

## Developing Strategies in Health Promotion and Disease Prevention to Reduce Prevalence of Trachoma, Soil-Transmitted Helminthiasis (STH), and Ectoparasitosis: A Case Study in the Indigenous Communities of River Cubiyú, Vaupés, Colombia in 2021

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Health Campaign Effectiveness Program at The Task Force for Global Health

### Key Messages

1. Active participation of indigenous leaders and communities throughout all phases of an integrated campaign exercises their right to agency in health decisions, regulates the actions of institutions, and increases acceptance of proposed interventions.
2. Community participation should aim to provide tools for community agency in diagnosis, treatment, and control/elimination of disease.
3. Decisions must be made in consensus with all key stakeholders, and must respond to the community's needs and way of life.
4. Intersectoral collaboration is needed when evaluating costs and financing integrated campaigns.
5. Identification of key stakeholders and health situation analysis are the cornerstones for effective microplanning and implementation of integrated campaigns.
6. Health information management systems can enable georeferencing of indicators, improve real-time analysis of the health situation, facilitate microplanning, and improve real-time monitoring.
7. Health workers/promoters who speak the language(s) of the indigenous communities and understand their way of life can contribute to successful integration.
8. To prevent lack of decision-making that can delay the microplanning process, health authorities (rather than representatives) should be directly involved, and/or mechanisms in place to delegate decision-making.

## Abstract

The department of Vaupés in the southeastern Amazon Region of Colombia has a high burden of trachoma and other neglected infectious diseases (NID) as a result of social, hygienic, territorial, and environmental conditions. The mainly indigenous population is dispersed in remote areas, resulting in high costs to conduct health campaigns. Therefore, the indigenous and health authorities of the department found it necessary to integrate campaigns to control these diseases.

The primary objective of this case study was to identify which health promotion and disease prevention strategies could be integrated to reduce the prevalence of trachoma and soil-transmitted helminthiasis (STH) in the indigenous communities in the area known as Cubiyú River in Vaupés department. Following the start of the study, ectoparasitosis was identified as another common NID amongst the indigenous population and was therefore added to the study objectives.

This case study used a qualitative-qualitative methodology incorporating the participatory action research (PAR) design. The study was conducted between June and September 2021 across a population of 203 people (43 families) in Cubiyú River. The outcome of the study was the design of a series of integrated strategies, co-constructed with key stakeholders and the community during the microplanning process, that respond to the needs of the indigenous communities within the framework of health promotion and disease prevention.

A situation analysis of NID prevalence and population characteristics was conducted. Multiple risk factors for NIDs were observed, including overcrowding in homes, low levels of facial cleanliness and handwashing, and lack of routine deworming. Prevalence of NIDs including trachoma and ectoparasitosis was assessed.

The microplanning process included participants from the indigenous communities, health departments, and government. The main outcome of the microplanning process was the creation of the Vaupés plan for the elimination of trachoma and reduction of STH and ectoparasitosis prevalence with local and indigenous authorities.

Challenges encountered during the study included disruptions caused by the COVID-19 pandemic, a national strike, delayed decision-making by authorities, language barriers, and travel and communication delays due to weather.

The microplanning process was enabled by the active involvement and participation of indigenous communities and indigenous health promoters, which facilitated communication, uncovered community needs and viewpoints, and resulted in jointly identified solutions that were supported by the community. This participatory approach guarantees that communities have full exercise of their right to health and agency in decision-making.

The following promising practices were identified as a result of this case study.

1. Convene a working group with participants from all levels of government, health programs, and community to guide campaign decisions.
2. Involve community leaders in microplanning to ground activities in the socio-cultural context.
3. Validate beliefs and ways of life of the community during planning.
4. Conduct a health situation analysis and use data to adapt the approach to local contexts.
5. Invest in and use a health information management system (HIMS) to improve real-time monitoring and build capacity for local use.
6. Develop a logical framework and action plan with stakeholders to guide action and decisions.
7. Develop an integrated microplanning strategy based on situational analysis.
8. Make campaign decisions in a participatory manner with health departments and indigenous community leaders.

## Background

In the department of Vaupés, health and hygiene deficiencies are linked to the presence of trachoma and other neglected infectious diseases (NIDs) (1). Among the risk factors are low levels of facial cleanliness and handwashing, distant water sources, the presence of vectors (i.e., mosquitoes, rodents), lack of use of footwear, soil in houses, and cohabitation with animals (2). In this region, trachoma and soil-transmitted helminthiases (STH) are associated with the presence of these socio-economic and environmental factors, resulting in significant public health problems. The affected communities experience economic hardship from missed work and inability to provide childcare due to illness (1).

The implementation of the World Health Organization's 2018-2025 Global Water, Sanitation, and Hygiene (WASH) Strategy, in conjunction with preventive chemotherapeutic measures, are approaches under consideration for combating NIDs in the department (3). These strategies, combined with public health policies, aim to control trachoma, STH, and other NIDs through health promotion and primary disease prevention strategies to achieve the Sustainable Development Goals (4).

The proposed intersectoral approach was not limited to mass antibiotic and anthelmintic administration campaigns, but also includes preventive intervention to address environmental factors that promote transmission and increase the risk of reinfection in treated persons. The Vaupés health authorities have considered implementation of the SAFE strategy (S = surgery, A = antibiotics, F = face washing, E = environment) for the elimination of trachoma (5). However, this strategy should be adapted to the local context of the department of Vaupés (1).

This study sought to develop a series of integrated strategies, co-constructed with key stakeholders and the community, that respond to community needs within the framework of health promotion and disease prevention, and address the social determinants of health associated with NIDs. The implementation of these integrated strategies will improve the quality of health interventions and services provided to indigenous communities in the department of Vaupés. Furthermore, these

jointly-planned strategies will align with the policies, vision, and mission of participating organizations and the community.

### *Decision-making process*

The decision to integrate was informed by a health situation analysis and discussions with the indigenous communities, local authorities, and government through a series of workshops.

The indigenous communities participating in this study were selected given their previous work with the Departmental Secretariat of Health and the work team of the Universidad de los Andes. Since 2016, the university study team has carried out previous participatory activities to improve the health of the inhabitants of Vaupés, forging trusting relationships in the process. Furthermore, the communities themselves advocated most strongly for integration.

The Coordinator of the Vaupés vector-borne diseases program and his work team had extensive knowledge of the NID situation in the department and the local context, i.e., the distance of the communities from health services, eight hours by river or approximately 120 kilometers from the capital of Mitú, and the high cost of providing health services. This group supported combining the diagnosis, health promotion, prevention, and treatment of several NIDs into integrated campaigns.

An inter-institutional working group was formed with actors from different sectors including the regional government, Office of the Mayor, Department of Health Secretariat, Municipality Health Secretariat, and leaders of indigenous communities. The aim of the working group was the development of an integrated microplanning strategy, including goals for changes in behavior, sanitation, and clinical treatment of humans and animals.

## **Objectives and Methods**

The primary objective of this study was to identify which health promotion and disease prevention strategies could be integrated to reduce the prevalence of trachoma, STH, and ectoparasitosis in the indigenous communities of the Cubiyú River area.

The secondary objectives of the study were to:

- Identify the actors involved in decision-making for health promotion and disease prevention in the department of Vaupés.
- Understand the perspectives of the community and stakeholders on the prevention and health promotion strategies that have been applied for trachoma, STH, and ectoparasitosis.
- Co-develop integrated strategies with the community and stakeholders to address conditions and behaviors contributing to the current prevalence of trachoma, STH, and ectoparasitosis infections, utilizing the theory of change framework.

## Methods

A quantitative-qualitative approach was taken in this study. Participatory action research (PAR) was used to promote identification of community needs and viewpoints and identify solutions using a collaborative and democratic process involving researchers, local authorities, and members of the community (7). The research was divided into three phases: observation, analysis, and interpretation and action.

### *Observation phase*

The study team conducted a health situation assessment of NIDs in the area in order to present this data to stakeholders to inform the microplanning process. This was in part to address the perception amongst indigenous communities that NIDs are not a health problem, and local health authorities' lack of attention to these diseases.

First the study team conducted secondary data analysis of census information on various health indicators of La Sabana and Virabazú communities on the Cubiyú River. In the primary data collection phase, information was collected from 203 people comprising 43 families. A family characterization form collected data including location of the home, family members, quality of home and basic sanitation, health indicators by life cycle, reported morbidity, psychosocial factors of the family, eating habits and food security, and mortality. A registration card, which evaluated the prevalence of ectoparasitosis in these communities, was also utilized following initial reports of the presence of these diseases in the community.

A community-based information system (SIBACOM PLUS 2020) was used to manage data, generate georeferenced indicators, and create alerts for follow-up and monitoring. Notably, this was the first exercise to characterize and georeference health variables in the Cubiyú River area.

### *Analysis phase*

A workshop of 10-12 participants from the departmental and municipal health secretariats, vector-borne disease team, community members, and the study team was held with the goal of achieving participant recognition of the health problems that NIDs pose to the indigenous communities. To accomplish this, workshop participants reviewed the health situation assessments, analyzed the quantitative data collected during the observation phase, and identified possible solutions, including the interventions to be implemented. Furthermore, a workshop was held with indigenous communities to learn from and appreciate their ancestral knowledge and perspectives on the health-disease process of NIDs, an activity that informed the approach to identifying solutions that would be acceptable to the communities.

In order to prepare for the microplanning process in the next phase, two methods were used to inform understanding of what campaign activities could be integrated in the context of Vaupés. First, a literature review of effective strategies for reducing prevalence of trachoma, STH infections, and ectoparasitosis was conducted. Second, interviews with experts from the community and departmental authorities were conducted.

### *Implementation and action phase*

Eight workshops of 4-55 participants were held with indigenous communities in Mitú, La Sabana, Puerto Nazareth, and Virabazú and local authorities and the vector-borne disease team. In these workshops, the participants co-developed a logical framework and a departmental action plan to modify the conditions, behaviors, and practices contributing to the prevalence of trachoma, STH, and ectoparasites.

Furthermore, semi-structured Interviews were conducted with four individuals at the highest level of the government of Vaupés.

## **Results**

### **Analysis of the health situation of Cubiyú River communities**

At the start of this case study, no socio-demographic information was available on the population or the health of the indigenous communities in the area. Conducting the situation analysis provided the case study team and working groups a clear understanding of the scope of NIDs as well as the social determinants of health affecting the population. Providing georeferenced information about the health situation of the indigenous communities and indigenous perspectives on the situation was a quantum leap for the way in which the Ministry of Health approached the design of NID elimination and prevention campaigns. The results of this analysis are presented below.

#### *Age, literacy, insurance*

Approximately 63% of the population was under the age of 25; 12.4% of people above age 7 years were illiterate, compared to 2.4%, the national average; 90.1% of the population was covered by the subsidized health insurance system run by the state; 1.9% was covered by the contributory (private) system; and 7.9% of the population was not insured.

#### *Housing conditions*

All families had electricity, collected water from the river or rain, and none had an adequate sanitation facility for eliminating human waste. It was found that 58.1% live in overcrowded conditions (>three people per bedroom). Methods of garbage disposal: 48.8% burn garbage, 37.2% throw garbage into the environment, and 9.3% bury garbage. Housing materials: 23.2% of the rooms in the houses have dirt floors, 88.3% have clay roof tiles, and 95.3% of the walls are made of wood. The presence of rodents was verified in 83.7% of the homes. It should be noted that some of these conditions present increased risk transmission of NIDs (e.g., overcrowding and trachoma; poor sanitation and STH).

#### *Prevalence of NIDs*

There were no clinical signs of follicular trachoma in children between 1-9 years old, or trichomatous trichiasis in those older than 15 years. Only 58% of children aged 5-14 years old had received deworming in the last six months. Five families reported having a relative with scabies (11.6%), 13 families had relatives with pediculosis (30%), one family had a relative with tungiasis (2%), and no families had cases of larva migrans or myiasis.

### *Disabilities and other health conditions*

12 people (5.9%) had a disability; five had a sensory disability, three had a physical disability, one had a mental disability, and three had all three disabilities.

Two children with suspected Down syndrome were found. One child under one year of age was suffering from severe acute malnutrition, one was suffering from acute malnutrition, and one was suffering from obesity. Only one child (20%, n=5) under one year of age was up to date on the full vaccination schedule. Of the 26 children aged 1-4 surveyed, 18 (69%) had received the complete vaccination schedule.

Low rates of family planning (10%) and a fertility rate of 2.2 children per woman of childbearing age were observed. Few adults had received screening for cancer (cytology: 6%, mammography: 12%, prostate examination: 1%). There is evidence of low receipt of prenatal services (20%, or one of five pregnant women) and most pregnancies are attended by the community alone (80%).

### **Use of the health information management system**

The SIBACOM Plus 2020 system system allowed for the generation of indicators georeferenced in real time for each of the information modules collected. The first round of data collection and input required a significant effort involving advocacy with the indigenous authorities, training users in the instrument, and standardization of information.

Figure 1. A screenshot of the georeferencing module with plotted risk indicators in SIBACOM PLUS 2020.



## Involving the community in microplanning

The study team validated the beliefs and ways of life of the indigenous communities throughout the microplanning process. For example, the team sought to understand ancestral knowledge about the origin of disease in the community. The indigenous communities shared their worldview that diseases such as trachoma are acquired by a 'rupture of dialogue between nature and man,' and therefore treatments should support generating harmonic spaces between nature and human beings. Ultimately this understanding and involvement benefited the microplanning process and resulted in a campaign design that was accepted by both the communities and local authorities.

## Findings from qualitative analysis of interviews and focus groups

- **There is a disconnect between government-designed health care plans and local conditions.** Participants reported that the department provided health care plans; however, these plans were developed in the absence of reliable information, and are based on assumptions or under-recording of the actual disease prevalence. Participants reported that the dispersed and remote locations in which indigenous communities live leads to lack of information and poor communication between the different actors of the Colombian health system.
- **Dispersed rural populations rely heavily on the primary health care approach due to their distance and difficulty in accessing healthcare.** Interviewees reported that local authorities use a primary health care approach to address community health needs, e.g., routine visits for mass deworming of communities as a primary prevention strategy.
- **Community education and training forms the cornerstone for health promotion and the prevention and care of NIDs.** According to the Health Secretary of Vaupés, "These trainings make the individuals the agents of change in the community. In addition, the training allows participants to be carriers of [health] information that allows [participants] to publicize [health] risks and different aspects that can help in prevention."
- **Interviewees had basic knowledge of the microplanning strategy for the integration of public health campaigns.** This knowledge is related to the prioritization, choice of strategies and the optimization of resources; however, its use has been limited due to competing priorities and difficulty in accessing the area.

## Challenges and mitigation during the case study

The start of the study was challenged by the COVID-19 pandemic as well as a national strike that took place in Colombia that affected working conditions in Mitú, the capital of Vaupés. The **COVID-19 pandemic** had a significant peak in the country during the planning period, with cases doubling from April to July 2021 (8). At the beginning of the project, the pandemic prevented travel by the team due to institutional policies related to vaccination prior to carrying out field work. During this time, the country also went through a significant **social crisis** that led to massive public demonstrations against the national government, which resulted in a national strike and violence against protestors (9). The strike and unsafe conditions stopped work activities in the capital of Mitú, further delaying the project.

**Language** was another challenge to the full understanding and involvement of the indigenous communities in the study. The majority speak Cubeo and no Spanish. Therefore, three indigenous health promoters who spoke Cubeo were hired at the beginning of the microplanning process. This contributed to the success of microplanning since the promoters understood the ancestral and traditional knowledge of their culture, and had a basic knowledge of Western medicine and public health. This made it possible to identify broader solutions and harmonize the strategies to be implemented with social customs and beliefs.

At times, **lack of decision-making** by representatives of health authorities delayed the microplanning process. It was necessary to involve the decision-makers themselves in the process, and create a mechanism to delegate decision-making to increase the effectiveness of workgroups.

**Heavy rains disrupted communication** between local authorities and the communities, as neither virtual meetings nor in-person meetings could be held during these periods.

## Promising Practices

The study team identified the following promising practices that should be consistently applied to collaborative approaches to campaign integration:

1. **Convene a working group** with participants from the government, the Mayor's office, the Department of Health and Municipality Health Secretariats, the Vector-Borne Disease Program, public health and mental health programs, and leaders of the indigenous communities to guide campaign decisions.
2. **Involve community leaders** throughout the microplanning process to ground the planned activities in the socio-cultural context.
3. **Validate beliefs and ways of life of communities** throughout the planning process.
4. **Conduct a health situation analysis** to identify and prioritize issues and adapt interventions to local contexts.
5. **Use an HIMS** to improve real-time monitoring, and train local authorities in the HIMS to build capacity for its future use.
6. **Develop a logical framework and action plan**, in collaboration with stakeholders, to guide campaign actions and decisions.
7. **Develop an integrated microplanning strategy document** based on the situational analysis, with defined goals for changes in behavior, sanitation and treatment coverage.
8. **Make campaign decisions in a participatory manner and obtain endorsement by actors** in the municipal and departmental health entities and authorities/leaders within the indigenous communities.

## Lessons Learned

The following lessons learned were developed as a result of unexpected findings and/or challenges encountered during this study.

1. **Active participation of indigenous leaders and communities is necessary throughout all phases** of an integrated campaign to guarantee the full exercise of their right to agency in decisions related to their health. Active participation of the communities also regulates the actions of institutions and increases acceptance of proposed interventions.
2. **Community participation should always seek to provide tools for community agency** in diagnosis, treatment, and control/elimination of disease.
3. **Decisions must be made in consensus with all key stakeholders**, and must respond to the community's needs and way of life.
4. **Intersectoral collaboration is needed when evaluating costs and financing integrated campaigns.** Roundtable discussions were held to share learnings on the study and discuss intersectoral collaboration in an integrated campaign; participants included public health experts from different departments; hospital delegates; university representatives; the Governor of Vaupés; mayors from different municipalities; delegated experts in WASH and Departments of Health; the point person for interculturality; and captains of indigenous communities.
5. **Identification of key stakeholders and analysis of the health situation** are the cornerstones for effective microplanning and implementation of integrated campaigns.
6. **HIMS can improve real-time analysis of the health situation, facilitate microplanning, and improve real-time monitoring.** The SIBACOM Plus 2020 system system enabled georeferencing of indicators for the different information modules collected during the study.
7. **It is important to have health workers/promoters who speak the language(s) of persons in the indigenous communities.** Having health workers/promoters who speak the local language(s) contributed to the success of microplanning since the promoters understood the ancestral and traditional knowledge of their culture, and had a basic knowledge of Western medicine and public health. This made it possible to identify broader solutions and harmonize the strategies to be implemented with social customs and beliefs.
8. **Lack of decision-making by representatives of health authorities can delay the microplanning process.** The decision-makers themselves should be involved in the process and a mechanism should exist to delegate decision-making when necessary.

## Conclusion and Recommendations

The collaborative microplanning approach undertaken in this study highlights the need to actively incorporate indigenous communities in the process in order to guarantee their full exercise of the right to health and self-determination. Indigenous knowledge, contexts, and dynamics of community life

support the implementation of locally-identified alternative solutions that address the complexities of ethnicity, gender, and territory.

Furthermore, the active participation of communities helps to regulate the actions of institutions and improves community compliance in proposed interventions, while maintaining the indigenous communities' agency in the diagnosis, treatment, and control or elimination of NIDs.

The study team recommends approaching the microplanning process with the following perspectives:

*Microplanning as a work tool*

This approach enables prioritization of areas for intervention, identification of behavioral and environmental risk factors, ensures community support of interventions, and optimizes economic and human resources.

*Microplanning as a strategy for collaboration and cross-sector integration*

Workgroups should be composed of stakeholders from various sectors, representative of both the government and the community. The causes of high prevalence of NIDs such as STH, trachoma, and ectoparasitosis are best addressed through a multi-sectoral approach including WASH, housing, food, and education, amongst others. This approach also highlights the need for comprehensive funding to support integrated campaigns and maximize resources.

*Microplanning is a fundamental basis for working with communities*

The personnel involved in implementing campaigns in the field should have prior knowledge about the culture and way of life of the communities. Working with communities supports a differential approach to identifying solutions, builds a shared repository of knowledge, increases acceptability of interventions, and optimizes the implementation and integration of campaigns.

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## References

1. Gobernacion del Departamento de Vaupés, & Secretaria de Salud Departamental. Analises de la Situacion de Salud basado en el Modelo de Determinantes Sociales, Departamento de Vaupés 2020. 1–188. Retrived from:  
<https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/Forms/DispForm.aspx?ID=23234>
2. Miller, H. A., De Mesa, C. B. L., Talero, S. L., Cárdenas, M. M., Ramírez, S. P., Moreno-Montoya, J., Porras, A., & Trujillo-Trujillo, J. Prevalence of trachoma and associated factors in the rural area of the department of Vaupés, Colombia. PLoS ONE (Vol. 15, Issue 5), 2020.  
<https://doi.org/10.1371/journal.pone.0229297>
3. World Health Organization. WATER, SANITATION AND HYGIENE STRATEGY. 2018.  
<https://www.who.int/publications/i/item/WHO-CED-PHE-WSH-18.03>
4. Naciones Unidas, Objetivos de Desarrollo Sostenible (ODS). 2016. Revista de La Universidad de La Salle.
5. Taylor, H. R., Burton, M. J., Haddad, D., West, S., & Wright, H. Trachoma. The Lancet, 384(9960), 2142–2152. 2014. [https://doi.org/10.1016/S0140-6736\(13\)62182-0](https://doi.org/10.1016/S0140-6736(13)62182-0)
6. Emerson, P. M., Bailey, R. L., Mahdi, O. S., Walraven, G. E. L., & Lindsay, S. W. Transmission ecology of the fly *Musca sorbens*, a putative vector of trachoma. Transactions of the Royal Society of Tropical Medicine and Hygiene, 94(1), 28–32. 2000.  
[https://doi.org/10.1016/S0035-9203\(00\)90427-9](https://doi.org/10.1016/S0035-9203(00)90427-9)
7. Hernández Sampieri, R., Fernández Collado, C., & Baptista Lucio, P. 6th Edition. 2010  
<http://observatorio.epacartagena.gov.co/wp-content/uploads/2017/08/metodologia-de-la-investigacion-sexta-edicion.compressed.pdf>
8. Instituto Nacional de Salud de Colombia. Noticias coronavirus-casos. 2021.  
<https://www.ins.gov.co/Noticias/Paginas/coronavirus-casos.aspx>
9. Defensoria del Pueblo. Informe Defensorial visita CIDH Colombia protesta social abril-junio 2021. Colombia. 2021. Retrieved from:  
<https://www.defensoria.gov.co/public/minisite/protestasocial/assets/informe-visita-cidh.pdf>