects factorial design to observe the effects of message framing (gain vs loss) and color configuration (text color on a different colored background) on college students' perceptions of the persuasiveness of flu-vaccination promotional banners. Each participant completed a four-item questionnaire. (Chien, 2013)

NEXT STEPS

- 1 Evidence of message framing interventions come from high income countries and can be scaled up in these locations. There is a lack of evidence in low-income countries.
- 2 Conduct pilot studies to determine effectiveness and feasibility (applicable for locations that are new to message framing interventions).
- 3 Determine the most appropriate message framing based on local contexts (gain vs. loss frame), appropriate messenger (ex. health care provider, community leader, or celebrity) and medium of distribution (ex. text, tv, email, etc.).
- 4 Establish a system to scale up based on the pilot study findings.

ON-SITE VACCINATION

71 NUMBER OF STUDIES

57 STUDIES IN HIC

14 STUDIES IN LMIC

HIGH INCOME COUNTRIES

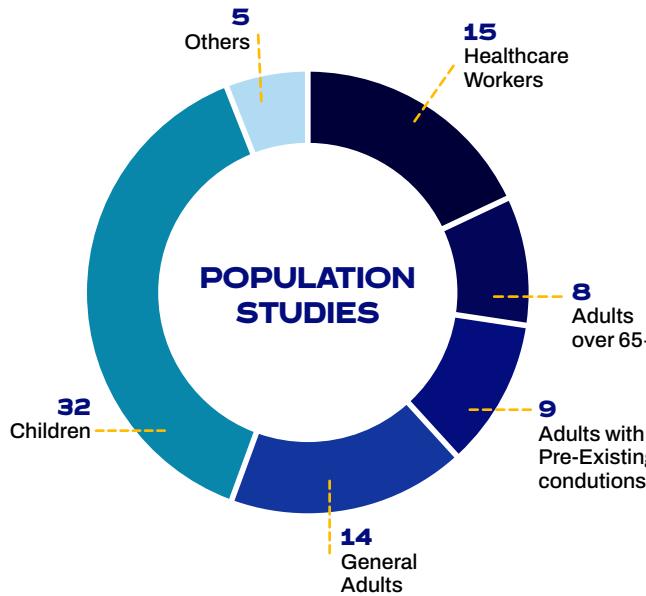
Brazil, Canada, China, France, Germany, Italy, Japan, The Netherlands, Qatar, South Africa, South Korea, Taiwan, Turkey, USA.

LOWER MIDDLE INCOME COUNTRIES

Bangladesh, Egypt, Ghana, India, Nepal, Nigeria, Pakistan, Peru, Rwanda, Uganda, Vietnam.

TECHNIQUES USED FOR ON-SITE VACCINATION

Schools
Churches
Work Places
Hospitals
Local Clinics
Community Centers



EXPERT INSIGHT

“
My hunch is that there's more to that; that there's something psychological behind it about communicating that the vaccines are a widespread thing that's in demand, so the pharmacies are offering it because lots of other people are doing it, so you want to do it. It's also more of an attentional call.

EFFECT SIZE FOR VACCINE UPTAKE

GRADE

High

ODDS RATIO [CI]

2.9 (2.3-3.7)

HIC – OR [CI]

3.0 (2.3-3.8)

LMIC – OR [CI]

2.4 (1.0-5.8)

ILLUSTRATIVE CASE STUDIES

1 A teaching hospital in Nigeria implemented a vaccine program where free vaccinations were provided on-site to the hospital staff. Participants were to receive the hepatitis B vaccine by the hospital management and to all interested employees of the teaching hospital for the vaccination program on site. (Fatusi *et al.*, 2000)

2 In California, USA, a randomized controlled trial was done in faith-based institutions (churches) in African American and Latinx communities. The intervention used the provision of adult vaccinations on-site at the churches. Participants were eligible if they had not been vaccinated with the pneumococcal vaccine in the past, did not receive influenza vaccine annually, were 65 years of age or older, and had a clinical recommendation for the vaccination. There were baseline and follow-up surveys conducted on the participants. (Daniels *et al.*, 2007)

NEXT STEPS

- 1 There is enough evidence that on-site vaccination interventions are effective in both high income and low income countries and can be scaled up.
- 2 Identify geographical locations for establishing vaccination clinics, using GIS systems or surveys (do not limit yourself to health care facilities).
- 3 Determine the appropriate timings for vaccination spots
- 4 Establish rapport with local community advocates and leaders to promote vaccination sites.
- 5 Periodically reassess locations and timings and update information as needed.

FREE VACCINATION

63 NUMBER OF STUDIES

54 STUDIES IN HIC

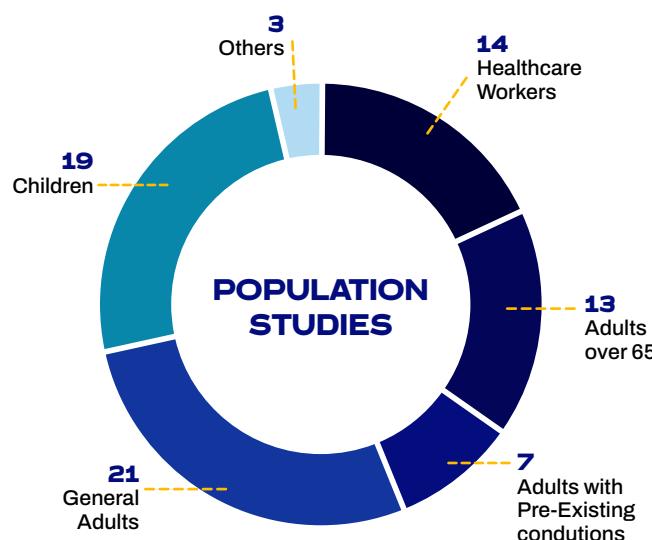
9 STUDIES IN LMIC

HIGH INCOME COUNTRIES

Australia, Belgium, Canada, Colombia, Denmark, Finland, France, Italy, Japan, The Netherlands, Singapore, South Africa, Sweden, Taiwan, Turkey, United Kingdom, USA.

LOWER MIDDLE INCOME COUNTRIES

Egypt, Nigeria, Pakistan, Rwanda, Zambia.



EXPERT INSIGHT

“
People are really concerned about money. Then I'm talking about, especially in a developing country setting which is what I know best. One generalized insight that comes is that charging for things are often not worth it, especially if there's a fixed cost of delivery. You can lower the cost or the per person delivery just by providing it for free. Lower how much it cost you to deliver it. Price is an important barrier.

EFFECT SIZE FOR VACCINE UPTAKE

GRADE
High

ODDS RATIO [CI]
2.6 (2.0-3.2)

HIC – OR [CI]
2.8 (2.1-3.5)

LMIC – OR [CI]
1.5 (0.7-3.1)

ILLUSTRATIVE CASE STUDIES

1 In Colombia, a health department provided a free multi-dose vaccination program for Hepatitis B among the female and transexual sex working community. The vaccines were given over two days each month at two locations. They were also offered daily in a local hospital for those who could not attend the vaccination days. Participants in the vaccination campaign were recruited through peer network contacts and chain referrals. Contact details of those who attended one of the two vaccination days in December were listed, and their compliance with the following doses were tracked through a comprehensive database. (Daughtridge et al., 2014)

2 A randomized controlled trial in France evaluated the impact of free on-site Hepatitis B vaccinations. Free and anonymous HIV and hepatitis B/C testing centers (FATC) were randomly placed into three groups receiving a different intervention: training on HBV epidemiology, risk factors and vaccination (Group A), free vaccination in the FATC (Group B), both interventions (Group C). (Launay et al., 2014)

NEXT STEPS

- 1 There is enough evidence that free vaccination interventions are effective in both high- and low- income countries and can be scaled up.
- 2 Determine appropriate locations for vaccine clinics (see on-site vaccinations)
- 3 Establish a sustainable system for offering free vaccinations (ex. work with local governments, insurance, etc.).

PROVIDER RECOMMENDATION

55 NUMBER OF STUDIES

51 STUDIES IN HIC

4 STUDIES IN LMIC

HIGH INCOME COUNTRIES

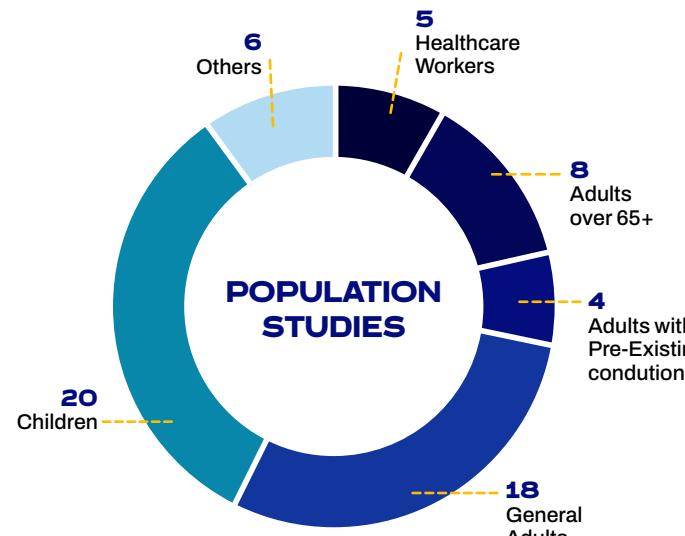
Australia, Belgium, Brazil, Canada, Germany, Israel, Italy, The Netherlands, Spain, United Kingdom, USA.

LOWER MIDDLE INCOME COUNTRIES

India, Nigeria, Sudan.

TECHNIQUES USED FOR PROVIDER RECOMMENDATION

Standing Orders
Nurse Practitioners
General/Family Practitioners
Community Clinic Staff
Immunization Nurses
Pharmacists



EXPERT INSIGHT

“One of the things that I'm seeing is that presumptive language can be really, really effective. Especially in the vaccination space, pro social messaging seems to be especially effective. There's work by Lee et al. showing that that's especially effective for vaccinations.

EFFECT SIZE FOR VACCINE UPTAKE

GRADE

High

ODDS RATIO [CI]

3.4 (2.5-4.6)

HIC – OR [CI]

3.6 (2.6-5.2)

LMIC – OR [CI]

2.4 (1.2-4.6)

ILLUSTRATIVE CASE STUDIES

1 In a study done in India, an intervention was implemented to promote polio vaccination among resistant families. A team identified households who refused to give polio drops to the children. These families were later visited by medical interns, who later provided health education and vaccine promotion/ recommendation. Families, still resistant, were visited by a second more motivated and enthusiastic team 2-3 days following the first interaction. (Ansari et al., 2007)

2 A randomized controlled trial from Belgium found that implementing education and information with provider recommendation to receive updated vaccines to patients with Inflammatory Bowel Disease. Vaccination data (hepatitis B, influenza, pneumococcus, tetanus, and varicella zoster virus) and demographic data were collected. After, patients were randomly assigned to group A receiving routine clinical practice or intervention group B receiving additional education by the IBD nurse with help of an information brochure and vaccination card. Vaccination status was reassessed 8 months later. (Coenen et al., 2017)

NEXT STEPS

- 1 There is enough evidence that provider recommendation interventions are effective in both high income and low income countries, and can be scaled up.
- 2 Implement educational campaigns among health care workers (see educational campaign domain).
- 3 Determine the most appropriate form of provider recommendation (ex. Standing orders) (see message framing for appropriate formatting).
- 4 Establish consistent and factual process of provider recommendation with on-going monitoring (see incentives and reminder and recall).

INSTITUTIONAL RECOMMENDATION

49 NUMBER OF STUDIES

43 STUDIES IN HIC

6 STUDIES IN LMIC

HIGH INCOME COUNTRIES

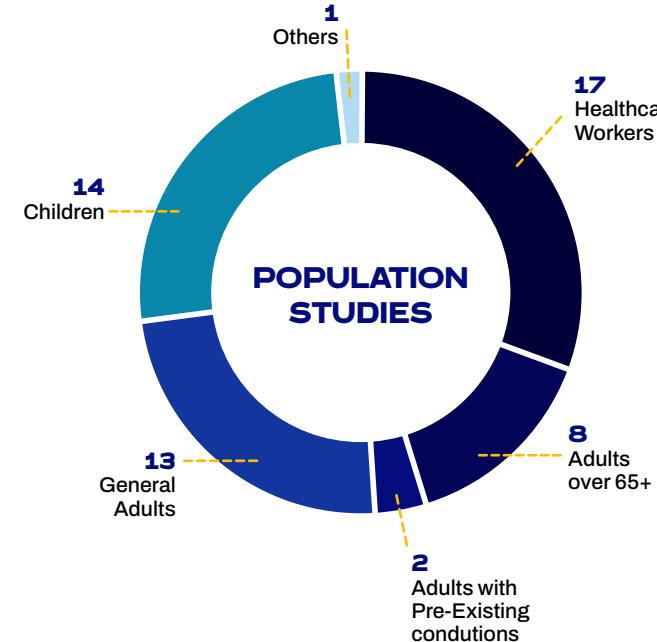
Australia, Belgium, Canada, Italy, The Netherlands, Peru, Qatar, Switzerland, United Kingdom, USA.

LOWER MIDDLE INCOME COUNTRIES

Bangladesh, Phillipines, Sudan, Zambia.

TECHNIQUES USED FOR INSTITUTIONAL RECOMMENDATION

Mandatory Declination
Vaccine Mandates
Supervisory Implementation
Visual Cues (posters, buttons, stickers)



EXPERT INSIGHT

Institutional recommendations reflect an organization's values and expectations from its members and can be employed effectively to set an institutional norm in favor of vaccination.

EFFECT SIZE FOR VACCINE UPTAKE

GRADE
High

ODDS RATIO [CI]
2.6 (2.2-3.2)

HIC - OR [CI]
2.6 (2.2-3.2)

LMIC - OR [CI]
N/A

ILLUSTRATIVE CASE STUDIES

- 1 In a randomized controlled trial in Seattle, USA, researchers assessed the effectiveness of three methods for preventative services. The three aims were (1) a physician-oriented model focused on education, motivation, recommendation flow charts, and periodic feedback, (2) a patient education model where patients were mailed an informative brochure and encouragement to talk to their physician, and (3) a health promotion clinic that patients were invited to attend. There was also a control group which received the regular standard of care. (Belcher, 1990)
- 2 In San Antonio, Texas, a study was done on healthcare workers to improve influenza vaccination rates. The interventions included the support of leadership, distribution of vaccine kits, grand rounds presentations and email and phone reminders. (Cadena et al., 2011)

NEXT STEPS

- 1 There is enough evidence that institutional recommendation interventions are effective in both high income and low income countries and can be scaled up.
- 2 Identify institutions with the ability to promote vaccine uptake based on local contexts (ex. workplaces, schools, ministries/departments of health).
- 3 Determine the most appropriate form of recommendation (ex. public service announcements, letters, emails, etc.).
- 4 Establish consistent and thorough communication to target audience throughout vaccination period.

VACCINE CHAMPION

23 NUMBER OF STUDIES

21 STUDIES IN HIC

2 STUDIES IN LMIC

HIGH INCOME COUNTRIES

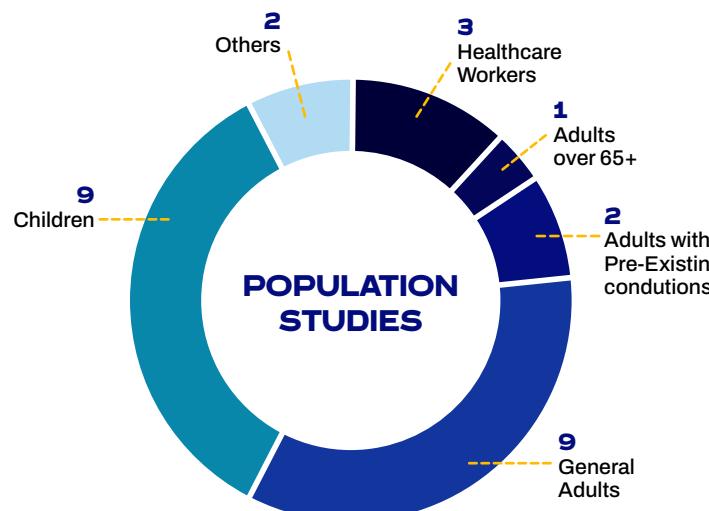
Australia, Canada, China, United Kingdom, USA.

LOWER MIDDLE INCOME COUNTRIES

Nigeria.

TECHNIQUES USED FOR VACCINE CHAMPION

Peers
Nurses
Community Leaders
Religious Leadership
Supervisors
Celebrities



EXPERT INSIGHT

Ways to increase trust in the vaccine: have the community leader support the idea or bring in evidence from a nearby area that has a high vaccination rate and a healthy population –
Ex: Having a mother say 'look, I was against it, but now I change my mind, and my children are very healthy'.

EFFECT SIZE FOR VACCINE UPTAKE

GRADE

High

ODDS RATIO [CI]

2.5 (1.8-3.5)

HIC – OR [CI]

2.5 (1.8-3.5)

LMIC – OR [CI]

N/A

ILLUSTRATIVE CASE STUDIES

1 In a study done in Canada, healthcare workers were recruited to be "champions" to motivate members of their work units to get vaccinated against influenza. These champions were provided a brief training session to increase awareness. Work units were then randomly assigned to either champion present or champion absent conditions. (Slaunwhite *et al.*, 2009)

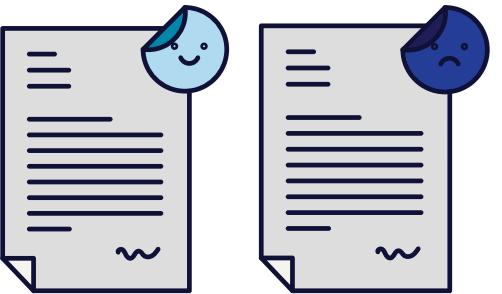
2 In a randomized controlled trial in Georgia, expecting mothers were randomized to an intervention bracket that included identification of a vaccine champion, provider-to-patient talking points, educational brochures, posters, lapel buttons, and iPads loaded with a patient-centered tutorial. Participants were recruited for five months and included 325 pregnant women who were unvaccinated at the start of the study. (Chamberlain *et al.*, 2015)

NEXT STEPS

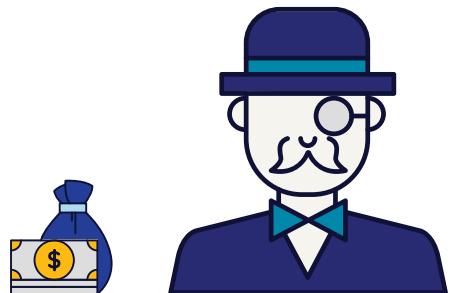
- 1 There are few studies providing evidence for vaccine champions. There is a need for further piloting of vaccine champion interventions in both high- and low-income countries.
- 2 Conduct pilot studies to determine feasibility and effectiveness, and implement with other strategies or interventions (see reminder and recall, message framing, educational campaigns or free vaccines).
- 3 Determine the most appropriate vaccine champions based on local context (ex. religious leader, peers, medical professionals, etc.).
- 4 Establish a sustainable system to scale up based on findings.

LIMITED EFFECT INTERVENTIONS

These are the interventions our team has identified as having limited effect across multiple studies.



Message framing has minimal difference between gain vs loss frame.



If incentives are not valued by the recipients, they are less effective in improving vaccine uptake.



Incentives are less effective with healthcare workers.



Decisional aids and self-assessment are less effective.



Solely pushing out educational messages is less effective. Educational messages should be paired with self-efficacy and response efficacy messages.



Quality improvement studies did not assess vaccine uptake often but show to be less effective in increasing vaccine uptake.

SNAPSHOTS

GLOBAL SNAPSHOTS

Reminder and recall paired with other interventions like educational campaigns or incentives are effective in increasing vaccination uptake.

Standing orders in high income countries linked with or without reminder and recall can improve vaccination rates among influenza and pneumococcal vaccines among adults.

Message framing (both gain and loss frame) studies are highly effective among high income countries.

Implementing on-site vaccination interventions among healthcare workers are highly effective.

Free vaccinations with and without incentives for vulnerable populations can improve vaccination rates.

Provider recommendation can increase vaccination uptake among patients with pre-existing conditions.

Financial incentives both at the level of the provider and at the level of the consumer can improve vaccine uptake.

Improving health system performance and quality also led to improved vaccination coverage.

Health promotion clinics including promoting vaccinations (through institutional recommendation) can sustainably improve vaccination rates.

Use of vaccine champions can improve vaccine rates among healthcare workers and adolescent females for Influenza and HPV vaccines.

LMIC SNAPSHOTS

The use of financial incentives and transportation vouchers to vaccine sites are highly effective.

Improving health system performance and quality also led to improved vaccination coverage.

Using GIS data for optimal vaccination center placement is effective in increasing vaccine uptake.

Reminder and recall by itself may not be as effective in increasing vaccination rates, unless tied to other interventions like financial incentives.

Message framing interventions are not highly studied in lower- and middle-income countries, leaving a gap for information.

The use of community mobilizers (vaccine champions) in high-risk communities can result in higher vaccine uptake.

A community service model targeting the heads of household/fathers can improve vaccination uptake for children.

Educational campaigns for vaccination uptake were found to be effective among healthcare workers, parent/child dyads and students.

There is a need for more randomized controlled trials in lower- and middle-income countries.

RESOURCES

The resources and studies for this project are available on the YIGH GitHub repository listed below.

[BI-Insights Full Citations](#)

[Systematic Review Studies](#)

[Meta Analysis Studies](#)

[iVaccinate Booklet Case Studies Citations](#)

YALE BEHAVIORAL INSIGHTS REVIEW GITHUB

WHO Resources

1. Development of tools to measure behavioural and social drivers (BeSD) of vaccination: Progress Report

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2. WHO Data for action covid-19 vaccines

[READ MORE](#)

3. Improving vaccination demand and addressing hesitancy

[READ MORE](#)

Implementation Frameworks

1. Wiltsey Stirman, S., Baumann, A.A. & Miller, C.J. The FRAME: an expanded framework for reporting adaptations and modifications to evidence-based interventions. *Implementation Sci* 14, 58 (2019)

[READ MORE](#)

2. Miller, C., Barnett, M.L., Baumann, A.A. et al. The FRAME-IS: a framework for documenting modifications to implementation strategies in healthcare. *Implementation Sci* 16, 36 (2021)

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3. Powell, B.J., Waltz, T.J., Chinman, M.J. et al. A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project. *Implementation Sci* 10, 21 (2015)

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4. Waltz, T.J., Powell, B.J., Fernández, M.E. et al. Choosing implementation strategies to address contextual barriers: diversity in recommendations and future directions. *Implementation Sci* 14, 42 (2019)

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5. Proctor, E., Silmire, H., Raghavan, R., Hovmand, P., Aarons, G., Bunker, A., Griffey, R., & Hensley, M. (2011). Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. *Administration and policy in mental health*, 38(2), 65–76

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6. National Academies of Science, Engineering and Medicine. Framework for Equitable Allocation of COVID-19 Vaccine

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