

TC Document

I. Basic Information for TC

▪ Country/Region:	REGIONAL
▪ TC Name:	Leveraging AI Interactive Agents to Enhance Vaccination Uptake in Suriname and Argentina
▪ TC Number:	RG-T4634
▪ Team Leader/Members:	Scartascini, Carlos (RES/RES) Team Leader; Rosenblatt, David Louis (CCB/CCB) Alternate Team Leader; Centeno Lappas, Monica Clara Angelica (LEG/SGO); Vazquez, Claudia (SCL/SPH); Ramirez Sanchez Indhira (CCB/CCB); Ho-A-Shu, Ian (SCL/SPH); Smith, John D. (RES/RES); Mancilla, Elton Alexander (RES/RES); Sanchez, Mario Alberto (SCL/SPH); Escobar Genes, Myriam Helvecia (RES/RES); Castilleja Vargas, Liliana (CCB/CSU); Marquez Guerra Karina Olenka Stella (RES/RES); Sarrazin, Tom (RES/RES)
▪ Taxonomy:	Research and Dissemination
▪ Operation Supported by the TC:	.
▪ Date of TC Abstract authorization:	04 Oct 2024.
▪ Beneficiary:	Argentina, Suriname
▪ Executing Agency and contact name:	Inter-American Development Bank
▪ Donors providing funding:	OC SDP Window 2 - Economic Growth(W2F)
▪ IDB Funding Requested:	US\$80,000.00
▪ Local counterpart funding, if any:	US\$0
▪ Disbursement period (which includes Execution period):	24 months, 18 months execution
▪ Required start date:	January 1, 2025
▪ Types of consultants:	Consulting Firms
▪ Prepared by Unit:	RES-Research & Chief Economist
▪ Unit of Disbursement Responsibility:	RES/RES-Research & Chief Economist
▪ TC included in Country Strategy (y/n):	No
▪ TC included in CPD (y/n):	No
▪ Alignment to the Updated to the Institutional Strategy:	Gender equality; Institutional capacity and rule of law; Social inclusion and equality

II. Objectives and Justification of the TC

- 2.1 The Latin America and Caribbean region face significant challenges in terms of vaccinations, including disparities in access to vaccines, logistical issues in distribution, and public hesitancy. These challenges have led to lower coverage in certain geographical areas, making it difficult to achieve widespread immunity and control preventable diseases. Addressing these barriers is crucial for improving public health outcomes across the region.
- 2.2 Suriname and Argentina are not exceptions to these challenges. In Suriname, national vaccination coverage rates for key childhood vaccinations such as Pentavalent-3, Polio-3, and MMR-1 have not met the 95% target needed to prevent outbreaks, with notable disparities at the subnational level. Districts like Saramacca, Coronie, and

Sipaliwini report alarmingly low coverage rates, endangering not only individual children but entire communities. These setbacks have led to a resurgence of diseases once thought controlled, such as diphtheria, measles, and polio.

- 2.3 In Argentina, efforts to promote child vaccination are being intensified through a collaborative initiative with the Ministry of Health under the AR-L1409 project. This initiative targets children aged 0 to 24 months, emphasizing the timely completion of vaccinations to prevent diseases like tuberculosis, hepatitis B, measles, mumps, rubella, and polio. The strategy involves linking vaccination compliance to the Asignación Universal por Hijo (AUH), a monthly payment made for each child under 18 years of age when their parents are unemployed, work in informal jobs, or are domestic workers. The receipt of the AUH benefit would be contingent upon meeting vaccination requirements. Additionally, within the framework of the project AR-L1358, there is a strong focus on improving HPV vaccination rates, especially addressing the gender gap and the pivotal role pediatricians play in vaccination uptake.
- 2.4 With the integration of artificial intelligence (AI), there has been an increase in digital behavior change interventions that utilize the benefits of AI to influence real-world behaviors, as AI presents opportunities for cost reduction, time efficiency, and human error minimization (Alowais, S. A., et al, 2023). An area where this has been extensively explored is in health, particularly regarding cardiometabolic health and lifestyle interventions. (Bucher, A., et al, 2024). Quinn, C. C. et al. (2011) found that using a mobile- and web-based self-management system had a significant effect on diabetes patients. Through this system, patients get automatic, real-time educational and behavioral messages customized to their blood sugar, diabetes medicines, and lifestyle. As a result, there was a statistically significant 1.2% decrease in their glycated hemoglobin over 12 months, compared to those getting standard care. Subsequently, Tarricone, R., et al (2024) conducted a systematic review and found similar results in patients who self-monitored their behavior to take medication.
- 2.5 Regarding vaccine communication, chatbots are an effective tool, offering a seamless and natural interface to deliver credible and personalized information in real-time. This gives users easy access to accurate information, enhancing their understanding of vaccines and potentially improving their willingness to vaccinate (Passanante, A., et al, 2023). Hong, Y. J., et al (2021) implemented a real-time consultation messenger chatbot to send reminders and motivation boosters to increase children's vaccination rates. The chatbot effectively improved vaccination knowledge, motivation, adherence of parents to their children's vaccination schedules, and parental intention to proactively manage their child's vaccination schedule. Even in contexts of high vaccine hesitancy, such as France, Altay, S. et al (2023) demonstrated the effectiveness of a chatbot designed to answer people's questions about COVID-19 vaccines. Interacting with the chatbot enhanced individuals' intentions to receive the vaccine and positively shaped their attitudes toward vaccination.
- 2.6 The pilot projects to be developed under this TC will be conducted in the capital cities of Suriname and Argentina, focusing on increasing vaccination rates using AI-driven WhatsApp chatbots. In Argentina, the pilot will concentrate on increasing the uptake of vaccines such as HPV, MMR, BCG, pentavalent, polio, and hepatitis B, addressing gaps in coverage and awareness. In Suriname, the focus will be broader, encompassing all vaccines within the national immunization schedule. The initiative will utilize AI-driven WhatsApp chatbots to deliver personalized reminders, provide

accurate vaccine information, and engage communities, aiming to enhance public health outcomes in both countries.

- 2.7 The initiative will engage local health authorities and community leaders to ensure cultural relevance and effectiveness. The pilots will run for six months, with continuous monitoring and adjustments based on real-time data.
- 2.8 Success will be measured by analyzing changes in vaccination rates, vaccine trust, user engagement, and feedback. In particular, the two pilots will include a controlled experiment to assess the impact of AI-driven WhatsApp chatbots on vaccination rates. The treatment group will receive AI chatbot interactions, including personalized reminders, vaccine information, and support via WhatsApp. The control group will rely on traditional outreach methods, such as in-person visits, phone calls, and public health campaigns. Vaccination rates between these groups will be compared to evaluate the effectiveness of the AI chatbot in increasing vaccine uptake. Additionally, qualitative data on user satisfaction, information retention, and community trust in the AI chatbot will be collected to provide a comprehensive assessment of its impact. This experiment will help refine the chatbot's design and guide future expansions of the initiative.
- 2.9 The scalability potential of the projects under this TC is significant. It will establish a scalable model for digital health outreach, enhancing public health infrastructure and community resilience. Its targeted approach allows for localized testing and optimization before broader implementation. The AI-driven interactive agent solution will be designed to be adaptable to different languages and cultural contexts, facilitating expansion to other regions or countries with similar public health challenges. Data from these pilots will guide future expansions and refinements, ensuring scalable and impactful results.
- 2.10 This TC directly supports the IDB Strategy+ objective of reducing poverty and inequality by enhancing public health through increased vaccination rates. By using AI-driven WhatsApp interactive agents to improve access to vaccinations, the initiative addresses critical health disparities in Suriname and Argentina. This focus on healthcare helps to protect vulnerable populations, reducing the risk of illness that can perpetuate cycles of poverty. Additionally, by investing in human capital and ensuring equitable access to vaccines, the project promotes social inclusion and supports the IDB's broader goals of improving living standards and reducing inequality in the region.
- 2.11 This TC aligns with the "One Caribbean" initiative by integrating digital transformation and institutional strengthening into its pilot design for Suriname. By deploying AI-driven WhatsApp chatbots to enhance vaccination rates, the project addresses fundamental flaws in public healthcare delivery, improving access, transparency, and efficiency. This digital approach supports the initiative's goal of closing the digital gap and enhancing resilience, particularly in underrepresented communities. Additionally, by strengthening institutional capacity in Suriname, the project aligns with the cross-cutting focus of One Caribbean, ensuring sustainable social progress and reduced inequality, consistent with regional development goals.

- 2.12 This TC is aligned to GN-2819-14 as it will address the challenges of social exclusion, inequality, and innovation through support for policies aimed at equitable access to health services. This TC will not have any synergies or joint activities with the TC RG-T4546 Digital Health Highway.

III. Description of activities/components and budget

3.1 Component 1: Research on the effectiveness of AI interactive agents (\$75,000).

This component will finance the design, implementation, and evaluation of the pilots to be implemented in the capital cities of Suriname and Argentina.

3.2 The main activities include:

- 3.2.1 Designing and deploying AI-powered WhatsApp chatbots that deliver personalized vaccination reminders, respond to frequently asked questions, and provide accurate vaccine information in local languages.
- 3.2.2 Partnering with local health authorities and community leaders to promote the initiative and ensure the chatbots address culturally relevant concerns.
- 3.2.3 Conducting a controlled experiment comparing vaccination rates in units of analysis using the AI chatbot against those using traditional outreach methods to assess the chatbot's impact.
- 3.2.4 Collecting and analyzing data on chatbot interactions to identify trends, address common concerns, and optimize outreach strategies.
- 3.2.5 Writing a report (to be published as an IDB working paper) with the main results and policy recommendations.

- 3.4 Component 1 will finance a consultancy firm or an individual consultant, if needed, that will support the project team in the design, implementation, and evaluation of the pilots. The expected timeline for completion is 16 months.

3.5 Component 2: Dissemination (\$5,000). This component will finance the dissemination of the knowledge generated by this TC. The first goal is to disseminate the results to policymakers and target audiences, including academics and practitioners, in the beneficiary countries and other countries in the region. A second closely related goal is to inform the design and implementation of IDBG operations. Dissemination of research results within IADBG will help to achieve this goal by strengthening the case for operations focused on improving health outcomes through vaccination.

- 3.6 The main activities include publishing a blog post on the RES blog Ideas Matter and Research Insights in English and Spanish. In addition, we will disseminate the results and knowledge generated through meetings with policymakers in each beneficiary country. This component will finance the costs of dissemination, which could include the costs of in-person meetings. The expected timeline for completion is 2 months, following the completion of Component 1.

- 3.7 If the Bank receives, manages, or uses information that may contain personal data or sensitive information, the Bank's Personal Data Privacy Policy (GN-3030) will be followed in coordination with the IDB Privacy team.

Indicative Budget

Activity/Component	Description	IDB/Fund Funding	Counterpart Funding	Total Funding
Component 1: Research on the effectiveness of AI interactive agents	Consulting firm for the design, implementation, and evaluation of the pilots	70,000	0	70,000
Component 1: Research on the effectiveness of AI interactive agents	Individual consultant for the design, implementation, and evaluation of the pilots	5,000	0	5,000
Component 2: Dissemination	Dissemination activities (travel expenses, workshops, webinars, blog posts)	5,000	0	5,000
	TOTAL	80,000	0	80,000

- 3.8. The UDR for this TC will be RES/RES. The Team Leader is Carlos Scartascini (RES/RES) and the Alternate Team Leader is David Rosenblatt (CCB/CCB).

IV. Executing agency and execution structure

- 4.1 This operation will be executed by the IDB through RES/RES in close collaboration with SCL/SPH and CCB/CCB, given their expertise in this type of research. The research has complementarities with Bank operations and research. The Research Department (RES/RES) will be responsible for the preparation, execution, and supervision of Components 1 and 2 following the policies established by the Bank. The team leader will be responsible for the execution and monitoring of the operation in collaboration with the alternate team leader and the rest of the team members. The team leader will directly supervise consultants and track that deliverables are completed according to the project's planned timeline with the support of the team members of the project.
- 4.2 The principal reason for this execution structure is that the IDB has expertise, capacity, and experience in similar research projects. A second reason is that the Bank has the capacity and channels to disseminate the knowledge generated by this TC to policymakers and target audiences in the beneficiary countries and in other countries in the region.
- 4.3 There will be no supervision by the IDB's Country Offices for the execution of the TC. However, the IDB Country Offices of Suriname and Argentina will be advised of the results and policy implications. They will be informed and consulted about missions and the main activities related to the implementation of the TC.

- 4.4 The research implemented as part of this TC will be in collaboration with the governments of Argentina and Suriname through their ministries of public health.
- 4.5 The Bank will contract individual consultants, consulting firms and non-consulting services to carry out the activities described. The activities to be executed will be included in the Procurement Plan and will be contracted in accordance with Bank policies as follows: (a) AM-650 for Individual consultants; and (b) GN-2303-33 for Consulting Firms for services of an intellectual nature; and for other non-consulting services related to dissemination. The knowledge products generated from Bank-executed activities within this technical cooperation will be the property of the Bank and may be made available to the public under a creative commons license. The intellectual property of said products may also be licensed through specific contractual commitments that shall be prepared with the advice of the Legal Department. The knowledge products that will be generated as part of this TC will be produced and disseminated in accordance with AM-331 and AM-325.

V. Major issues

- 5.1 The main risk to successful and timely execution of this TC is that the team may not receive the data/information needed to complete the project with enough time according to the planned timeline. To minimize that risk, we will engage closely with counterparts in the governments of Argentina and Suriname to discuss the planned research questions, methodology to be used in the project, and the data/information required.

VI. Exceptions to Bank policy

- 6.1 This TC does not involve any exceptions to Bank policy.

VII. Environmental and Social Aspects

- 7.1 This Technical Cooperation is not intended to finance pre-feasibility or feasibility studies of specific investment projects or environmental and social studies associated with them; therefore, this TC does not have applicable requirements of the Bank's Environmental and Social Policy Framework (ESPF).

Required Annexes:

[Results Matrix_6433.pdf](#)

[Terms of Reference_14650.pdf](#)

[Procurement Plan_56339.pdf](#)