

Stakeholder Engagement in the Translation of a Hypertension Control Program to Guatemala's Public Primary Health Care System



Lessons Learned, Challenges, and Opportunities

Meredith P. Fort^{*,†}, Alejandra Paniagua-Avila[†], Andrea Beratarrechea[‡], Sayra Cardona[†], Juan Carlos Figueroa[†], Kevin Martinez-Folgar[†], Daniela Moyano[‡], Edgar Barrios[§], Bernardo Eliu Mazariegos[§], Eduardo Palacios[§], Vilma Irazola[‡], Jiang He^{||}, Manuel Ramirez-Zea[†]

Aurora, CO, USA; Guatemala City, Guatemala; Buenos Aires, Argentina; and New Orleans, LA, USA

ABSTRACT

Background: There is an urgent need to define appropriate intervention strategies to control blood pressure in low- and middle-income countries. In 2018, a program proven effective in Argentina was translated to Guatemala's public primary health care system in rural and primarily indigenous communities.

Objectives: This paper describes the stakeholder engagement process used to adapt the program to the Guatemalan rural context prior to implementing a type II hybrid effectiveness-implementation trial and shares lessons learned.

Methods: We identified key differences in the 2 contexts that are relevant to translating the intervention to the Guatemalan context. Alongside interviews and focus group discussions, we conducted consultation workshops in July and August 2018, applying a participatory translation process involving patients, family members, community members, health care providers, and Ministry of Health officials. The process consisted of multiple meetings in Guatemala City, as well as meetings in each of the 5 departments where the study will be implemented, and 1 district per department. During the workshops, we presented the evidence-based experience from Argentina and then focused on the challenges and recommended solutions that the participants identified for each of the intervention's 6 components. The process concluded with a meeting in which the research team and Ministry of Health officials defined specific details of the intervention.

Results: The outcome of the process is an adapted approach appropriate to integrate into Guatemala's public primary health care system in the trial phase. The approach considers the challenges and recommended strategies for each of the 6 intervention components.

Conclusions: We identified lessons learned, challenges, and opportunities during the adaptation process. Findings will inform ongoing stakeholder engagement during the study implementation and future scale-up and efforts to translate evidence-based hypertension control strategies to low- and middle-income countries globally.

Hypertension is the leading preventable risk factor of cardiovascular diseases, pre-mature death, and disability in the world [1]. According to recent estimates, 1.4 billion adults worldwide have hypertension, three-quarters of whom live in low- and middle-income countries [2].

Although there is limited data on hypertension prevalence in Guatemala, available information shows that hypertension affects a substantial proportion of the adult population [3]. An estimated 17% of adults, and 41% of adults >40 years, residing in an urban part of the country were found to have high blood pressure; still, only one-half reported taking medications always or almost always.

Prevalence estimates in rural parts of the country are scarce, but range from 9% to 34% (unpublished data), and access to diagnosis, medications, and health care providers is substantially more limited than in urban areas. Currently, the primary care infrastructure in the public health care system in Guatemala is made up of health centers and health posts and are primarily oriented toward maternal and child health and infectious disease control.

There is an urgent need to develop and test effective, adoptable, and sustainable intervention strategies for blood pressure control in patients with hypertension in Guatemala and other low- and middle-income countries.

The authors report no relationships that could be construed as a conflict of interest.

Research reported in this publication was supported by the National Heart, Lung, and Blood Institute of the National Institutes of Health under Award Number U01HL138647.

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

From the *Department of Health Systems, Management and Policy, Centers for American Indian and Alaska Native Health, Colorado School of Public Health, Aurora, CO, USA; †Institute of Nutrition of Central America and Panama (INCAP) Research Center for the Prevention of Chronic Diseases (CIIPEC), Institute of Nutrition of Central America and Panama, Guatemala City, Guatemala; ‡Department of Research in Chronic Diseases, Institute for Clinical Effectiveness and Health Policy (IECS), Buenos Aires, Argentina; §Ministry of Health and Social Welfare, Guatemala City, Guatemala; and the ||Department of Epidemiology, Tulane University School of Public Health and Tropical Medicine, New Orleans, LA, USA. Correspondence: M. P. Fort (meredith.fort@ucdenver.edu).

GLOBAL HEART
© 2019 World Heart Federation (Geneva). Published by Elsevier Ltd. All rights reserved.
VOL. 14, NO. 2, 2019
ISSN 2211-8160/\$36.00.
<https://doi.org/10.1016/j.jheart.2019.05.005>

An evidence-based hypertension control intervention that was designed and implemented in Argentina through the public primary care system from 2013 to 2016 showed promising results for low-resource settings such as Guatemala. The multicomponent intervention resulted in a systolic blood pressure (BP) reduction from baseline to 18 months of 19.3 mm Hg in the intervention group and 12.7 mm Hg in the control group; diastolic BP decreased by 12.2 mm Hg in the intervention group and 6.9 mm Hg in the control group [4].

The intervention program was composed of 3 parts: 1) physician education and audit and feedback; 2) home-based patient education and counseling for lifestyle modification and home BP monitoring; and 3) a text messaging intervention to improve lifestyle and adherence to medication and primary care visits [5].

The physician education program consisted of an on-line continuing education course on hypertension management and an on-site intensive training and certification. The program focused on standard treatment algorithms for stepped-care management based on hypertension guidelines, including both lifestyle modification and pharmacological treatment (assessment of cardiovascular risk factors and absolute risk, use of a treatment algorithm for initial drug choices, a stepped-care approach to titrating medications, strategies to improve medication adherence, and follow-up). Community health workers (CHW) led the home-based intervention. They served as a source of education, motivation, and social support and as facilitators of health care use for hypertensive patients and their families. CHW were trained in facilitating behavioral change through BP monitoring, medication management, and lifestyle modification. CHW visited hypertensive patients' homes monthly for the first 6 months of the intervention and every other month thereafter. All study participants were administered a pill box and a home BP monitor. CHW also delivered antihypertensive medications to patients' homes and helped them to schedule appointments with primary care physicians if BP values were above the target goal. For the text messaging part of the intervention, individualized messages to promote lifestyle change and reminders to reinforce medication adherence were sent out weekly and were based on hypertension status and perceived barriers to behavioral change identified during CHW home visits.

Drawing on the experience in Argentina, we conducted a participatory process in 2018 to develop and adapt a hypertension control intervention appropriate for the Guatemalan public-sector primary care context. This intervention will then be implemented in a type II hybrid effectiveness-implementation trial applying the RE-AIM (reach, effectiveness, adoption, implementation, maintenance) framework [6] from 2019 to 2022. The study is called Implementing a Multicomponent Intervention to Control Hypertension in Central America. The collaborative working relationship and educational materials to be used in the intervention also stem from a pilot study that

was jointly implemented by the Ministry of Health and Social Welfare (abbreviated as Ministry of Health) and the Institute of Nutrition of Central America and Panama in an urban health center from 2007 to 2009 [7].

A key aim of this hypertension control study is to implement a perspective of designing for dissemination [8] to develop an approach that may be sustained [9] over the long term. Recognizing the importance of engaging multiple stakeholders in the process, we have implemented an intervention design and adaptation process that aims to capture the perspectives of patients, family members, providers, health authorities, and researchers. This paper describes the stakeholder engagement process used to define the hypertension control program appropriate for the Guatemalan public primary care context and presents lessons learned, challenges, and opportunities.

METHODS

Identification of key differences in the context between Argentina and Guatemala

Our study team recognized the importance of assessing required adaptations to the intervention from Argentina at different levels based on differences in the context [10]. The levels we identified were service delivery setting, staffing, resources, population-level characteristics, and intervention components. We reviewed key sources and captured differences described in interviews with key informants, providers, and community members. From the outset, we decided not to include the text messaging component in Guatemala as there was not electronic infrastructure to enable this component within the public sector service delivery system.

Formative research and identification of key stakeholders

We began the formative research phase from March to May 2018 by conducting interviews with key informants within different offices of the Ministry of Health and others knowledgeable about the public primary care system in Guatemala. We used purposive sampling to identify people familiar with different aspects of the health care system relevant to the intervention. Key informants provided insight into system-level needs and considerations for the intervention.

Then in June 2018, we began interviews and focus group discussions with different stakeholders (health area and district staff, doctors, nurses, auxiliary nurses, community members, patients, and family members) in 2 of the 5 selected departments where the intervention will be implemented: 1 department in the west (Sololá) and 1 in the east (Zacapa). Interview guides included questions regarding the health care system building blocks, local perceptions of hypertension, and implications for the intervention. Focus group discussions with auxiliary nurses explored their working relationship with the community, service provision for patients with hypertension,

teamwork, use of treatment guidelines, training, and thoughts about the proposed intervention. Focus groups with patients explored thoughts about health, hypertension follow-up, care-seeking behavior outside of government facilities, access to medications, and thoughts about the proposed intervention.

The primary purpose of the interviews and focus group discussions was to conduct a comprehensive assessment of system-level needs organized by the health care system building blocks: service delivery; human resources; information systems; medications and technologies; financing; and governance [11]. Results of the needs assessment will be presented in detail in a forthcoming publication.

Consultation workshops

The consultation workshops were inspired by the boot camp translation method [12] that employs a community-based participatory research approach [13]. Boot camp translation was developed in Colorado as a way to facilitate the uptake of evidence-based interventions into practice. Although the method primarily emphasizes the development of health messages and products to communicate with the public, it is flexible and may be applied in different settings and contexts. Our process of consultation workshops focused on the adaptation of the hypertension intervention to the Guatemalan context and addressing key decisions essential to finalizing the intervention design. We also adapted the boot camp translation method to accommodate a compressed time frame and the dispersed geographic area where the study will be conducted.

First, we conducted 3 meetings with Ministry of Health actors at the central level in Guatemala City between July 6 and 20, 2018. The workshops were 2 h in length and focused on a combination of logistical aspects that were key to ensuring progress and an in-depth discussion of the 6 intervention components including barriers and opportunities. Logistical aspects included study site selection and preparation of the protocol for ethical review. The 6 intervention components are: treatment based on guidelines, health care worker training, team-based care, audit and feedback, coaching sessions aimed at motivating patients to achieve hypertension control, and home BP monitoring.

We began the workshops in Guatemala City with an overview of the study and an explanation of the experience in Argentina. One team member who was directly involved in the implementation of the intervention in Argentina (A.B.) participated virtually in the meetings to share a detailed account of the experience and answer questions. We then asked small groups to review the description of the 6 components, explain what currently happens in Guatemala, and identify core intervention elements, as well as anticipated barriers, and practical recommendations.

These workshops in Guatemala City were followed by local-level workshops in the 5 departments in which the intervention will be implemented: Huehuetenango and

Sololá in the west and Baja Verapaz, Chiquimula and Zacapa in the east. We conducted the rural workshops from August 1 to 10, 2018. The rural workshops were conducted on 2 levels in each of the 5 departments: health areas and health districts. Two to 3 members of the Institute of Nutrition of Central America and Panama research team and 1 representative from the Ministry of Health team at the central level from Guatemala City made visits to the 5 departments and facilitated the workshops.

At the health area level, we met in the Ministry of Health administrative offices in each of the departments with the area director and members of the technical team. The specific participants varied in each of the meetings with the health areas and included the area director; service delivery coordinator; and representatives of the Epidemiology Division, Supervision Unit, Department of Human Resources, program-specific staff (Mental Health, Chronic Disease), Health Promotion, and Pharmacy. The workshops at the health area level focused on the 6 intervention components as well as key identified topics including availability of medications, the process for soliciting medications, the number of estimated hypertension cases in the department, and a conversation about the selected sites in which the intervention will be implemented.

We selected 1 district that had been previously vetted as a site to participate in the study. At the district level, we conducted workshops with the district director, professional nurses and doctors, auxiliary nurses, patients with high BP, and family members. One to 2 members from the health area level took part in the local-level workshops at the district level as well. The local-level workshops emphasized how work is currently implemented, key challenges, and solutions.

On concluding the rural workshops, the team synthesized the information from the central- and local-level workshops and presented it at a meeting in Guatemala City on August 24, 2018. Six stakeholders from the central level participated, including the coordinator of the National Chronic Diseases Program and members of the service delivery unit. The purpose of the meeting was to finalize decisions about the implementation approach for each of the intervention components.

Analysis

Drawing on field notes, a focused review of the recordings, and a thematic analysis of coded transcripts (aided by NVivo software, version 11; QRS International, Melbourne, Australia), we identified local-level challenges and opportunities, differences in how hypertension is detected and addressed in different settings, and implications for the multicomponent intervention. The interviews and focus group discussions overlapped with the consultation workshops; the first set of interviews and focus group discussions helped us identify priority topics to include in the adaptation workshops as well as specific participants. During July and August 2018 as we were simultaneously

TABLE 1. Key differences between the Guatemalan and Argentinian contexts

	Guatemalan Context	Argentinian Context
Service delivery setting	Districts of 10,000 to 30,000 people that include a health center and multiple health posts (each serving 1,500–5,000 people)	Primary care clinics in Argentina (serving 15,000–30,000 people)
Staffing	Auxiliary nurses as the primary care providers at health posts, sometimes supported by a clinical supervision team (nurse and at times a doctor)	Physicians, nurses, and community health workers in some clinics
Financial resources	General government health expenditure as percentage of GDP (2016): 2% [14] General government health expenditure per capita in US\$ (2016): \$90 [14]	General government health expenditure as percentage of GDP (2016): 6% [14] General government health expenditure per capita in US\$ (2016): \$711 [14]
Population-level characteristics	GNI per capita (2017): \$4,060 [15] Indigenous population: 41%–66% [16] Language: 24 languages including Spanish; at least 7 in the areas where the project will be implemented	GNI per capita (2017): \$13,030 [15] Indigenous population: 2.4% [17] Language: Over 9 languages are spoken; Spanish is official

GDP, gross domestic product; GNI, gross national income.

conducting interviews, focus group discussions, and consultation workshops, we used an iterative process of summarizing and sharing findings from the interviews and focus group discussions with consultation workshop participants. The purpose of sharing the summaries was to validate findings and progressively define the intervention approach. Then, in preparation for the detailed presentation of the 6 components of the intervention in the concluding consultation workshop on August 24, 2018, we reviewed all of the coded transcripts to identify implications for the intervention. The combination of the consultation workshops and the interviews and focus group discussions allowed for us to triangulate information from complementary processes and sources.

RESULTS

Differences between Guatemala and Argentina

Table 1 captures key differences in the Guatemalan and Argentinian contexts [14–17]. Participants from the Ministry of Health in a workshop in Guatemala City were struck by the difference in the meaning of the primary care level in Argentina as compared to in Guatemala and stated, “Their primary level of care is like our secondary level of care.” Specific differences include the setting in which the intervention will take place, staffing, overall financial resources, and population-level characteristics. Notably, in Guatemala there are 24 languages and in the 5 departments that are included in the study, there are at least 7 spoken, in addition to Spanish, which include Achí, Awakateko, Kaqchikel, K’iche’, Mam, Tz’utujil, and Tektiteko.

Relevant findings from interviews and focus group discussions for the intervention

A total of 127 people participated in individual interviews and 6 focus group discussions in Guatemala City and in

the departments of Zacapa and Sololá. Findings from interviews and focus group discussions that present implications for the intervention included the following: 1) only 1 medication for hypertension (enalapril) was available in health posts or centers, in the case that medications were available; 2) supplying medications requires soliciting them by a certain date and following the Ministry of Health’s medication requisition system; 3) 2 different primary care models within the public system show substantial differences in supervision, staffing, and modes of operationalizing health care service delivery, including detection of patients with chronic conditions; 4) trainings typically do not reach frontline providers; 5) hypertension is captured differently on forms or lists, in different settings; 6) there is a need for improved communication between providers at different levels to improve patient follow-up; 7) frontline providers do not have educational materials and provide a range of different types of advice to patients; 8) patients expressed interest in having access to a BP monitor and stated a need for support to be able to use it; 9) patients often stop taking medication when they feel better or because it is not available at the time that they need it; and 10) patients who primarily speak a language other than Spanish or who are not literate spoke of the importance of having family member accompaniment. Interviews also helped us identify individuals at the central, departmental, and municipal levels to include in the consultation workshops aimed at adapting the intervention.

Consultation workshops: Participants and discussion topics

Table 2 is a summary of the participants in the consultation workshops at the national, departmental, and district levels. At the central level of the Ministry of Health in Guatemala City, 20 people participated across the 5 workshops and 2 subsequent meetings; all of the

TABLE 2. Consultation workshop participants

Workshop Location		Type of Participants	Total Participants
Guatemala City (national-level Ministry of Health office)		Representatives from the Comprehensive Service Delivery Unit, Epidemiology, and the Chronic Disease Program of the Ministry of Health	20
Department	District		
Huehuetenango		Area director and technical team	9
	Cuilco	Nurses, patients, and family members; representatives from the area	9
Sololá		Area director and technical team	3*
	Guineales	District director, nurses, auxiliary nurses, social workers, rural health technicians, patients and family members; representatives from the area	16
Zacapa		Area director and technical team	5*
	La Unión	District director, nurses, secretary, patients, and family members; representatives from the area	9
Chiquimula		Technical team	14
	Jocotán	Auxiliary nurses, nurse, water and sanitation lead, and patients; representatives from the area	17
Baja Verapáz		Area director and technical team	12
	Rabinal	Doctors, nurses, auxiliary nurses, primary health care leads, nutritionist, patients, and family members; representatives from the area	23

*These 2 departments were where qualitative interviews and focus group discussions were conducted; as such, the research team members leading the formative research phase held additional meetings to present the study prior to the consultation workshops.

participants were professionals based in the capital. In the 5 departments and 5 districts, a total of 117 people participated including health area and district directors, technical team members, frontline health care providers, patients, and family members.

The primary topics of discussion in the workshop meetings in Guatemala City were site selection, concerns about the availability of medications and specific intervention components, including delivery of coaching sessions, and the provision of home BP monitors. By the third meeting on July 20, 2018, as a group we agreed on 40 territories and specific health posts under consideration in the 5 departments to be included in the study. Of those under consideration, 36 territories were selected after each was visited to confirm that the basic criteria were met. We developed a form to gather information at the health area level about available medications to be used during the subsequent workshop meetings. With respect to the 6 intervention components, key concerns that were raised were the feasibility of offering coaching sessions in patients' homes and the sustainability of providing home BP monitors to patient participants.

At the health area level, key challenges and concerns that were raised included limited infrastructure to provide testing for patients identified with hypertension and different levels of infrastructure and capacity between selected territories. [Table 3](#) captures the challenges and recommended solutions for each of the 6 intervention

components based on the input of participants at the health area and district levels.

During what was expected to be the final workshop meeting on August 24, 2018, with the central level of the Ministry of Health, participants offered solutions for unresolved issues that the research team identified. These included having monthly meetings with the research team to address issues, identifying 2 points of contact for the study within the Ministry of Health central office, and reaching out to other individuals within the Ministry of Health to provide support related to specific challenges.

Additional key individuals within the Ministry of Health identified for follow-up were the units of medication supply and logistics, finances and administration, health promotion and education, and monitoring and evaluation. Importantly, a stakeholder suggested planning an additional meeting with key health area staff to ensure timely supply of hypertensive medications; as such, we met with health area staff in late October and early November 2018 in 2 regional meetings for focused conversations on the topic of medication logistics and supply. We have continued to involve new stakeholders within the Ministry of Health. Continually expanding the engagement process to involve people identified from one meeting to the next has been critical; for example, the financial administrator who became engaged in the fall, after the workshop process, provided guidance to the health areas on how to

TABLE 3. Challenges and recommended solutions to the intervention approach identified at the health area and district levels

Intervention Component	Challenges	Recommended Solutions
Treatment based on guidelines	Printed versions of guidelines are not available Medications are not consistently available Limited availability and poor quality of blood pressure monitors Health posts do not routinely conduct hypertension screening	Provide printed hypertension guidelines Organize meetings with all health area staff in charge of the budgeting for and supply of medications; provide estimations of the number of medications needed and their cost so that health areas can plan accordingly Provide blood pressure monitors to all health posts in the intervention group Organize reading groups for health care providers who do not have a habit of reading so that they learn the guidelines
Health care worker training	Training “in cascade” format does not reach auxiliary nurses In order to keep health posts open, only 1 auxiliary nurse may be trained at a time	Offer multiple training sessions as the local level Use videos during the trainings and make them available afterward Prepare information cards for health care providers and posters with the hypertension treatment algorithm
Team-based care	Limited time, vehicles, and gasoline to be able to conduct supervisory visits There is not a culture of team-based care in all districts	Provide financial resources to facilitate supervisory visits Emphasize team-based care in the training sessions
Audit and feedback	Not all districts have lists of patients with hypertension In districts that do have lists of patients with hypertension, they are not organized by patients achieving blood pressure control vs. noncontrol	Provide printed copies of logs to document listings of hypertensive patients, identifying those with and without control. Begin to generate lists in settings where they do not have patients with hypertension identified
Coaching sessions aimed at motivating patients to achieve hypertension control	Time and distance limitations for conducting home visits In some areas due to violence, auxiliary nurses do not conduct home visits on their own Some patients prefer group sessions and others prefer individual sessions or home visits No educational material is available Fruits and vegetables are expensive (patients)	Coaching sessions may be delivered in multiple ways (health post, home, and in group settings) Provide appropriate material for coaching sessions Take advantage of existing clubs Adapt educational materials for providers from a previous hypertension control effort and develop new materials for patients and family members
Home blood pressure monitoring	Blood pressure monitors are not available High levels of illiteracy Some older adult patients live alone and do not have somebody in their household who can help keep a log of their blood pressure	Health posts can lend blood pressure monitors to participants Community members and/or leaders may play a role in blood pressure monitoring Engage younger family members who are able to read and write to assist with logs

adjust their budgets to purchase hypertensive medications. Importantly, 2 health areas purchased hypertension medications in preparation for the intervention. We identified the need for additional planning meetings to finalize the coordination of training sessions to be conducted in 2019.

Stakeholder engagement challenges, barriers, facilitators, and solutions

Table 4 summarizes the key stakeholder engagement challenges, barriers, facilitators, and solutions from our engagement process. Challenges included communication

TABLE 4. Stakeholder engagement challenges, barriers, facilitators, and solutions

Challenges for Stakeholder Engagement	Structural Barriers
Communicating adequately with patient and family member stakeholders who speak multiple languages.	Availability of key Ministry of Health stakeholders to participate in meetings given their many other time commitments.
Identifying appropriate Ministry of Health staff and decision makers to participate in the intervention design phase.	Some of the key Ministry of Health actors changed roles during the intervention adaptation phase.
Community leaders do not have a defined role to participate as they will not be directly involved in the intervention.	Geographic dispersion of health areas, districts, and posts that will be participating in the intervention.
Overcoming Challenges for Stakeholder Engagement	Overcoming Structural Barriers With Facilitators
Meetings were conducted primarily in Spanish with translation to a local Mayan language. For future community advisory board meetings including patients and family members, it will be essential to identify 1 or more dedicated translators for Spanish-to-Mayan languages.	Hold frequent meetings at times when stakeholders are available and recognize the importance of dedicating sufficient time to stakeholder engagement.
In addition to group-level workshops, hold small or individual-level meetings with key people who were identified on focused topics (e.g., health education materials, preparations for the training process, monitoring, and supervision).	Hold meetings in intermediary locations bringing together multiple stakeholders rather than expecting participants to travel to Guatemala City.
Involve community leaders through existing community organizations; support auxiliary nurses to engage leaders.	To facilitate participation from patients, family members, and local-level providers, community advisory board meetings will be held in each of the 5 departments included in the intervention.

in a plurilingual society, identification of appropriate stakeholders, and the lack of a clear role for community leaders. Structural barriers included limited time of Ministry of Health officials, changing roles of health system stakeholders, and geographic dispersion. Ways to overcome challenges and barriers included holding regular meetings at convenient times and in intermediary locations, holding small-level meetings on topics as they arise, making use of translators, defining how to engage with community leaders, and identifying an approach for ongoing engagement through a community advisory board that will enable participation from each of the departments.

DISCUSSION

The stakeholder engagement process from July to August 2018 presented an opportunity to meet with a diverse set of stakeholders from different levels in the health care system as well as patients and family members. During the stakeholder engagement phase, we identified a number of challenges. A key challenge is the distance that separates Guatemala City, the department capitals where the health area administrative offices are located, and the communities to be served. Given that this study is being implemented in a large geographic region with diverse languages, the ongoing engagement of stakeholders will require multiple local-level meetings

to engage stakeholders who are participating in the intervention.

Study Limitations

A limitation of the stakeholder process to date is that we have not included community leaders, yet community leaders were identified as a part of the recommended solution, especially for the sixth intervention component: home BP monitoring. Moving forward, it will be important to make a concerted effort to include community leaders in organized sessions during the roll-out of the intervention.

Another lesson from the stakeholder engagement process is that not all concerns that are raised during the stakeholder engagement process can be addressed in the short-term by the intervention; many require longer terms and larger-scale investments. It is important to determine which health system strengthening needs may be addressed in the short term and which factors need to be addressed in the long term. For example, at a central-level meeting in Guatemala City, a participant recognized the importance of updating the national level health information system to be able to capture and track hypertension control. At the health area and district levels, teams identified the lack of laboratory capacity. These system-level needs are important to identify and simultaneously

address, yet it is important to define what the study will be able to address as compared to longer-term needs.

Considerations for stakeholder engagement during the implementation of the study

To increase the applicability of the study and the likelihood of sustained implementation of the intervention, we will engage stakeholders throughout the implementation of the study, including in the interpretation and dissemination of findings. A key mechanism for ensuring ongoing stakeholder engagement will be through a community advisory board. Given the geographic dispersion and diversity of languages, it will not be feasible to have 1 physical meeting with everyone located together in the same room. An option for ongoing engagement will be to continue a dynamic similar to the consultation workshops conducted in July and August 2018 and conduct repeated meetings in all 5 of the departments and at the local level. One of the health areas recommended designating a technical staff member to the study to ensure ongoing participation. To increase communication across levels, when possible it will be beneficial to have central-level Ministry of Health staff visit the local level and have local-level health workers and/or community member visit the central level.

Relevance of the stakeholder engagement process for other LMIC

Although conducting a systematic process of stakeholder engagement prior to initiating the intervention requires an investment of resources and takes time, there are many advantages. We foresee that a key advantage is that the intervention will not be perceived as being imposed by outside agencies or the central-level authorities, but rather it will be understood as an approach designed by and for local teams. Another advantage is that implementers and participants become familiar with the project at an early stage. This is particularly important for certain implementation outcomes that are central to this project such as adoption. In practical terms, to assure meaningful engagement, it is important to budget sufficient resources and allocate time to include stakeholders in the design, implementation, analysis, and dissemination phases of the project. A potential disadvantage may be that the additional time and resources can lengthen the intervention development phase. Whereas for the study team, broad stakeholder engagement has many apparent advantages, for Ministry of Health stakeholders, the hypertension control study is among many projects that they are involved with, and it is important to have reasonable requests of the amount of participation in order to not distract them from other priorities.

Although we have initiated this project in Guatemala, our team envisions continuing this work in countries throughout Central America, including El Salvador, Honduras, and Nicaragua. The stakeholder engagement

experience and lessons learned described in this paper will be directly relevant for an expansion of this effort to other countries in the region. This experience also responds to the call for creative and innovative intervention development efforts with diverse participants [18] and a recognition of the importance of engagement as a way to increase health equity [19].

CONCLUSIONS

The collaborative stakeholder engagement process between the research team and Ministry of Health practitioners and decision makers has allowed our team to develop a shared vision of the intervention and the priority areas to work on in the coming years. The participatory process with local stakeholders in the health areas and districts have allowed us to capture a local perspective on the challenges and opportunities and to tailor an intervention developed in a different context to the local reality. During the implementation of the study, and in the evaluation and dissemination phases, it will be important to ensure ongoing engagement and pay particular attention to enabling meaningful participation of family members, patients, and community leaders. It will also be important to define ways to address the needs identified during the process to support strengthening of the overall health care system.

ACKNOWLEDGMENTS

The authors are grateful for support from all of the participants in the stakeholder engagement process including staff at the Ministry of Health and Social Welfare in Guatemala City, at the department and district levels, and patients and family members.

REFERENCES

1. Lim SS, Vos T, Flaxman AD, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012;380:2224–60.
2. Mills KT, Bundy JD, Kelly TN, et al. Global disparities of hypertension prevalence and control clinical perspective: a systematic analysis of population-based studies from 90 countries. *Circulation* 2016;134:441–50.
3. Barceló A, Gregg EW, Wong-McClure R, Meiners M, Ramirez-Zea M, Segovia J. Total adult cardiovascular risk in Central America. *Rev Panam Salud Publica* 2015;38:464–71.
4. He J, Irazola V, Mills KT, et al. Effect of a community health worker–led multicomponent intervention on blood pressure control in low-income patients in Argentina: a randomized clinical trial. *JAMA* 2017;318:1016.
5. Mills KT, Dolan J, Bazzano LA, et al. Comprehensive approach for hypertension control in low-income populations: rationale and study design for the hypertension control program in Argentina. *Am J Med Sci* 2014;348:139–45.
6. Glasgow RE, Vogt TM, Boles SM. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *Am J Public Health* 1999;89:1322–7.
7. Mendoza Montano C, Fort M, de Ramirez M, Cruz J, Ramirez-Zea M. Evaluation of a pilot hypertension management programme for Guatemalan adults. *Health Promot Int* 2016;31:363–74.

8. Klesges LM, Estabrooks PA, Dzewaltowski DA, Bull SS, Glasgow RE. Beginning with the application in mind: designing and planning health behavior change interventions to enhance dissemination. *Ann Behav Med* 2005;29:66–75.
9. Shelton RC, Cooper BR, Stirman SW. The sustainability of evidence-based interventions and practices in public health and health care. *Annu Rev Public Health* 2018;39:55–76.
10. Chambers DA, Norton WE. The adaptome. *Am J Prev Med* 2016;51: S124–31.
11. World Health Organization, editor. In: *Monitoring the Building Blocks of Health Systems: A Handbook of Indicators and Their Measurement Strategies*. Geneva, Switzerland: World Health Organization, 2010.
12. Norman N, Bennett C, Cowart S, et al. Boot camp translation: a method for building a community of solution. *J Am Board Fam Med* 2013;26:254–63.
13. Israel BA, Schulz AJ, Parker EA, Becker AB. Review of community-based research: assessing partnership approaches to improve public health. *Annu Rev Public Health* 1998;19: 173–202.
14. World Health Organization. Global Health Expenditure Database; 2016 data. Available at: <https://apps.who.int/nha/database/ViewData/Indicators/en>. Accessed June 26, 2019.
15. World Bank Group. The World Bank and Equity Portal; 2017 data. Available at: <http://povertydata.worldbank.org/poverty/home/>. Accessed June 26, 2019.
16. Ministry of Public Health and Social Welfare, PanAmerican Health Organization/World Health Organization in Guatemala. Profile of the Health of Indigenous Peoples in Guatemala (in Spanish: Perfil de Salud de los Pueblos Indígenas de Guatemala); Guatemala, 2015.
17. National Institute of Statistics and Census of the Republic of Argentina, National Census of the Population and Households 2010 (in Spanish: Instituto Nacional de Estadística y Censos de la República Argentina -INDEC). Censo Nacional de Población, Hogares y Viviendas 2010. Available at: https://www.indec.gov.ar/nivel4_default.asp?id_tema_1=2&id_tema_2=41&id_tema_3=135. Accessed June 26, 2019.
18. Bernal G. Intervention development and cultural adaptation research with diverse families. *Fam Process* 2006;45:143–51.
19. Pratt B, de Vries J. Community engagement in global health research that advances health equity. *Bioethics* 2018;32:454–63.