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## Lessons from Training and Supervision of Community Health Workers conducting non-invasive, population-based screening for Cardiovascular Disease in Four Communities in Low and Middle-Income Settings: Implications for Scaling Up

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## Abstract

**Background**—Community health workers (CHWs) can screen for cardiovascular disease (CVD) risk as well as health professionals using a non-invasive screening tool (data unpublished). However, this demonstrated success does not guarantee effective scaling of the intervention to a population level.

**Objectives**—To report lessons learned from supervisors' experiences monitoring CHWs and perceptions of other stakeholders regarding features for successful scaling of interventions which incorporate task-sharing with CHWs.

**Methods**—We conducted a qualitative analysis of in-depth interviews to explore stakeholder perceptions. Data was collected through interviews of 36 supervisors and administrators at non-governmental organizations contracted to deliver and manage primary care services using CHWs, directors and staff at the government health care clinics, and officials from the departments of health responsible for the implementation of health policy.

**Results**—CHWs are recognized for their value in offsetting severe human resource shortages and for their expert community knowledge. There is a lack of clear definitions for roles, expectations, and career paths for CHWs. Formal evaluation and supervisory systems are highly desirable but nonexistent or poorly implemented, creating a critical deficit for effective implementation of programs utilizing task sharing. There is acknowledgement of environmental challenges (e.g. safety) and systemic challenges (e.g. respect from trained health professionals) that hamper the effectiveness of CHWs. The government-community relationships presumed to form the basis of redesigned health care services have to be supported more explicitly and consistently on both sides in order to increase the acceptability of CHWs and their effectiveness.

**Conclusions**—The criteria critical for successful scaling of CHW led screening are consistent with evidence for scaling up communicable disease programs. Policy makers have to commit appropriate levels of resources and political will to ensure successful scaling of this intervention.

## Keywords

Community health workers; cardiovascular disease; screening; scaling; policy; implementation

## INTRODUCTION

### BACKGROUND

Low- and middle-income countries (LMIC) have been bearing well-documented, disproportionate burdens of both rising morbidity and mortality from non-communicable disease (NCD). [1–3] Cardiovascular disease (CVD) is a major contributor to these burdens and directly impacts the economies of these countries as mortality rates are highest amongst those between the ages of 35 to 64.[3] Risk factors for CVD include elevated blood pressure, being at an unhealthy weight, and use of tobacco products. [4] The World Health Organization (WHO) estimates that cardiovascular deaths attributable to these risk factors are: 13% due to raised blood pressure; 9% due to tobacco use, and 5% due to obesity. [5] Early identification of persons with these risk factors has the potential to reduce the morbidity and mortality associated with CVD through early intervention and treatment.

The WHO noted the importance of community based screening in the prevention and management of NCD because it can be a cost-effective approach for screening large numbers of people and because building community-based models of care for disease management can help to ensure success in reducing and managing NCDs.[1, 6] Yet, two significant barriers to conducting population-based screenings remain: (1) a paucity of formally trained health professionals (e.g. physicians or nurses) and, (2) inadequate fiscal and infrastructure resources to assess risk using laboratory-based testing.

Task sharing from physicians to health workers without formal training, e.g. community health workers (CHWs) offers a means to increase the levels of human resource available for screening. Such screening by CHWs would allow them to capture persons at high risk and to refer them to a formally trained health professional for further assessment and appropriate management of disease.

Blood-based lipid testing (total cholesterol, LDL, HDL) is a significant component of CVD risk assessment. However, lack of adequate numbers of laboratories where these tests can be conducted, in conjunction with the human resource shortages makes laboratory-based testing impractical for population-level screening in LMIC. [7] An alternative non-laboratory based, effective risk screening tool such as the CVD risk assessment chart developed by Gaziano, has the potential to mitigate resource constraints by eliminating the need for laboratory testing to determine overall CVD risk. [8, 9] Together, task sharing of screening responsibilities from physicians or nurses to CHWs using this risk tool will offset both the human and infrastructure resource constraints that currently prevent effective population-based screening in many LMIC.

A trial conducted in Bangladesh, Guatemala, Mexico, and South Africa, trained CHWs to conduct screening in the community using this risk tool to determine the absolute risk for cardiovascular disease (CVD) events within the next five years. The trial's primary aims were: (1) To compare the level of agreement between the absolute CVD risk score calculated by the CHW, and a second score calculated by a physician or nurse; (2) determine if those community members with a CVD risk score >20% used the referral letters provided by CHWs to schedule a visit for a comprehensive risk assessment with a health professional;

(3) to describe the training experiences of the CHWs and identify issues that would influence scaling up this type of screening as part of redesigning primary health care using task-sharing. A comprehensive description of the training and field work experiences of the CHWs is provided elsewhere in this issue. This paper focuses on capturing the perceptions of key actors regarding the feasibility of scaling up this intervention at all sites, except Bangladesh, which elected not to participate in this part of the study.

## METHODS

The methods for designing and executing the training of CHWs, the assessments of their performance during training, and the assessments of their fieldwork experiences, are covered elsewhere in this issue.

Based on a combination of published evidence, trainers' detailed field notes from the training experience in South Africa, and detailed notes from supervisors' experiences during fieldwork, an interview guide of eight questions was developed and used for key informant interviews (Table 1). [10] Key informants were identified based on their work with CHWs at the government health clinics, supervision of CHWs, clinic staff, clinic directors, and officials from the local departments of health who were responsible for implementation of health care policy. Where appropriate, permission was obtained from local departments of health to invite key informants to participate and those who agreed signed consent forms.

All key informant interviews were recorded onto digital audio recorders. Transcription of the audio sessions was completed at each of the three participating sites. Coded, de-identified transcripts of all audio session were provided to investigators for pooled analysis. Interviews were conducted in the native language of the respondents (English, isiXhosa, Spanish) and lasted approximately 60–90 minutes. All interviews were conducted in 2013, within 6–12 months of completion of the fieldwork for the trial.

## DATA ANALYSES

Analyses were conducted using Atlas Software ® or NVivo 9 ® software, and manual coding techniques. [11, 12] The software packages analyze the content in three stages: (1) coding to broad nodes (themes) based on the interview guide questions; (2) distinguishing more specific information to identify both common and divergent themes; (3) comparing and contrasting nodes which were cross-referenced with the type of informant. Manual coding involves replication of this process by hand (manually). Investigators reviewed transcripts in their entirety several times: first to correct spelling mistakes and transcription errors and get a general sense of the data. Second, responses were grouped into themes. Finally, the output from both the software and manual analyses were combined to obtain an overall picture of the data. Selected quotes from participants are included to illustrate themes and reported without identifiers to preserve the anonymity of respondents.

To promote trust worthiness during the course of the interviews, information was summarized and repeated back to the participants to ensure that it accurately reflected what they intended to communicate. Interviewers would also stop recording when participants wanted to share sensitive information off the record. To ensure rigor and validity, all

transcripts were reviewed by one researcher who compared sections of the transcripts with the audiotaped interviews.

### **Ethics**

The National Heart, Lung and Blood Institute (NHLBI) as well as the respective institutional or ethics review boards in each of the three participating country sites, approved the study protocol. All staff members associated with the study successfully completed the ethics courses through the Collaborative Institutional Training Initiative (CITI) and provided appropriate documentation to the NHLBI.

## **RESULTS**

A total of 36 key informant interviews were conducted across all three sites. A summary of the main themes emerging from the interviews is provided in Figure 1. Please note that any differences in the color, shapes, and text sizes in this figure are for readability only and do not indicate any particular significance.

### **Ongoing Training and Competencies**

Both supervisors and key informants at the study sites felt that constant training and retraining was needed, but acknowledged that the training currently offered to CHWs was fragmented, driven by immediate or programmatic needs. The issue of core competencies also often entered the discussion but there was little specific details offered on how core competencies should be defined.

“It is probably good that each program trains the CHW, but then they are at the mercy of each program. Annual trainings are too over-encompassing, they need reinforcements throughout the year to retain all the information.” – [Supervisor, Mexico]

The lack of specifics also extended to an apparent agreement that training for CHWs should be more holistic, teaching them to make connections between multiple aspects of health. Yet, the tension between the potential gains of training CHWs to fill service gaps, and a strong belief on the part of formally trained health professionals that CHWs were, by definition, limited in what they could be trained to do, argues against the apparent agreement.

“...they need to be able to link one health issue to another, such as mental health to chronic disease to HIV, and so on. They also need to understand how different patients respond to disease, if they are in denial, or acceptance, or action, amongst other.” – [Physician, Mexico]

## **SUMMARY OF MAIN THEMES FROM FIELD WORK**

### **Value and Motivation of Community Health Workers**

The CHWs' expert knowledge of their communities' norms and standards of behavior allowed them to navigate potentially difficult situations. Supervisors readily acknowledged the necessity of this community expertise.

“... they are a great help because it’s difficult for us to go out and see what’s happening out there...they play a vital role in helping us to make a decision with regard to treatment...People must be comfortable with them, they must be part of the community, they must be known within the area and uhm...they must be observant...they are my eyes...outside of the facility.” – [Facility Manager/Nurse, South Africa]

“They are our voice to the community. They...play a very important role because the cultures of the communities are different...they...show us the way.” – [Coordinator, Guatemala]

CHWs are perceived both as being highly motivated, and unmotivated, to do their jobs.

“So we’ve got people that are coming in just to park, whilst they are waiting for a better job, ... the first group of people...were driven by the passion ... now...it’s about bread and butter, let me get this R1300 until I can move to the next phase,” – [Health Department Official, South Africa]

“...Effective CHW are those that have a positive attitude, a spirit of service, and a motivation to advocate for their communities. The characteristics that are most important are those that address their ability to mobilize the communities. Some CHW do not know how to write well or express themselves perfectly, but are wonderful CHW because of their relationship to the people and their communities.” – [Project Supervisor, Mexico]

### Safety concerns

Safety of the CHWs was a major concern in South Africa and Mexico. Even though CHWs work and live in the communities they screen, they often work in areas with high rates of crime. CHWs are known in the community for their functions (e.g. delivering medication to patients) and are identifiable through their outfit (e.g. uniforms), making them targets for criminal attacks.

“...the big challenge is...safety... especially in these townships...because if they carry their bags with patients’ stock...these [thugs] don’t think that....” - [Nurse, South Africa]

### Work load, compensation and respect from clinic staff

Professionally trained staff members agree with CHWs that the workload and time allotted to meet their target goals are not realistic.

“...the government...stipulate that they should work for four-and-a-half (4½) hours a day...how will they render the integrated health care for only four-and-a-half (4½) hours? They can’t. It’s not possible...it’s really a challenge....” – [Nurse, South Africa]

Compensation is a strong motivator in both South Africa and Mexico.

“...the other thing that bothers me very much is that; these people at least need a recognition as workers, they need to bring something home. Because some of them

have families, some have husbands, parents etc. So they feel like though they offer so much, they receive too little in return (haaaaa, she chuckles)...they are not satisfied with the stipend that they are getting.” – [Nurse, South Africa]

CHWs are also treated with varying levels of respect by clinic staff and the health professionals with whom they interact – from outright distrust to admiration.

“If you were a doctor, would you accept that...I gave a vaccine in October, when it is still September? I don’t know how they do it, they are not doing a good job.” – [Physician, Guatemala]

“We met weekly at the community health center, there they handed in the completed surveys...they had a weekly goal of at least 10 interviews each, however most of the time they surpassed it. CHWS were open to share their experiences during the entire field work, we also took their suggestions in consideration.” – [Coordinator, Guatemala]

### Supervision of CHWs

Supervision of CHWs during fieldwork proved to be challenging. Some supervisors underestimated the additional workload that would be taken on by the CHWs as part of this study and did not care to support them.

“...some health center directors were very supportive, others did not really put their heart into the project...Sometimes the CHW were stressed with all they had to do and got tired, this happened to the more responsible ones who wanted to get the recruitment done on time.” – [Supervisor, Mexico]

Other supervisors felt they lacked the strong administrative skills and commitment to good record keeping that the study demanded.

“...They took good care of their materials, we never had anyone reporting that they had lost or misplaced their things. However, the CHW had not had the experience of recruiting and fulfilling a study like this one. They were inexperienced at doing things with a method. They thought it would be easier than how it really was, which meant a lot of work.” – [Supervisor, Mexico]

There is also disagreement about who the best candidates are for effective CHW supervision. One notion is that the supervisor should be an employee of the non-governmental organizations (NGOs) that employ the CHWs, rather than nurses at the clinics, because they have the community expertise required to effectively assess the CHW’s performance.

“They [nurses] will take time to gel in supervising the CHWs. The reason why I am saying this is because they are not used to our system...they do not know how we do it in the community...it will really take time for them to be able to supervise. They are not used to community health work.” – [Project Manager, South Africa].

Supervision is further complicated because the relationships between CHWs and clinic staff are often strained, largely due to the belief that CHWs are not qualified to provide information to clinic staff.

## The Role of Government

The role of government is critical in promoting the legitimacy of CHWs beyond policy documents, and also in preventing the effective use of CHWs through poor communication with clinics and communities. The support and strong political will of government was seen as essential in legitimizing the CHW and their value in CVD prevention.

“In order to scale up we need to have a national policy and political will to support the CHW in this type of preventive activity...if they learned what the study results could contribute in the prevention of CVD, then maybe they could be more supportive and the whole team, physicians, nurses and CHWs could be involved.” – [Director, Ministry of Health, Mexico]

A complete disconnect between what is needed and what the government thinks is needed was also noted.

“...but the clinics out there...are doing what the government think we need and yet they don't know what we need, they never ask us and that is why at the end of the day you find out there is a conflict between the communities and the clinics you see and there is no way of working through these problems and you just sit and let it pass...” – [NGO Director, South Africa]

This disconnect can result in failure to set up programs for success.

“The best way I think...that's going to support any program of CBS is that they must have a link with the department of health personnel...there must be an assigned person who is going to be a link...so that they know how to communicate with the department of health even if the management and the running of the community-based services is still done by a separate institution...the lines of communication have to be clearly defined...” – [Health Department Official, South Africa]

Or, it can lead to policies being completely ignored.

“Well we are getting all...kinds of policies...sometimes you just ignore them hahaha (laughs)” – [Clinic Director, South Africa]

## DISCUSSION

The primary goal of this study was to illuminate the issues that key actors believe are relevant for successful scaling up of primary care interventions using task-sharing approaches that involve CHWs. Hermann and colleagues identified several key criteria of successful infectious disease programs in Sub-Saharan Africa that incorporate CHWs into delivery of care. [13] Many of the themes in our results line up with these criteria. Community involvement in the selection of CHW candidates, education about the programs the CHWs are selected for, CHWs' motivations, and quality of training have been shown to be critical in improving birth outcomes in Nigeria and Nepal. [14] This is consistent with our findings, which indicate that there is agreement that CHWs should be selected from the communities that they serve and that the community should have some input into the selection process. Communities will in turn seek CHW services because of the trust that



inclusion in the process engenders. [15] We also found agreement that training should aim to be integrative in terms of the health topics rather than restricted to single disease programs. In our study sites, implementing approaches that meet this goal have been severely limited. The redesigned Iranian primary health care system integrates health care services with health education and serves as a model for successfully integrating CHWs into programs. [16] Our findings related to community involvement, training, and CHW motivations overlap with this model. CHWs serving in rural areas must be approved by the local councils, commit to residing in their communities for 4 years after training, and successfully pass an interview for admission. Training occurs over a 2-year period and includes practical skills, communication skills, and clinical placement in rural areas. Additional factors that facilitate success include CHWs being directly employed by the government, altruism and community appreciation, and clear definitions of roles and expectations. Similarly, barriers identified in the Iranian model overlap with our study findings: poor supervisory structures, lack of administrative support, overall workload, the influence of gender on task assignments, and the capacity to deliver certain services.

A study of the management of childhood diseases in Malawi highlighted the importance of the nature of supervision and assessment of CHWs' performance. [17] The practical limitations of direct supervision of CHWs by formally trained health professionals were mitigated to different degrees, depending on the tasks being evaluated. There was little difference between supervision under direct observation, compared to supervision not under direct observation when the required protocols implemented by the CHWs were simple. For more complicated protocols, the CHWs' performance degraded to a much greater extent. This explains why the level of agreement between CHWs' and health professionals' CVD risk scores in our parent study exceeded 95% (unpublished data) – the screening protocol was simple and the risk tool easy to use. Task sharing with CHWs are most effective when the responsibilities involve uncomplicated tasks.

There is agreement that evaluation and assessment of CHWs' performance is important for not only effective service delivery but also for determining the effectiveness of training. The Zambian Defense Force used a comprehensive checklist to obtain feedback about ante-natal care at military clinics and found that they were useful to determine areas of weakness in services delivery which could, in turn, be targeted for consequent strengthening. [18] This kind of tool would provide a systematic approach to evaluation and also inform the need for retraining.

Weak supervisory mechanisms can also exacerbate the lack of respect that health professionals can have for CHWs who are already expected to function with minimal training, supplies, and poor administrative support in many cases. [19, 20]

Key policy makers and health officials need to champion programs that use CHWs as a way to build credibility for the CHWs both within the communities that they serve, as well as the health systems in which they are expected to function. Again Hermann's work bears this out by identifying a strong policy framework and political support as a critical element in successful scaling efforts. [13] These efforts will serve as deterrents to health professionals setting up barriers to CHWs' functioning in programs, as seen in our data. In addition, the

community expertise of the CHWs need to be acknowledged and incorporated into plans to scale up successful programs, especially in the area of interfacing with health clinic staff and health professionals. In addition to these factors, defining clear career paths along with improved remuneration will increase the rates of retention of trained CHWs. There is currently not a lot of evidence for the critical remuneration thresholds for CHWs in programs in LMIC. [21–23]

Our data also illustrates the real concern that prohibiting CHWs from using their newly-acquired skills to conduct non-invasive screening, e.g. measuring blood pressure, also sends mixed messages about the value assigned to their services and will ultimately increase the number of patients that clinics will need to manage, directly contrary to the efforts to relieve the burden on trained health professionals at these clinics.

Overall, our findings are consistent with prior evidence but these findings need to be replicated in larger trials in LMIC settings, along with more in-depth explorations of the development of effective evaluation instruments, how CHWs can be incentivized in lieu of increased remuneration, and how career paths that enhance acceptance and integration into existing health care systems can be defined.

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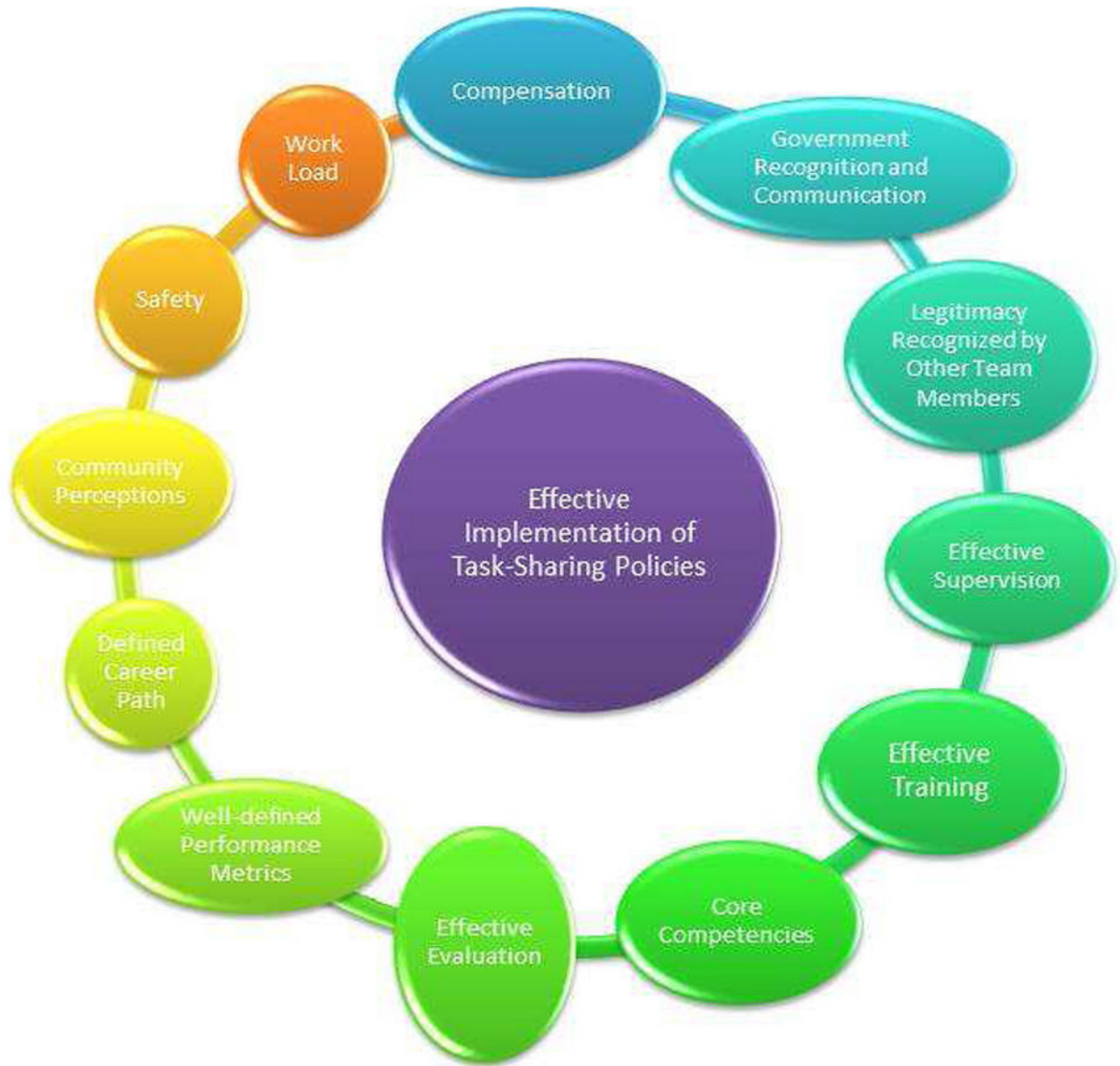
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### HIGHLIGHTS

- We surveyed stakeholders about effective integration of CHWs into primary care teams.
- Critical issues were effective training, evaluation tools, and clear career paths.
- Strong political will and sufficient resource allocation was identified as critical for success.



**Figure 1. Main Themes from Key Informant Interviews\***

*\*Please note that color, shape or text size do not assign any significance to individual components.*

**Table 1**

## Guide questions for key informant interviews

1. Please describe your current position and your experience working in health promotion, or with CHW.
2. What do you think it means to be a CHW? <ul style="list-style-type: none"> <li>a. What is your opinion of the work done by CHWs (both in the state health system and in the non-governmental sector)?</li> <li>b. What characteristics and skills do you think a good CHW needs?</li> </ul>
3. How are the CHWs you work with supervised and evaluated?
4. Based on your experience, what kind of training do CHWs need? <ul style="list-style-type: none"> <li>a. Who trains them?</li> <li>b. Formal or informal training?</li> <li>c. CVD specific training?</li> <li>d. What would be their ideal training, and how does it differ from their current training?</li> </ul>
5. How do you perceive the role of CHWs? <ul style="list-style-type: none"> <li>a. How do you think they are perceived by the community?</li> <li>b. How do you perceive their role within their organizations?</li> <li>c. How do you think their working conditions can be improved? (training, recognition, etc.)</li> </ul>
6. What do you think is the best way to integrate CHWs into chronic disease prevention efforts? <ul style="list-style-type: none"> <li>a. Who would monitor and evaluate their activities, and how?</li> <li>b. What kind of resources would be needed?</li> <li>c. What conditions would be necessary for CHWs and other health service providers work in a coordinated way?</li> </ul>
7. Is there any other topic you think is important which we haven't discussed yet about the work of CHW or their contribution to chronic disease prevention? Is there anything you would like to add?