Vitality®

VACCINE STRATEGY PLAYBOOK

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EXECUTIVE SUMMARY

While vaccinations are recognized as one of the greatest public health achievements of all time, persuading the public to take advantage of some of these vaccines has proven challenging. In the United States, only 45% of adults received the flu vaccine in 2018-2019, and these vaccination rates have remained largely unchanged for nearly a decade despite numerous marketing campaigns and other initiatives. [1] [2] In 13 countries, uptake of the infant DTP vaccine (Diphtheria, Tetanus, and Pertussis) has fallen by at least 10% since 2015. [3] Recently, the World Health Organization listed vaccine hesitancy (defined as "the reluctance or refusal to vaccinate despite the availability of vaccines") as one of the top 10 threats to health in 2019. [4]

The COVID-19 pandemic has quickly become one of the greatest public health crises in history, with COVID-19 ranking as the leading cause of death in the United States, surpassing heart disease and cancer. [5] At the beginning of the pandemic, experts were quick to remind the public that vaccinations typically take years to develop; nevertheless, multiple pharmaceutical companies developed effective COVID-19 vaccines in less than a year. While the accelerated timeline should certainly be applauded, it has led to widespread concerns about the efficacy of these vaccines, as well as the degree of influence from prevailing political and economic factors. These concerns place many governments in a serious predicament as the COVID-19 vaccine is widely viewed as the only real solution to the current pandemic. [6] As one Duke researcher stated, "Vaccine hesitancy is going to be a primary risk factor for COVID deaths in the next year." [7]

A COVID-19 vaccination communication strategy is critical to motivating people to get vaccinated. This document highlights several examples of behavioral science strategies as they relate to COVID-19 vaccinations and vaccinations generally. This document also sets out key strategies aimed to increase information accuracy by disseminating information from trusted sources and combating availability bias and over-optimism, facilitating action by providing individuals with reminders and nudges, reducing barriers by setting defaults and ensuring easy access, and shaping behaviors by establishing incentives, requirements and social norms.

COVID-19 VACCINE HESITANCY

THE CHALLENGE OF VACCINE HESITANCY

One of the main challenges in dealing with vaccine hesitation is countering the prevalence of information that the public encounters which is not based on scientific evidence.

The Health Belief Model classifies people's thinking about the perceived threat and the net benefits of a health-related decision as follows: **perceived susceptibility, perceived severity, perceived benefits, and perceived barriers.** A person's responses to these classifications as a whole will influence their readiness to act, and in the case of some COVID-19 vaccines, which may require a booster, their readiness to act twice. [8]

The World Health Organization's Strategic Advisory Group of Experts (SAGE) on Immunization established the SAGE Working Group on Vaccine Hesitancy from March 2012 to November 2014 to address vaccine hesitancy and its determinants in different settings, including its context-specific causes, its expression, and its impact. [9] Through its work, the Working Group has identified that high levels of hesitancy lead to low vaccine demand, but low levels of hesitancy do not necessarily lead to high vaccine demand. The Vaccine Hesitancy Determinants Matrix, set out below, describes the factors that influence people's behavioral decision to accept, delay or reject some or all vaccines under three categories: contextual, individual and group, and vaccine/vaccination-specific influences. [10]

VACCINE HESITANCY DETERMINANTS MATRIX

Contextual Influences Influences arising due to historical, sociocultural, environmental, health system/institutional, economic or political factors	a. Communication and media environment b. Influential leaders, immunization program gatekeepers, and anti- or pro-vaccination lobbies c. Historical influences d. Religion/culture/gender/socio-economic e. Politics/policies f. Geographic barriers g. Perception of the pharmaceutical industry
Individual and Group Influences Influences arising from personal perception of the vaccine or influences of the social/peer environment	a. Personal, family, and/or community members' experiences with vaccinations, including pain b. Beliefs and attitudes about health and prevention c. Knowledge/awareness d. Health systems and providers – trust and personal experience e. Risks/benefits (perceived, heuristic) f. Immunization as a social norm vs. not needed/harmful
Vaccine/vaccination - specific issues Directly related to vaccine or vaccination	a. Risks/benefits (epidemiological and scientific evidence) b. Introduction of a new vaccine or new formulation, or a new recommendation for an existing vaccine c. Mode of administration d. Design of vaccination program/mode of delivery, e.g., routine program or mass vaccination campaign e. Reliability and/or source of supply of vaccine and/or vaccination equipment f. Vaccination schedule g. Costs h. The strength of the recommendation and/or knowledge base and/or attitude of healthcare professionals

While the global rollout of COVID-19 vaccines for healthcare workers and various other defined groups has begun, it is important to understand the rationale for vaccine acceptance among the general public. **Vaccine acceptance depends on a number of factors, including an understanding of the disease, perceptions of risks and social factors affecting access, the severity of disease in-country, trust in the development process, personal or family experience with COVID-19, education level, income, gender and age.** A summary of Vitality markets' vaccination acceptance estimates is set out below. [11] [12] [13] [14] [15] [16]

COUNTRY	ESTIMATED VACCINE ACCEPTANCE	COUNTRY (CONT'D)	ESTIMATED VACCINE ACCEPTANCE (CONT'D)
Australia	64.0% -77.3%	Netherlands	73.0%
Brazil	85.4%	New Zealand	74.0%
Canada	68.7% - 80.0%	Nigeria	65.2%
China	61.0% - 91.3%	Norway	57.0%
Denmark	70.0% -80.0%	Phillippines	32.0% - 46.0%
Ecuador	71.9% - 97.0%	Poland	28.0% - 56.3%
Finland	50.0%	Portugal	75.0%
France	39.0% - 77.1%	Russia	54.9%
Germany	51.0% - 70.0%	Saudi Arabia	51.0% -64.7%
Hong Kong*	40% - 63% (among nurses)	Singapore	47.0% - 67.9%
India	67.0% -74.6%	South Africa	81.6%
Indonesia	56.0% -93.3%	South Korea	79.8%
Israel	61.1% (among nurses) - 78.1% (general population)	Spain	66.0% - 74.3%
Italy	70.8% - 86.1%	Sweden	55.0% -65.2%
Jordan	28.4%	Taiwan	41.0%
Kuwait	23.6%	Thailand*	83.0%
Malta	61.8%	Turkey	69.0%
Malaysia	60.0% -94.3%	United Kingdom*	64.0% - 90.1%
Mexico	76.3%	United States*	47.0% - 75.4%

BEHAVIORAL SCIENCE STRATEGIES FOR VACCINATION UPTAKE

AN OVERVIEW

The literature on vaccination uptake consistently suggests that the most effective methods to facilitate vaccination are direct behavioral interventions rather than the attempt to change what people think or feel or their social context. One comprehensive systematic review examined the evidence for a variety of vaccination uptake interventions. A summary table of its findings is below. [17]

INTERVENTION	LIKELY IMPACT	ESPECIALLY EFFECTIVE WHEN ...	AMOUNT OF EVIDENCE	AMOUNT OF CAUSAL EVIDENCE	AMOUNT OF CAUSAL EVIDENCE IN LOW- OR MIDDLE-INCOME COUNTRIES
On-site vaccination	Substantial impact	People have favorable intentions but do not get vaccinated.	Substantial evidence	Substantial evidence	Substantial evidence
Incentives	Substantial impact	People have favorable, ambivalent, or unfavorable intentions.	Substantial evidence	Substantial evidence	Substantial evidence
Healthcare provider recommendations	Substantial impact	People have favorable, ambivalent, or unfavorable intentions.	Substantial evidence	Substantial evidence	No evidence
Vaccination requirements	Substantial impact	Vaccination rates are already high; most people affected by the requirement support vaccinations.	Substantial evidence	Some evidence	No evidence
Presumptive healthcare provider recommendations	Substantial impact	People have favorable or ambivalent intentions.	Some evidence	Some evidence	No evidence
Default appointments	Substantial impact	People have favorable intentions but do not get vaccinated.	Some evidence	Some evidence	No evidence
Reminders and recalls	Modest impact	People have favorable intentions but do not get vaccinated.	Substantial evidence	Substantial evidence	Some evidence
Descriptive norm messages	Modest impact	People are unsure or misunderstand what others are doing.	Substantial evidence	No evidence	No evidence

INTERVENTION	LIKELY IMPACT	ESPECIALLY EFFECTIVE WHEN ...	AMOUNT OF EVIDENCE	AMOUNT OF CAUSAL EVIDENCE	AMOUNT OF CAUSAL EVIDENCE IN LOW- OR MIDDLE-INCOME COUNTRIES
Implementation-intention interventions	Modest impact	People have favorable intentions but do not get vaccinated.	Some evidence	Some evidence	Some evidence
Mere-measurement interventions	Modest impact	People have favorable intentions but do not get vaccinated.	Some evidence	Some evidence	No evidence
Social network interventions that build on contagion	Modest impact	People are at least minimally connected to a social network.	No evidence	No evidence	No evidence
Messages that increase disease-risk appraisals	Little or no impact	People have low disease-risk appraisals or have become complacent about disease risk.	Substantial evidence	Some evidence	Some evidence
Education campaigns that increase confidence	Little or no impact	People have low confidence that vaccination is effective and safe.	Substantial evidence	Some evidence	Some evidence
Messages that change altruism or free-riding beliefs	Little or no impact	People have low altruism or high free-riding motivation.	Substantial evidence	No evidence	No evidence
Decision aids	Little or no impact	People initially do not agree to vaccination because they have questions.	Some evidence	Some evidence	No evidence
Motivational interviewing	Little or no impact	People initially express ambivalence about vaccination.	Some evidence	Some evidence	No evidence

INCREASING INFORMATION ACCURACY

A COMPREHENSIVE PREVENTION STRATEGY

Another important component of vaccination messaging is the reminder that COVID-19 vaccines are but one of the accepted and necessary preventive measures, which include wearing masks, physical distancing, and hand-washing. These preventive behaviors have unfortunately been framed as stop-gap measures and activities to tolerate until there is an effective vaccine. The advent of the vaccine may lead to over-optimism and could cause people to become careless about practicing these preventive measures by taking greater risks than they would if an effective vaccine did not exist. [18] It is essential to frame the vaccine as a component of a comprehensive pandemic response rather than as a singular "savior" strategy that will result in an immediate return to normal life. [19]

Reiterate the "Swiss Cheese model" of prevention in its messaging, and emphasise that vaccinations are not the entire prevention strategy, but instead are part thereof, i.e. one additional slice of Swiss cheese

TRUSTED SOURCES OF INFORMATION

Scientific experts and healthcare professionals are seen as the most trusted sources of information among all age groups, which is crucial to ensure high vaccine uptake. [20] We have seen the influence of public health officials on mask-wearing, handwashing, and physical distancing. Employers should consider a "credibility-enhancing display" through which CEOs and other corporate leaders visibly set an example for their employees. Perceptibly engaging in a recommended behavior is far more effective in convincing others than simply recommending that behavior. [18]

Communicate that top health officials recommend getting vaccinated. Consider publishing photos of executives receiving their vaccinations to show that your leaders "walk the walk ".

RISKS VS. REWARDS (AVAILABILITY BIAS)

Availability bias is the tendency to assume salient events are frequent. [21] In the context of vaccines. This means that people give disproportionate weight to the harm of receiving vaccinations and dismiss the dangers of not receiving them. [7] Vaccine adverse events are believed to be far more likely and dangerous than they actually are, while the infectious diseases they prevent are seen as less likely and less dangerous than they actually are. Yet, more than half of patients report concerns about serious side-effects of vaccines. [22]

Address people's concerns about the rarity of serious side effects from the vaccine by referring them to trusted sources.

COUNTERACTING HEALTH MISINFORMATION

The online environment and social media, in particular, have become exceptionally influential in society today. This is particularly problematic due to the online world's role as a breeding ground for misleading information and negative messaging around vaccinations. There are many reasons for the flood of COVID-19 misinformation, including the widespread public adoption of unverifiable social media platforms as tools for information-seeking, the indeterminate nature of the virus itself, and the prevalence of disinformation campaigns aimed at deflecting blame and pushing false narratives. Misinformation about the COVID-19 vaccine ranges from the usual rumors questioning vaccine safety to outlandish claims that the vaccine is being used for covert tracking operations widely shared by automated internet bots and online trolls. [12]

Substantial exposure to negative vaccination messaging may influence general attitudes toward vaccinations over time, especially when the repetition of messages is often mistaken for verification of their accuracy - a phenomenon known as “the Illusory Truth Effect.” Research shows hat even when people know a message is untrue if it is repeated enough, people will start to believe it. [23]

Negative messages on social media are likely to elicit more attention, have higher views than positive messages, and spread more rapidly, and a plethora of negative messages can have a greater impact. [24] [25]

Public health organizations should invest in positive social media campaigns about vaccinations to improve the likelihood of people seeing encouraging and accurate messaging on vaccinations. [20]

Use all available platforms, including social media accounts and blog posts, to disseminate truthful information about vaccines.

FACILITATING ACTION

REMINDERS

Text message reminders have been found to be an effective and low-cost method to increase seasonal influenza vaccination coverage among high-risk patients. This can be a particularly effective strategy with parents of young children, who were twice as likely to have their child vaccinated if they received a text message reminder. [26]

Send reminders to members/employees to encourage vaccination.

NUDGES/PRE-COMMITMENT

There are numerous ways that simple nudges can encourage the right behavior. **Creating a social comparison among peers** is a particularly effective nudge strategy. [2] Studies have shown that competition can influence behavior. For example, the rate of unnecessary antibiotic prescriptions decreased by 71% after doctors' rates were compared with other "top performers" in their fields. [27]

Encourage employees to participate in vaccination challenges and offer rewards and incentives for completion.

Another effective nudge strategy is pre-commitment. **Asking individuals to pre-commit to a date, time and location to get vaccinated has been shown to lead to statistically significantly higher vaccination rates** compared to the rates of individuals who were only sent information on the location and hours of vaccination clinics they could visit. [28]

Surprisingly, numerous studies have shown that one of the biggest reasons people do not get flu vaccines is that their physicians never recommended doing so. 80% of patients say they would be more likely to get a vaccination if a healthcare provider recommended it. [29]

Share communication from recognized and credible healthcare professionals recommending the COVID-19 vaccine.

PERSONALIZED COMMUNICATIONS

Communicators need to understand the values, attitudes, perceptions and beliefs of their audience to develop effective communications on health and risk. Messaging that ignores these factors is often ineffective and can actually direct audiences away from the desired protective behavior.

Vaccination communications should be tailored to specific audiences that have various experiences with this disease, such as essential workers, parents, communities of color, groups with high comorbidities, and vaccine-hesitant people. [12]

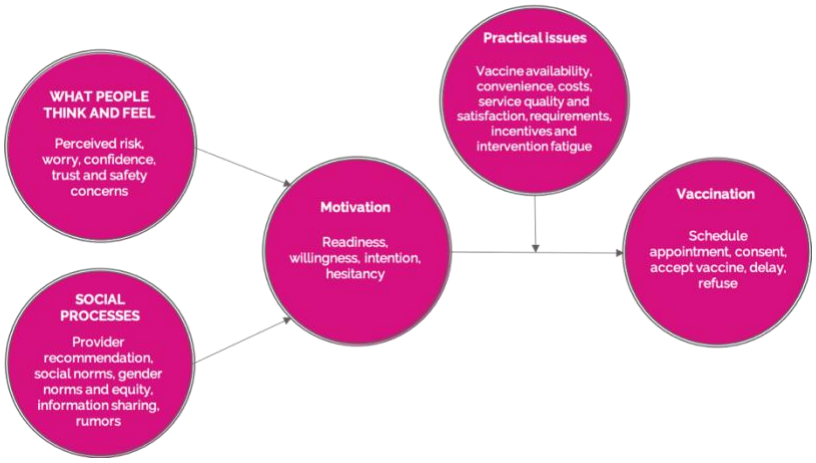
Segment the audience and craft tailored messages that resonate with each segement.

TARGETING MOTIVATION

The World Health Organization (WHO) convened an expert working group called BeSD (Behavioural and Social Drivers) to advance the development of tools to track and address under-vaccination. BeSD published a theoretical "Increasing Vaccination Model" (pictured below) that provides a useful organizing framework for important demand-side considerations related to tackling vaccine hesitancy and successfully promoting the COVID-19 vaccine. [17] Central to the model is the examination of motivation to be vaccinated, delineated into concepts such as readiness, willingness, hesitancy or intention. According to the model, motivation is shaped both by what people think and feel about vaccination and the social processes in their environment. What people believe about the severity of COVID-19 and the effectiveness and safety of a vaccine, their trust in public health or medical authorities, their tolerance for risks, and how they feel about needles are all examples of the "think and feel" elements that precede motivation.

At the same time, it is well established that humans are socially motivated: It is generally important to people that they fit in and gain social approval, and that people commonly take their behavioral cues from those around them. This means that a strong recommendation from a healthcare provider or a trusted member of the community can increase motivation to vaccinate. However, listening to friends, family members or social network contacts who choose not to vaccinate can decrease motivation.

BESD THEORETICAL INCREASING VACCINATION MODEL



Target motivation by addressing what people think and feel about vaccination. Keep in mind that social processes exist and may be more challenging to control.

REDUCING BARRIERS

ACCESS

Accessibility and convenience of vaccination services are important determinants of vaccination uptake, so it is critical to reducing any practical complications to increase uptake. A survey of parents found that the most common barriers to having their children vaccinated were the timing of appointments (59%) and availability of appointments (46%). In addition to doctors' offices, vaccinations should be offered at COVID-19 testing sites in the community, local retail pharmacies, schools, places of worship and workplaces. Vaccinations should also be free of charge and without co-payments. [30] [18]

Consider helping to facilitate easy and accessible scheduling of vaccination appointments at partner pharmacies/vaccination sites.

DEFAULTS/AUTOMATIC ENROLLMENT

Automatically scheduling individuals for their flu vaccination appointments (with the option to call and cancel the appointment) increases the likelihood of being vaccinated. [31]

While not practical for the 2021 roll-out of COVID-19 vaccines, this strategy may be used in the future if/when the COVID vaccine becomes a routine immunization. Automatically schedule appointments to a time slot at on-site immunization clinics/vaccination partners to increase vaccination uptake.

SHAPING BEHAVIORS

INCENTIVES

Incentives, whether they are intrinsic or extrinsic, can be effective in encouraging behavior change and help to create desirable habits and break undesirable habits. [32] Studies have shown that offering students monetary incentives to get the flu vaccine resulted in an 11% increase in the likelihood of vaccination. Other systematic reviews have also found evidence that conditional cash-transfer programs are effective in increasing the use of preventive services, including vaccinations in adults in low- and middle-income countries. [33] The Australian government provides financial incentives in the form of tax credits for parents who have their children vaccinated, and physicians receive a small payment when their pediatric patients are vaccinated on schedule. [34] [35]

The Community Preventive Services Task Force of the Office of Disease Prevention and Health Promotion in the United States recommends using incentives to increase vaccination rates in children and adults. It recommends both monetary and non-monetary incentives for keeping an appointment, receiving a vaccination, returning for a vaccination series, or producing documentation of vaccination status. Rewards are typically small, such as food vouchers, gift cards, lottery prizes or baby products. [36] One systematic review of both financial and non-financial incentive programs for vaccinations in the U.K. and the United States found that both monetary and non-monetary incentives were effective in increasing immunization rates. [37]

Incentives become more effective in proportion to their value relative to the economic circumstances of the recipient. For example, a small incentive of the equivalent of $5 would be minimally persuasive in the developed world. Even the equivalent of a $50 incentive or an incentive in the form of food or medicine coupons may not have a significant impact on the decisions of high-income recipients who are skeptical of vaccine efficacy or safety. However, the same incentive may be irresistible to skeptical recipients on a low-income or in low-income countries.

Assuming the aim is to attain herd immunity (in respect of COVID-19), one author argues that incentives should only be used when persuasion and nudging have been found to be ineffective. [38] However, other studies have found that even in high-income countries, there is mixed evidence on the effectiveness of financial incentives for vaccine uptake. [39]

There is some evidence to suggest that non-financial incentives for vaccination uptake in low-income settings can be effective. However, a food-based incentive in a very disadvantaged population was found to be so closely tied to basic survival that it is possible that the target population felt other critical needs were being met in exchange for vaccination. [40]

Consider rewarding members/employees who receive the COVID-19 vaccine when it becomes available to them, both through monetary and non-monetary means. Employers may consider including paid time-off for employees to be vaccinated. Monetary rewards should be low and sensitive to your population and in line with EEOC regulations. [30]

SHAPING BEHAVIOR VS. CHANGING MINDS

A comprehensive review of scientific literature on the psychology of vaccinations has shown that shaping behavior rather than trying to change minds is a far more effective strategy to persuade people to be immunized. Simply providing educational information about vaccines or attempting to confront myths tends to be ineffective at changing vaccination behaviors and can backfire, as directly countering misinformation can actually reinforce false beliefs. The best way to confront misinformation about vaccinations is to clearly reiterate the scientific facts. [41]

> Focus on communicating clear and truthful vaccination information and employing behavioral science strategies to influence behavior, rather than focusing on dispelling myths about vaccines.

REQUIREMENTS

Access to certain locations can be made conditional on proof of a COVID-19 vaccination, such as clinical settings, congregate living facilities (nursing homes, student dormitories, etc.), preschools to high schools, workplaces, and public institutions. [18] Some airlines are considering making proof of a COVID-19 vaccination a condition for international air travel, and in the United States, employers are legally allowed to mandate vaccination as a condition for in-person work, provided that there are reasonable alternatives for those who refuse. [42] [43]

> If access to a location is made conditional on proof of a COVID-19 vaccination, provide reasonable alternatives to those who are not vaccinated.

SOCIAL NORMS/PUBLIC ACCEPTANCE

People often take their cues on how to behave from the behavior of others, and social accountability (how others view a person's actions) can be an important motivator. [18] Creating a public-facing message, such as an "I'm Vaccinated" sticker for people to wear, is one possible approach to signal vaccine acceptance within the community. It is also important to normalize vaccination within marginalized communities that may experience higher than average vaccination hesitancy by showing photos or featuring testimonials from community members talking about their experiences. [44]

> Use social accountability as a motivator by giving “I’m Vaccinated” stickers or certificates to people who are vaccinated.

PERSONALIZATION

When a decision such as getting a COVID-19 vaccination is politically or morally based, simply providing factual information may not be sufficient. One strategy to overcome this is to frame messaging as personal experiences, which may cause people to be more open-minded than just presenting the simple facts. However, these personal stories must be well-vetted and should mirror the facts as well as personalizing them. [44]

COMMUNITY CHAMPIONS

Establishing "champions" or key individuals within a community as advocates for vaccination have been shown to be effective in increasing vaccination compliance for the flu. [45] A similar approach of asking individuals to spread the word to their friends and family about the importance of being vaccinated is being investigated by The University of Pennsylvania's Behavior Change for Good Initiative (BCFG) in partnership with Walmart. They suggest that acting as a "champion" for vaccination within one's own community can not only change one's own likelihood to be vaccinated but can also encourage one's network to be vaccinated as well. [46]

Leverage any existing influencers and other prominent spokespeople to promote vaccination acceptance and ultimately encourage uptake.

FRAMING

It is critical that the vaccination messaging is framed in a way that not only encourages people to be vaccinated but also prevents negative backlash. A U.S. study compared five different messages types: a "Safety" message aimed at alleviating concerns about the vaccine by highlighting the U.S. Food and Drug Administration's (FDA) extensive testing process; an "Economic Recovery" message that emphasized the economic devastation caused by COVID-19 and the vaccine's role in accelerating a path to recovery; a "Statistics" message that leveraged shocking data about COVID-19 as a leading cause of death in the United States as well as the prolonged symptoms that impact the quality of life of those who have technically recovered; a "Personal Story" message that shared the story of a young, otherwise healthy American who died from COVID-19; and a "Community" message that explained herd immunity and emphasized the vaccine's role to make communities healthier for everyone - including those who are unable to be vaccinated.

The "Personal Story" message resulted in an increased likelihood to be vaccinated across all demographic and geographic categories and did not have any negative backlash. Messages describing vaccine safety were found to have a 45% probability of negative backlash, a 57% probability for the economic message, and a 69% probability for the community message. [47]

Highlight personal stories of people who have had COVID-19 and how they and their families have been impacted by COVID-19.

CREATING DEMAND

Dan Ariely has suggested using scarcity as a way to create motivation by creating a hypothetical waitlist for vaccination and encouraging everyone to register. This waitlist may create a sense of urgency, encouraging people to register as it may appear that everybody wants the vaccine. [48]

Highlight personal stories of members who have had COVID-19 and how they and their families have been impacted by COVID-19.

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