DENGUE VACCINE IMPLEMENTATION (Screen & Vaccinate)
COMMUNICATION FOR THE DENGUE VACCINE

INFORMATION FOR SKATEHOLDERS

The purpose of this module is to summarize, for decision makers and program planners, key information on communication for dengue vaccine (Dengvaxia®) implementation, in the context of the WHO-recommended Screen and Vaccinate strategy.

1. CONTEXT FOR THE DENGUE VACCINE INTRODUCTION

- The number of dengue cases reported to WHO increased over 8-fold over the last two decades, and the disease is now endemic in more than 100 countries.
- Since December 2015, dengue is a vaccine-preventable disease. The live-attenuated dengue tetravalent vaccine from Sanofi Pasteur (commercial name Dengvaxia®), is the first and only vaccine, that has been licensed for the prevention of dengue in more than 20 countries in Latin America, Asia Pacific, the United States (US), and the European Economic Area (EEA). Dengvaxia® is WHO-prequalified and has been introduced in public immunization programs in the Philippines and Brazil.
- In November 2017, Sanofi Pasteur communicated new analyses of long-term clinical trial data. It shows that while the vaccine is efficacious and safe in persons who have had a dengue virus infection in the past (seropositives), those who experienced their first natural dengue infection after vaccination (seronegatives) have an increased risk of severe dengue.
- Based on the new results, Sanofi Pasteur proposed an updated label for the vaccine, and the World Health Organization (WHO) recommends a pre-vaccination screening strategy whereby only persons with evidence of a past dengue infection would be vaccinated.
- The resulting Screen and Vaccinate strategy (S&V) considers prescreening of eligible vaccine recipients using tests with high specificity[1] to minimize individual risk, and high sensitivity[2] to maximize individual and population benefit. Sanofi Pasteur has supported the co-development of an optimized point of care rapid diagnostic test (RDT) designed specifically to detect past dengue infections. The test is now available for use, CE-marked and registered in more than five countries in Latin America and Asia Pacific.

2. OPPORTUNITIES AND CHALLENGES FOR DENGUE VACCINATION

For an immunization program, investing in communication aims to ensure that the vaccine-target population, caregivers, and communities, understand the value of vaccines, are able to make informed decisions, and adhere to vaccination. In an unstable environment of vaccine adherence and hesitancy, it is essential to be fully prepared in order to ensure acceptance of the program and to prevent deleterious communication crises from compromising prevention efforts.

[1] Specificity: Ability to screen out those without past infection.

[2] Sensitivity: Ability to identify those with past infection.

2.1. Distrust in vaccines

- The first dengue vaccination public programs came at a time of growing evidence of vaccine delays and refusals due to a lack of trust in the importance, safety, and effectiveness of vaccines.
- The impact of the Covid-19 pandemic and of the resulting implementation of Covid-19 vaccines is heterogeneous and varies depending on time, location and types of vaccines.
- Covid-19 vaccination offers both opportunities and challenges for other vaccines, as it drains similar behavioral and social factors. In some places, the Covid-19 pandemic has improved the perception of vaccination by suddenly presenting it as the indispensable tool to end a major health crisis.
- Yet, emotions around vaccines are very volatile, making vigilance and monitoring crucial for effective public outreach.
- Vaccine hesitancy is subject to multiple influences from groups with widely differing agendas. At the global level, more organized and expanding anti vaccination groups undermine the immunization efforts and trust in national authorities. The growing politicization of immunization is worrying.
- Fake news, misinformation, disinformation, and conspiracy theories have become commonplace in the age of social media that allows for near instantaneous dissemination. Infodemic, the overabundance of both online and offline information, deliberately attempts to spread disinformation to undermine the public health response and advance alternative agendas of groups or individuals.
- Social norms and cultural practices, fears and rumors, and socio-political context, are all factors that can interfere in the acceptance of a public health intervention. Vaccine hesitancy contributing factors are highly individual and context-specific and may vary at a subnational level.

2.2. Dengue vaccine specific communication challenges

- There have been precedents that have marred confidence in the dengue vaccine:
  - > In 2017, in the Philippines, the news of the potential vaccine risk in seronegatives overwhelmed any perception of vaccine benefit, and instead resulted in political drama and public outcry. The consequence was broken public trust around the dengue vaccine as well as heightened anxiety around vaccines in general.
  - > When it was first made available to countries, Dengvaxia® was the subject of a scientific controversy regarding the antibody-dependent enhancement (ADE) theory in seronegative individuals. If this argument is no longer admissible since only seropositives are now vaccinated, it may nevertheless persist in some discussion hostile to the vaccine.
- A Screen and Vaccinate (S&V) strategy is now recommended for dengue vaccine implementation.
  - > The fact that the vaccine is recommended only for those who have already been infected may be counterintuitive for some people and subject to misinterpretation or refusal.
  - > This is the first time that a S&V strategy is implemented, a strategy than can lead to misunderstandings both in the public and among health staff.
  - > The S&V strategy involves longer procedures and an additional burden on health resources, schools' calendars, and patients' agenda, all of which can be discouraging factors.
  - > The change of label and recommendations can be a source of anxiety and suspicion.
- The dengue vaccination is given as a 3-dose regimen with 6-month intervals.
  - > These interventions may be subject to high drop-out rates.
  - > Vaccinees and health staff should be aware that three doses of vaccine are required to ensure optimal protection.
- The vaccine targets individuals from 9 to 45 or 60 years of age (depending on the license).
  - > The adolescent and adult population is not used to vaccination and may be more difficult to approach and convince.
  - > Adolescents and adults are very active on social media and may quickly spread and amplify rumors.
  - > People may ask why only some have access to the vaccine (age/school grade/area) while others cannot benefit from the intervention
  - > It is therefore important to explain the need to maintain other preventive measures against mosquito bites after vaccination.
  - > People need to seek care as usual if symptoms occur even when vaccinated.

2.3. Dengue S&V program opportunities

- Dengvaxia is the world's only approved dengue vaccine.
- A dengue S&V program provides effective protection against dengue for eligible people.
- The new strategy of only vaccinating those who have already been infected with the dengue virus avoids any potential safety risk in dengue-seronegative people.
- In addition, it makes it possible to focus the intervention on those who need it most, i.e., those already infected and therefore more likely to develop severe dengue in the event of a new infection with the dengue virus.

3. COMMUNICATION STRATEGY FOR THE DENGUE VACCINE

A well-designed and adequately funded dengue S&V communication strategy targeting key audiences will help foster willingness to get vaccinated and answer questions and safety concerns about the vaccine. While a communication strategy relies on clear, accurate, accessible and audience-tailored information, its success can only be ensured if people's emotions are taken into account, and not just access to scientific and technical facts. Thus, for a strategy to achieve optimal effectiveness, it should adapt its messages and tactics based on prior behavioral and social studies as well as monitoring of the target populations.

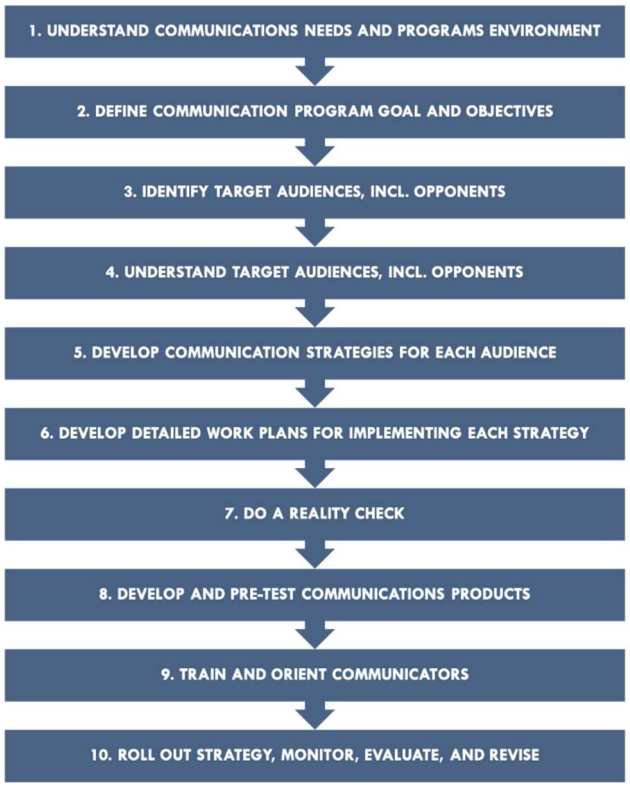
3.1. Formative research

- If calendar and budget allow, formative research should complement existing data on interests, behaviors, factors, and needs of target populations that influence their decisions and actions.
- To help developing appropriate and effective communication strategies, as well as compelling communications materials and dissemination plans, in-depth analyses of audience characteristics should include:
  - > perceptions and experiences related to dengue, dengue risk and dengue prevention;
  - > vaccination decision-making process (barriers and enablers) in relation to attitudes, social norms and culture;
  - > perception of dengue vaccination, and the S&V approach and implementation strategies;
  - > trusted sources and information channels.
- Target population for research should be those involved in the vaccine intervention, those receiving the vaccine or influencing the vaccination decision and implementation, e.g. vaccination stakeholders, health staff and communities. Communities may be people living in a specific geographical location, but also groups defined by age, gender, socioeconomic status, education, profession, specific opinions or interests, or religious or other beliefs. The more granular the data, the more it will capture the wide range of individual concerns and facilitators.
- People identified as potentially indecisive about the intervention should be targeted by formative research. This will help to better understand the behavioral and social drivers of vaccine hesitancy, and to better guide and adjust the communication.

3.2. Development of a S&V communication plan

- The S&V communication plan aims to foster a clear understanding of dengue and dengue vaccine characteristics, the potential risks and benefits of the dengue vaccine and the need for a Screen and Vaccinate strategy.
- The plan should be prepared well before the vaccination program is implemented, and partners should be identified and involved early. Senior management engagement and approval of communication and crisis communication plans need to be ensured.
- A National Working Group on dengue screen and vaccinate communication should be established with the objectives to:
  - > build strong collaborations between stakeholders and with the S&V implementing team (health, education, community leaders, etc.);
  - > strengthen routine communication on dengue S&V;
  - > ensure a rapid and well-coordinated response in the event of a communication crisis.
- A mapping of country stakeholders, influencers and vaccine opponents should be conducted. Dengue S&V champions or celebrities and influencers need to be identified and approached in advance. These individuals are trusted messengers for the intervention and can act as models for the desired behaviors and policies.

- "Anti-vaxxers" may be a lost cause but the "vaccine-hesitants" and moderate vaccine opponents should be brought on board. At the national level, mapping, understanding and engaging early with vaccine hesitant people will help address their fears and concerns, and reduce rumors.
- As well as formative research, the perception of the intervention should be assessed by analyzing access to influential sources of information online and on networks (national and international). The S&V communication plan must be able to feed social mobilization activities, including strategies to prevent and manage rumors, measures to adequately mobilize private schools, social workers and community groups, training to sensitize health workers involved or not in the intervention, and a plan for delivering messages to out-of-school children and hard-to-reach populations.
- Engaging with communities early and throughout implementation is critical to achieving optimal vaccine coverage.
- The S&V communication plan should include early work with the media to gain their trust and increase their knowledge on dengue vaccination.
- Trustful relationships with stakeholders should be built to avoid confusion, distrust and misconceptions. They will also help mobilizing advocates to provide active support during the implementation or in the event of a communication crisis.
- The plan should consider timeliness of communication activities as it greatly influences the way audience react to messages. How can messages be delivered so that audiences have enough time to understand and react? Are there times when a health message will be crowded out by competing issues and concerns? Is there a way to deliver a sequence of messages over time that would increase the effectiveness of information and advice?
- Spokespersons, health staff and staff involved in administering the S&V should be trained on topics related to the vaccine, the S&V intervention, vaccination topics, communication material use, and interpersonal communication. Teachers, community leaders and community health workers need to be trained on how to deliver messages and adequately respond to questions and concerns from parents and the community.
- The communication plan should organize evaluation through regular assessments of communication messages, materials and channels, and audience engagements. Collection and analysis of opinion trends will be essential to drive the efforts towards the most relevant tools.
- The framework for the dengue vaccine communication plan could be as follow:



Source: adapted from 10 Building Blocks of a Malaria Vaccine Communication Strategy, Strategic Planning Workshop, Sept 2012, Ghana. PATH MVI the Malaria Vaccine Initiative

3.3. Communication audience targets

- To ensure the success of the dengue screen and vaccinate program, communication should be shaped to various audiences who need to be reached in order to increase adherence to the intervention.
- A range of target audiences can be considered, including:
  - > Targets for screening and for vaccination including caregivers if vaccination is for children
  - > Health care providers (HCPs), vaccinators and laboratory staff involved in the screening
  - > School administration, school management and teachers if implementation involves schools
  - > Professional medical societies and local experts, including key opinion leaders (KOL)
  - > Mass media journalists, including science beat reporters
  - > Community health workers, leaders, civil society organizations, 'immunization champions' and any community actor involved in the vaccination or influencing the decision to receive the intervention
  - > Influencers among young people

- Other health staff, such as doctors, nurses, midwives, pharmacists, heads of regional and local health systems, or community health workers, who interact with parents and community members regularly and should be prepared to communicate and respond appropriately to questions about the vaccine and the intervention
- A special attention should be paid on hard-to-reach populations, whether those could be out-of-school children, or groups with cultural characteristics predisposing them to vaccine hesitancy or reluctance.

- In the way of shaping and delivering the messages, it will be important to define not only the target group, i.e. who the communication is aimed at, but also the segments of population according to:
  - Demographics: age, gender, geographical location, education or socioeconomic group
  - Vaccination behaviors: vaccination status, risk perceptions, barriers/enablers, views and perceptions to vaccination.

Communication target audience for the dengue screen and vaccinate intervention

4. MESSAGES FOR THE DENGUE S&V APPROACH

- Communicators should understand target audience knowledge, attitudes and behaviors in order to develop and articulate effective messages shaped to the different audiences. Ideally, these messages should be based on the formative research and address misconceptions and knowledge gaps identified in the initial analysis.
- For the medical audience, messages should be relevant to their practice, precise, and evidence-based. For the non-medical audience, communicators need translating technical information into messages that non-expert audiences can understand, using clear and non-technical language, and avoiding medical jargon and complex concepts.
- The country's communications strategy should consider tailoring the messaging to hard-to-reach
- populations, including low-literate parents and other specific audiences.
- The communications team will want to echo and amplify messages of the existing dengue prevention program in the country, and not contradict them, while adding information about dengue vaccination.
- Using positive vaccination conversation with positive vaccination experience may help uptake of the intervention.
- Communication messages will need to adapt to the S&V implementation scheme selected in the country (One-step or Two-step intervention, school-based / community-based / health care-based / mixed settings interventions) [see Module IMPLEMENTATION STRATEGIES].

4.1. Messages for the public

- Messages need to be simple, easy to recall, repetitive and attention getting. Key communication topics for the public may address dengue prevention, dengue vaccine efficacy and safety, possible side effects, the reasons for screening before vaccinating, the risk and benefit of the intervention, where and how it is delivered.
- As many people will take to their search engine to learn more about the intervention, good quality easy to understand information should come up early in a search on the internet.
- Simplified information on the results of clinical trials and the dengue vaccine implementations already conducted (including the number of people who have received the vaccine as part of public vaccination programs) can help build confidence in the vaccine.

- Topics of key messages can be:
  - Dengue is a disease transmitted by mosquitoes.
  - Severe dengue, including dengue hemorrhagic fever (DHF), occurs mostly after the second infection and can be fatal.
  - Anyone, child or adult, can be infected with the dengue virus and become severely ill.
  - The dengue vaccine prevents from dengue. It is safe, does not harm, and is endorsed by the government and the WHO.
  - The vaccine is given only to those who have had dengue before.
  - Rapid diagnostic tests (RDTs) are available for the detection of past dengue infections.
  - Provided directly at point of care, the test aims to inform individuals and health care providers (HCPs) on eligibility for vaccination against dengue.
  - There is a slight probability that the test gives false positive results, in which case, very rarely, some individuals who have not been infected may be vaccinated. In the event of a subsequent natural infection with dengue, these people will be at the same risk of severe dengue as people who already had a first natural dengue infection.
  - It is up to individuals who have been tested positive for dengue to decide, based on the recommendations of their HCPs, whether to be vaccinated or not against dengue.
  - Like other vaccines, the dengue vaccine is not 100% protective, therefore, preventive measures against mosquito bites need to be maintained, and it is important to continue seeking medical care in the case of fever or other dengue symptoms.
- Messages should be framed differently depending on the target or the context:
  - Narratives are influential tools that can trigger an active decision-making or a change of mind. E.g. *"I was quite hesitant with the dengue vaccination because* (state the problem that arise from formative research)*, but when I talked with the nurse at the health clinic, I realized that* (state the solution to the problem)*. Now I am happy because I know my status and* (a: seropositive) *can therefore be vaccinated and be protected from suffering severe dengue in case I get infected again* (b: seronegative) *while I haven't had dengue before and therefore cannot be vaccinated, I can come back later on for further testing".*
  - Illustrations, figures and icons increase accessibility and understanding of information, especially for low literacy audiences and children.
- WHO recommends creating messages that convey more than just information but elicit emotions, create trust, and ensure genuine understanding of the issue. They should all be applied with care and always tested with representatives of the audience before wider use. Several methods may apply:
  - Focus on gains or on loss - E.g. "*You have a right to health and life. Protect that right: get tested for past dengue infection and vaccinated if you are positive*" (gain frame) or "*Dengue can kill you. Get protected: get vaccinated if you have been tested for past dengue infection*" (loss frame).
  - Emotional appeals – they elicit emotions but should be culture and context-specific and applied with care. E.g. "*Protect your child. Test for dengue and vaccinate if positive*".
  - Fear appeals – They stress potential losses and elicit fear but have to be combined with prevention information and a clear call for action. E.g. "*At the time her son died from dengue, there was no vaccine available. Protect the ones you love: screen and vaccinate*".

4.2. Key messages for media

- It is important to build and maintain open and continuous information sharing with all media on the vaccine and S&V intervention, the latest scientific articles, technical releases, and relevant lessons learnt from program implementation.
- Topics of key messages can be:
  - Today, there is no specific cure available for dengue disease.
  - Severe dengue is a leading cause of serious illness and death in some Asian and Latin American countries.
  - The global incidence of dengue has grown dramatically in recent decades. About half of the world's population is now at risk. There are an estimated 100-400 million infections each year.
  - Dengue infection is unique in that a secondary infection tends to be worse than the first infection. Therefore, preventing dengue in individuals with a prior dengue infection has the potential to reduce the high human and economic costs of severe dengue.
  - Trials showed that in patients 9 years and older, the dengue vaccine can reduce instances of severe dengue by 90% and decrease the risk of hospitalization from dengue by 80%.
  - The dengue vaccine has been evaluated in studies involving more than 40,000 people from 15 countries with up to six years of follow-up data

from large-scale clinical safety and efficacy investigations. It is safe and does not cause any harm nor severe dengue.

- The vaccine is not indicated for those who did not have a past dengue virus infection. This is evaluated by laboratory testing and is the rational for the Screen-and-Vaccinate strategy proposed.
- Rapid diagnostic tests (RDTs) for the detection of dengue infections are available.
- The OnSite® Dengue IgG RDT, is an optimized point-of-care RDT specifically designed to identify individuals in the age range for vaccination who have had a past dengue infection.
- Provided directly at point of care, the test aims to inform individuals and HCPs on eligibility for vaccination against dengue.
- It is up to individuals who have been tested positive for dengue to decide, based on the recommendations of their HCPs, whether to be vaccinated or not against dengue.
- The specificity of the OnSite® Dengue IgG RDT is not 100%, therefore, there is a slight probability that based on false positive test results, some seronegative individuals will be vaccinated. In the event of a subsequent natural infection with dengue, these people will be at the same risk of severe dengue as people who already had a first natural dengue infection.

4.3. Key messages for health staff

- Health workers need to fully understand and adhere to the intervention, which requires specific information regarding the rational for the new strategy, and how to organize the screening and the vaccination
- They also need to know how to talk effectively with communities about dengue and how to be able to deliver timely, accurate, appropriate and uncomplicated messaging on what the vaccine does and how it works, and the new S&V strategy.
- They should be trained on how to pass on messages taking emotions into account, and how to respond to misconceptions, anxiety, hostility, and to those seronegative for prior infection who would want to be vaccinated.
- Special attention should be given to ensuring that health workers do take the time to respond to potential queries from parents or patients, whether S&V take place in a private hospital or during a public campaign.
- Examples of key topics can be:

- *Approximately 95% of all severe/hospitalized cases of dengue are associated with second dengue virus infection.*
- *After 20 years of Research and Development, Dengvaxia® was approved for the prevention of dengue in individuals with prior dengue infection and living in endemic area.*
- *WHO granted Dengvaxia® prequalification status on March 2020.*
- *Dengvaxia® was evaluated in a large, robust clinical trial program, involving 31 studies and more than 41,000 children, adolescents and adults from endemic and non-endemic countries*
- *Trials showed that in patients 9 years and older, the dengue vaccine can reduce instances of severe dengue by 90% and decrease the risk of hospitalization from dengue by 80%.*
- *The actual risk of severe dengue to a vaccinated seronegative is the same as the risk of an unvaccinated seropositive, or about 5 out of 1000 infected patients.*
- *The increased risk of severe dengue in seronegative patients translates to an excess risk of 2 severe dengue cases out of 1,000 seronegative patients, while the vaccine decreases severe dengue risk by 90% in those who have already had dengue.*
- *The dengue vaccine does NOT cause any known disease, including dengue.*
- *Long term follow-up of 40,000 individuals for up to 6 years failed to show any deaths in either seronegative or seropositive vaccine recipients*
- *Rapid diagnostic tests (RDTs) for the detection of dengue infections are available. While some of the currently available tests are very good at screening out those without past infection ("high specificity"), they are less good (around 50%) at identifying all those who have had dengue before ("moderate sensitivity.")*
- *The OnSite® Dengue IgG RDT, is an optimized point-of-care RDT specifically designed to identify individuals in the age range for vaccination who have had a past dengue infection.*
- *Its specificity (ability to screen out those without past infection) is 98%, while its sensitivity (ability to identify past infection) is 95%.*
- *Provided directly at point of care, the test aims to inform individuals and HCPs on eligibility for vaccination against dengue.*
- *The OnSite® Dengue IgG RDT, is CE-marked and licensed in more than 5 countries in Latin America and Asia pacific. Other country approvals are pending.*

> *It is up to individuals who have been tested positive for dengue to decide, based on the recommendations of their HCP, whether to be vaccinated or not against dengue.*

> *The specificity of the OnSite® Dengue IgG RDT is not 100%, therefore, there is a slight probability that based on false positive test results, some sero-negative individuals will be vaccinated. In the event of a subsequent natural infection with dengue, these people will be at the same risk of severe dengue as people who already had a first natural dengue infection.*

4.4. Key messages for the education staff and community leaders

- The education staff (school-based strategy) and the community mobilizers (community-based strategy) will have to deliver front-line information to populations, advocate for the intervention, and answer questions from those interested.

- Examples of key topics can be:

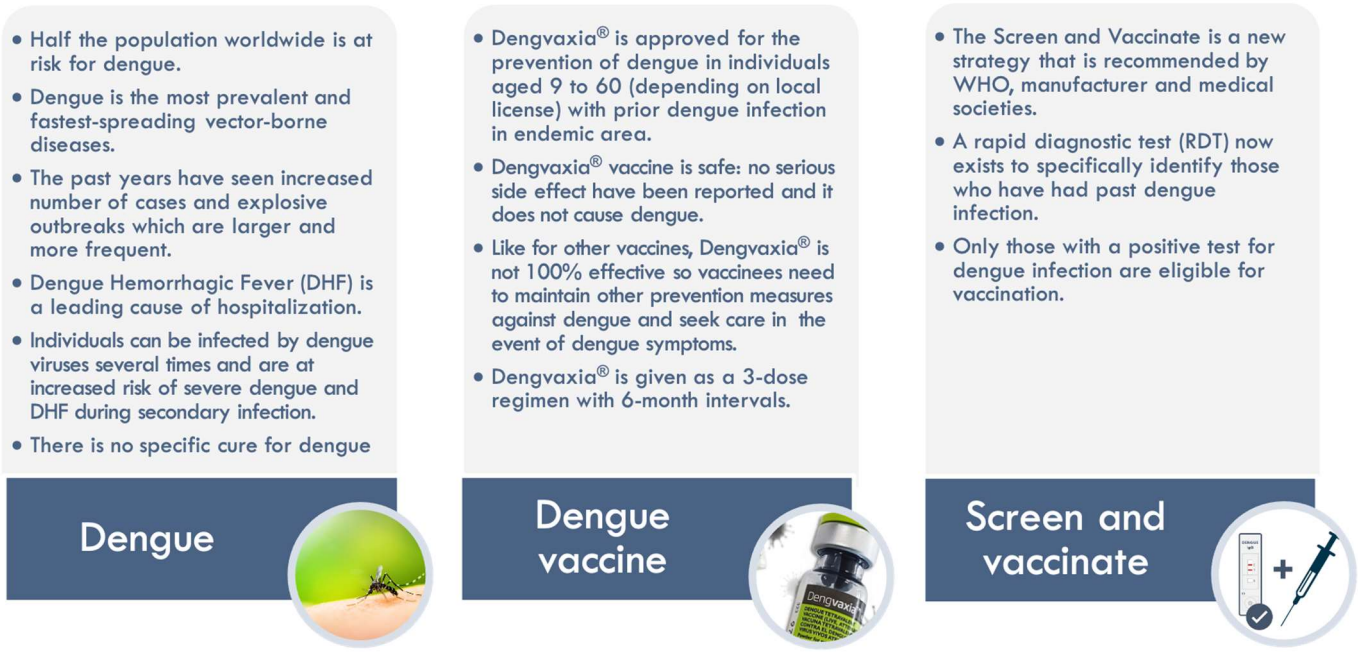
> *Dengue is a growing problem in our country with more and more people suffering from the disease. It can cause severe disease leading to death. Dengue outbreaks disrupt health services, education and socio-economic fabric of an entire area.*

> *The dengue vaccine is safe and does not cause any known disease, including dengue.*

> *The vaccine is recommended to prevent severe dengue in those who already had been infected with the dengue virus. One of the ways to know if you had dengue before is to be screened for past infection. If you are positive and in the age group targeted by the campaign, you will be proposed vaccination.*

> *Vaccination is proposed for those aged X to Y years of age, because in our area, they bear the higher risk of contracting severe dengue.*

Key messages for dengue vaccination



4.5. Communication materials and channels

- Communication is not just a message, it is about how HCPs or influencers talk with (not at) people, how they are able and trained to listen, understand and engage with people.
- A holistic approach is recommended, using a range of materials, channels and initiatives adapted to different segments of the audience. After mapping available channels and their capacities to reach each identified targets, communicators should analyze the audience's preferences for receiving and seeking health information.

- The country program may want to consider producing the following types of information, education, and communication (IEC) materials:

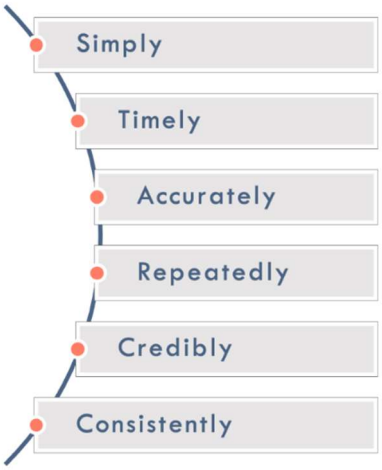
> **Social media videos and messaging:** to advertise and explain the dengue burden and the dengue S&V intervention to a very large public.

> **Websites, blogs, web forum:** to pro-actively deliver information and gather feedback. It may be declined in several forms: from general infor-

mation for a large public audience to highly scientific content for medical and scientific experts.

- **Direct communications:** can also be considered with lay public, leveraging on social media, online lay public influencers, or parenting websites.
- **Mobile applications and chatbots:** to present quick and easy information for the community and for any stakeholder who needs to learn or answer questions from the public or other staff.
- **Leaflets**: for community to understand key concepts on dengue, dengue vaccine and dengue screen and vaccinate strategy.
- **Booklets or fact books:** with more detailed information on the same topics, for audiences who directly interfere with those who make the decision to vaccinate. They help understanding further the concepts and being able to answer questions and respond to concerns. They target a more health-educated audience, including teachers and community workers.
- **Posters, banners and billboards**: can "legitimize" the S&V intervention and bring the information to a wide audience. T-shirts given to vaccinators and other staff can be thought of as "moving posters" and may trigger conversations between community members and health staff about the vaccine.
- **Cartoons and mascots:** may serve approaching young audiences.
- **Slide deck**: presents in-depth information on various topics to explain strategies and concepts to HCPs and educated stakeholders during workshops and meetings.

- Appropriate channels of communication should follow the STARCC principles:



- A fundamental step is to assess the information ecosystem and web access patterns to understand what are the most trusted and followed sources of information in the country.
- Social media platforms need to be largely involved in the communication for dengue S&V (Facebook, Twitter, YouTube, Instagram, LinkedIn, Vimeo, Snapchat, TikTok, WeChat etc, depending partly on the country landscape).
- Besides social media, a range of communication channels should be used such as interactive websites, blogs, Mobile App, radio and television shows, informational meetings, community billboards, public announcements, articles in the local media, distribution of leaflets, direct mails or posters on public transport. They will help promote as widely and effectively as possible messages and information intended for the population and health professionals.
- For the HCPs, co-workers, teachers, counsellors, and community leaders, interpersonal communication may be one of the most effective communication channel, particularly in addressing community needs, doubts, and concerns. These one-on-one discussions are often the most trusted channels for health information.
- HCPs need training in how to engage with people regarding the S&V process and to answer all questions about the vaccine. Interpersonal communication is also important when engaging with vaccine opponents or those who feel hesitant about the intervention. Specific training programs in communication for HCPs exist, that cover how to have vaccination conversation with the hesitant or a refuser.
- Interactive methods also include individual or group meetings at schools, health facilities or other public settings, with people from the community, teachers and health workers.
- Discussion forums, sessions, SharePoint and one-to-one outreach to journalists need to be organized and maintained throughout the intervention.
- Communication is most effective when delivered by trained, trusted and credible people such as health workers, teachers religious and community leaders. Advocacy messages will be heard all the more when they are relayed by popular bloggers, YouTubers, and other influencers from social media.
- Partnerships with families, medical societies, pharmacy associations have proven efficient in building trust.

Example of communication matrix for the S&V intervention.

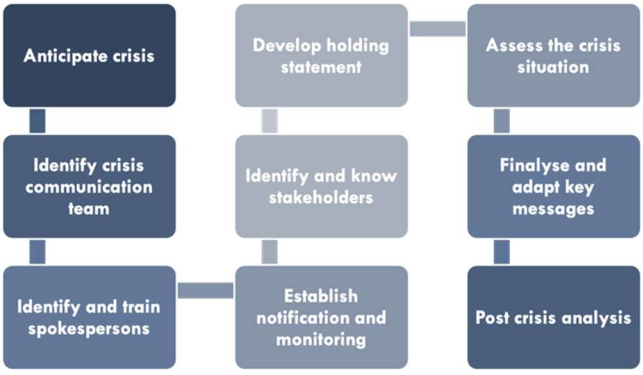
AUDIENCE	COMMUNICATION KEY TOPICS	MEDIA AND RESOURCES	CHANNELS AND ACTIVITIES
Vaccinees & vaccinees' caregivers	• Burden of dengue in recent years • Importance and benefit of dengue vaccination • Vaccine characteristics and safety • Know your status • S&V intervention: screening test, eligibility etc.	• Social media messaging/videos • Radio and/or TV spots and shows • Mobile messaging • Web sites/Blogs/Forums • Leaflets • Posters, banners, billboards • Mobile applications / chatbots • Cartoons and mascots	• Social media campaigns • and platforms • Local and national media releases • Web platforms • Sensitization and information • meetings • Interpersonal communication • Distribution and display of materials
Health care providers	• Burden of dengue in recent years • Importance and benefit of dengue vaccination • Vaccine characteristics and safety • Help them find out about their status • Understanding of the S&V strategy • Communication with community	• Slide deck • Web sites/Blogs/Forums • Mobile applications/chatbots • Booklets or fact books • Posters • Social media messaging/videos • Mobile messaging	• Cascade training on communication • Workshops and meetings • Web platforms • Distribution and display of materials • Social media platforms
School staff	• Dengue and prevention • Information on dengue vaccine • Know your status • S&V intervention: screening test, eligibility etc.	• Booklets or fact books • Leaflets • Posters and banners • Web sites/Blogs/Forums • Mobile messaging • Mobile applications / chatbots • Cartoons and mascots	• Workshops and meetings • Distribution and display of materials • Social media platforms • Web platforms
Community leaders	• Burden of dengue in recent years • Importance and benefit of dengue vaccination • Vaccine characteristics and safety • Know your status • S&V intervention: screening test, eligibility etc.	• Leaflets • Booklets or fact books • Web sites/Blogs/Forums • Mobile applications/chatbots • Mobile messaging • Social media messaging/videos	• Workshops and meetings • Distribution of materials • Social media platforms • Web platforms
Media	• Burden of dengue in recent years • Importance and benefit of dengue vaccination • Screening test for past dengue infection now available Vaccine characteristics and safety • S&V intervention: screening test, eligibility etc.	• Web sites/Blogs/Forums • Slide deck • Interpersonal communication • Mobile messaging • Mobile applications/chatbots • Social media messaging/videos • Leaflets	• Meetings • Web platforms • Social media platforms
Medical societies and experts	• Dengue vaccine efficacy and safety • Dengue vaccine public health impact • Screening test for past dengue infection now available Recommendations for the S&V strategy • Dengue diagnostic for vaccine implementation • Dengue vaccination and outbreaks	• Web sites/Blogs/Forums • Scientific articles • Dengue vaccine toolkit • Technical releases • Slide deck • Mobile messaging • Mobile applications/chatbots	• Meetings and conferences • Web platforms • Social media platforms

5. COMMUNICATION CRISIS MANAGEMENT

- While the dengue vaccine is proven safe and the vaccine indication is restricted to those who had a previous dengue infection, similarly to when implementing other vaccines, communication crisis may occur.
- A range of events may erode confidence in the dengue screen and vaccinate program. Vaccine reactions, critical media reports, social media stories and rumors, activities of anti-vaccination groups, critical studies or temporary suspensions of vaccines may occur and create distrust and hostility in the public.
- In the case of dengue screen and vaccinate, additional specific factors can participate to vaccine hesitancy, including:
  - the previous major communication crisis in the Philippines;
  - misconceptions of risks of severe dengue in seronegative vaccinees;
  - possible outbreaks during vaccine implementation;
  - political misuse of an event;
  - misinterpretation of a change of label and recommendations;
  - mass psychogenic illness (adolescents vaccinees may be more prone to panic reactions (e.g. fainting after vaccine administration) that will quickly spread and be amplified on social media.
- Building and maintaining trust in health authorities and health workers is paramount: once trust is lost, it is difficult to re-establish, and risk communication becomes ineffective.
- Risk communication is defined by educating the population about risks before a crisis has occurred. It implies understanding the risks associated with dengue disease; understanding the benefits and risks of the dengue vaccine and the S&V intervention; and knowing where to find accurate, trustworthy and clear information about these. How risk is perceived during a crisis is affected by what the individual already knows.

5.1. Communication crisis plan: hoping for the best, planning for the worst

- A crisis communications plan implies the creation of a written response structure that will not only allow responding quickly, efficiently, effectively and in a premeditated way, but that will also guide and optimize reaction to future crises.
- As crises require a short response time, the crisis communication plan needs to be ready and validated in advance of the vaccine implementation.
- The dengue S&V crisis communication plan should include:
  - The creation of a crisis team that need to be trained on handling social media crisis, with designated staff roles and responsibilities
  - Designated spokespersons as well as a list of contact persons identified and mobilized in each of the institution, company, media, and community involved
  - The building of strong relation with stakeholders
  - A procedure to coordinate between response teams
  - Listening skills to identify community concerns and adverse events that are associated with the S&V intervention
  - Culturally appropriate holding statements for use in a crisis, with planning for situation-specific content and material development and pre-identified channels of information dissemination



5.2. Detection and risk amplification

- An "early alert" system should be in place to advise program managers when there is a need for a crisis communication intervention.
- Emerging public concerns, public opinions and rumors around the intervention should be tracked near real-time in social networks and traditional media, from field and globally. Such social listening should be able to separate true signals from background noise.
- Listening skills of HCPs in contact with vaccine targets and influencers are key to understand the nature, source and reasons for concerns and fears. For those,

good listening and effective reporting to the program requires more training, practice and effort.

- Several methodologies help with risk detection:
  - > Monitoring social media (social media, search, news sites, blogs, forums…)
  - > Monitoring traditional media (newspapers, magazines, radio, broadcast)
  - > Producing and analyzing real world data (polls, face-to-face interviews with health workers and individuals, national question-and-answer phone-ins or chats, hotlines, feedback from community leaders and operational research within specific target groups)
- For social listening analytics, countries need to ensure specific tools and technical support to enable monitoring and analyses of conversations about the S&V intervention in digital space and the real world.
- Social listening and community feedback are not exclusive and human insights is important to validate digital findings.
- These activities should be conducted in collaboration with international agencies, NGOs, digital technology companies, academic partners, etc.
- Once collected, near real time data needs to be aggregated, filtered, visualized on dashboards to inform action.

5.3. Response: be prepared, don't simply react

- Vaccine confidence cannot be increased by facts and education alone. To prevent or mitigate the crisis detrimental impact, crisis response involves using effective strategy and tactics, resonating with the audiences.
- During a crisis, communication activities and messaging are also based on attitudes, social and cultural norms, structural barriers, habit and identity.
- Messages contents need to be tested for efficacy and safety to prevent backfiring.
- Misinformation is hard to correct. Often, the more you are trying to disprove a myth, the more you reinforce it. The followings may be considered:
  - > Debunk the myths - do not repeat the myth but emphasize facts and success stories instead.
  - > Explain the agendas behind the myth – conspirators generally defend economic, political, or ideological interests.
  - > Present only core facts: myths are simple, so should be the facts.
  - > Avoid strong language and information that could be twisted back into another myth.
  - > If referring to a misperception quote, use visual cues to warn that the upcoming information is false.
  - > Answer the myths by providing a true alternative explanation and positive narrative regarding Dengvaxia® and the OnSite® Dengue IgG RDT.
  - > Use easy-to-read graphics and figures.
- It makes sense to use communication channels similar to those used to disseminate disinformation messages, in order to reach the same targets. Instead of focusing on a web page that speaks only to itself, a response strategy should be aimed at reaching and attracting people to pro-vaccine/Dengvaxia® groups, the same way anti-vaccine/Dengvaxia® lobbies work.
- As young people are super-spreaders, engaging them in social media listening, formulating messages and designing responses is strongly recommended.
- It is important to show and express empathy for the people involved, and to respond from the "victim" perspective in a way that is sensitive to their concerns and needs.
- Health authorities, civil society, scientists, pharmaceutical companies, community leaders and engaged citizens should all join forces to help journalists, opinion leaders and the public see clearly the value of vaccination.
- The accessibility and frequent interaction with all media are essential. Honest and open external communication is crucial for maintaining and building trust. It is important to:
  - > communicate broadly and to selected target groups;
  - > communicate often using consistent messages through many relevant channels;
  - > communicate where there are uncertainties.
- A strong response may not be necessary for all events as not all will escalate into crisis; giving a strong focus on small event by over-communicating about it may generate or fuel the concern.
- Both dengue and dengue vaccination may be associated with risk, but in the absence of severe disease or outbreak, the fear of dengue may be replaced the by fear of the vaccine.

CASE STUDY:
DENGVAXIA® COMMUNICATION CRISIS IN THE PHILIPPINES

INTRODUCTION

Dec 2015: Dengvaxia® registration

Apr 2016: Launch of school-based program / 830 000 vaccinated

CRISIS

2016 : Presidential election

2016 : Hesitation about Dengvaxia® is vocalized by scientists

Nov 2017: Campaign officially suspended after safety concerns due to relabeling

2018: National scandal
Senate hearing on Dengvaxia®

2017/18: Dramatic loss in (all) vaccines confidence
Drop of vaccine coverage rates

Jan 2019: Dengvaxia license revoked

2018/19: Vaccine-preventable diseases outbreaks, including dengue

MITIGATION

2018/19: Listening campaigns
Launch of platforms for online chats with health experts
Launch of community platforms involving the whole society

RESULTS

2019/20: Vaccination coverage back to normal

In December 2015, Dengvaxia® is registered in the Philippines. Since early 2016, hesitation about the vaccine is vocalized by some experts within the scientific community. In March a public school-based vaccination program is launched in 2 regions. 830 000 children aged 9 to 13 years receive vaccination. 2016 is a presidential election year.

In November 2017, the manufacturer updates the vaccine label; safety concerns immediately arise, and the campaign is officially suspended. From December 2017 and during 2018, increasing AEFI, including death, are reported. Highly emotional and politicized narrative ("'Filipino kids are not guinea pigs") are amplified by social (Facebook) and mainstream media; Online misinformation about the Dengvaxia® exacerbates controversy and vaccine hesitancy; anti-vaxxer misinformation goes viral; some promotes alternatives to the dengue vaccine, like herbal food supplement; anxiety and anger seize the populations.

The Department of Health DOH issues guidelines on case management and AEFI surveillance related to Dengvaxia® and hospital set up "Dengvaxia® wards" to manage suspected cases of AEFI.

Senate hearing on Dengvaxia®. In February 2019, the Dengvaxia® license is revoked in the Philippines. The country faces dramatic loss in vaccine confidence (93% in 2015 vs 32% in 2018).

The DOH identifies vaccine hesitancy as one of the reasons for measles outbreak. Polio outbreaks reappeared after 19 years free of the disease, and in 2019, the country suffers the worst dengue outbreak in years.

Fake news and false statements are debunked:

- Clinical investigations and epidemiological studies prove that the vaccine is safe and causes no AEFI (no vaccine-related deaths and no increased risk of dengue observed).
- From 2019, a three-pronged approach is used to combat vaccine hesitancy:
  1. Listening: launching of ***Your Voice***, a listening campaign to understand questions and concerns of Filipinos regarding their health.
  2. Science-based communication: launching of ***FamHealthy***, an online fireside chat with health experts. It helps bring medical experts closer to patients and caregivers who could be worried about family health issues. Such online community platforms provide relevant medical information, latest scientific and medical updates, and professional suggestions to help understanding. They are a safe place to hear about the journey and experience of other people who have successfully navigated through the same dengue intervention, and provide solutions to help families make better informed decisions.
  3. Whole-of-society approach to engagement: helping media connecting with medical experts so that they can deliver science-based facts (***Health4all***); build strong engagement of health champions; taping into youth creativity through a ***Youth Health Patrol Initiative***. Such coalition brings together engaged citizens, healthcare experts, and non-medical professionals to design better health outcomes.

In 2019, coverage rates for all vaccines are back to normal and even higher for some antigens.

6. READ MORE

CONTEXT FOR THE DENGUE VACCINE INTRODUCTION

- The WHO vaccine position paper, outlining WHO recommendations for the dengue vaccine, was published 7 September 2018: No 36, 2018, 93, 457–476, available at http://www.who.int/wer/2018/wer9336/en/
- Sanofi Pasteur update of product label published November 29, 2017 is available at: http://mediaroom.sanofi.com/sanofi-updates-information-on-dengue-vaccine/

- Dayan et al. *Efficacy after 1 and 2 doses of CYD-TDV in dengue endemic areas by dengue serostatus*. Vaccine. 2020 Sept; 38(41): 6472-6477. doi:10.1016/j.vaccine.2020.07.056. The article describes results from a post-hoc analysis of two Phase III studies showing that CYD-TDV has high efficacy against VCD from the first dose.

OPPORTUNITIES AND CHALLENGES FOR DENGUE VACCINATION

- Conducting Formative Research for HPV Vaccination Program Planning: Practical Experience from PATH. 2012. This PATH publication discusses audience research including use of focus groups and individual interviews; it is available at: http://www.rho.org/HPV-formative-research.htm
- Johnson, et al. *The online competition between pro- and anti-vaccination views*. Nature. 2020 June; 582: 230–233. This article study how this distrust evolves at the system level and provide a system-level analysis of the multi-sided ecology of nearly 100 million individuals expressing views regarding vaccination on Facebook.
- VCP, the Vaccine Confidence Project monitors public confidence in vaccination programs by building an information surveillance system for early detection of public concerns; applying a diagnostic tool to data collected to determine their potential to disrupt vaccine programs; and providing analysis and guidance for early response and engagement with the public to ensure sustained confidence: http://www.vaccineconfidence.org/
- What went wrong with the breakthrough dengue vaccine? By Edsel Maurice Salvana, TED Fellows program; available at: https://fellowsblog.ted.com/what-went-wrong-with-the-breakthrough-dengue-vaccine-cf8519cb90c8

COMMUNICATION STRATEGY FOR THE DENGUE VACCINE

- WHO Strategic communications framework, 2017, available at http://www.who.int/communicating-for-health/en/
- De Figueiredo et al. "*Mapping global trends in vaccine confidence and investigating barriers to vaccine uptake: a large-scale retrospective temporal modelling study*". The Lancet 2020, vol396(10255): p898-908.
- WHO and UNICEF have developed guidance tools to support planning and implementation for COVID-19 vaccination. They offer practical guidance on a range of areas – from planning, to data gathering and evaluation, to specific strategies for community engagement and managing rumors and misinformation. A communication plan template is intended to offer an outline of the communications activities that should be considered when countries are preparing to introduce COVID-19 vaccines. They are available at: https://www.who.int/initiatives/act-accelerator/covax/covid-19-vaccine-country-readiness-and-delivery/acceptance-and-demand
- HPV Vaccine Lessons Learnt & Recommendations – Communications. London School of Hygiene & Tropical Medicine and PATH, 2016. Based on a review of HPV vaccine delivery experience in 46 low- and middle-income countries, this brief highlights findings, key lessons and recommendations relevant to the theme of HPV vaccine communications, and is available at www.rho.org/HPVlessons.

MESSAGES FOR THE DENGUE S&V APPROACH

- Some programs like AIMS (Announce; Inquire; Mirror; Secure) aim to teach health care providers how to have a vaccination conversation, particularly with the hesitant or a refuser. file:///C:/Users/isabe/Downloads/vaccines-and-trust.pdf

COMMUNICATION CRISIS MANAGEMENT

- Vaccination and Trust; how concerns arise and the role of communication in mitigating crises. WHO, 2017. This document presents the scientific evidence behind WHO's recommendations on building and restoring confidence in vaccines and vaccination, both in ongoing work and during crises.: file:///C:/Users/isabe/Downloads/vaccines-and-trust.pdf
- Pear headed by UNICEF, the Vaccination Demand Observatory support global communities with increased vaccine demand and reduce the impact of misinformation. This program provides help equipping countries with local-level, equitable social listening programs which are tightly coupled to risk communication and community engagement, and building a sustainable network of country 'infodemic managers' supporting national immunization programs and their networks of community-based organizations: https://vaccinationdemandobservatory.org
- Guidelines, tools and training on infodemic management are available from the WHO website at https://www.who.int/health-topics/infodemic#tab=tab_