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PHCR
Primary Healthcare Reform Project

FACILITY AND PROVIDER PERFORMANCE ASSESSMENT

FOLLOW-UP ASSESSMENT OF TARGETED PRIMARY HEALTH
CARE FACILITIES IN KOTAYK, TAVUSH, AND GEGHARKUNIK
MARZES

2009



August, 2010

DISCLAIMER

This publication is made possible by the support of the American People through the United States Agency for International Development (USAID.) The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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Preface

The Primary Healthcare Reform (PHCR) project is a nationwide five-year (2005-2010) program funded by the United States Agency for International Development (USAID) under a contract awarded to Cardno Emerging Markets USA, Ltd. (Cardno), formerly Emerging Markets Group, Ltd. in September 2005. The PHCR's primary objective is increased utilization of sustainable, high-quality primary healthcare services leading to the improved health of Armenian families. This objective is operationalized by supporting the Ministry of Health (MoH) to implement a package of six interventions that links policy reform with service delivery so that each informs the other generating synergistic effects. These six interventions address healthcare reforms and policy support (including renovation and equipping of facilities); open enrollment; family medicine; quality of care; healthcare finance; and public education, health promotion and disease prevention.

“What impact are these interventions having?” is a question frequently asked but less frequently funded. Fortunately, provision was made in the PHCR project to address the “impact” question. PHCR developed a set of six tools to monitor progress and evaluate results. Three of these tools are facility-based and are designed to assess changes through a pre-test and post-test methodology at 164 primary healthcare facilities and their referral facilities. Three other tools are population-based and are designed to assess changes for the whole of Armenia's population, using the same pre-test and post-test methodology.

This report summarizes the follow-up facility/provider performance assessment of targeted primary healthcare facilities in Kotayk, Tavush, and Gegharkunik marzes (Zone 2). This follow-up assessment evaluates the project impact on Zone 2 from 2007 to 2009 by comparison of selected facility and provider performance indicators.

The Center for Health Services Research and Development of the American University of Armenia, one of the sub-contractors to Cardno, has primary responsibility for PHCR monitoring and evaluation. Dr. Anahit Demirchyan, Dr. Yelena Amirkhanyan, Dr. Varduhi Petrosyan, Dr. Michael Thompson, and Ms. Tsovinar Harutyunyan are the primary authors of this study. We would like to thank Dr. Hripsime Martirosyan and Ms. Nune Truzyan for their valuable contribution to all stages of the study. We would also like to thank our interviewers (primary healthcare physicians in the target marzes) for their data collection efforts and the facility heads who participated in the assessment. We are also grateful for the support received from the Ministry of Health and marz officials and the opportunity to collaborate in strengthening health services in Armenia.

We trust that the findings of this study will be of value in improving health outcomes through more informed decision-making. The report can be found on the PHCR website at www.phcr.am. Comments or questions on this study are welcome and should be sent to info@phcr.am.

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Primary Healthcare Reform Project

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List of Acronyms

AUA	American University of Armenia
AIDS	Acquired Immune Deficiency Syndrome
ASTP	Armenian Social Transition Program
CHC	Community Health Committee
CHD	Coronary Heart Disease
CHSR	AUA Center for Health Services Research and Development
FAP	Rural Health Post (from Russian abbreviation)
FN	Family Nursing
HC	Health Center
HIV	Human Immunodeficiency Virus
IMCI	Integrated Management of Childhood Illnesses
MA	Medical Ambulatory
M&E	Monitoring and Evaluation
MOH	Ministry of Health
MSF	Medicines sans Frontiers
NOVA	Strengthening Reproductive and Child Health Care Services in Rural Areas (from Armenian abbreviation)
PC	Polyclinic
PHC	Primary Health Care
PHCR	Primary Health Care Reform
PMP	Performance Management Plan
RA	Republic of Armenia
STDs	Sexually Transmitted Diseases
SVA	Rural Medical Ambulatory (from Russian abbreviation)
USAID	United States Agency for International Development

1. Introduction

1.1 PHCR Project Overview: The United States Agency for International Development (USAID) awarded Cardno Emerging Markets USA, Ltd. (Cardno), formerly Emerging Markets Group, Ltd., an international consulting firm, a five-year contract to run the Primary Health Care Reform (PHCR) Project in Armenia. The primary goal of the Project is to improve population access to quality primary healthcare services through strengthening Primary Health Care (PHC) facilities and family medicine providers, on one hand, and improving public health awareness, health-seeking behavior, and competent demand for PHC services, on the other. The six main components of PHCR project are run in partnership with IntraHealth International Inc., American University of Armenia, and Overseas Strategic Consulting, Ltd., and include the following activities:

- **Expansion of Reforms:** assisting the Government in establishing a supportive regulatory environment for the advancement of reforms; renovating and equipping PHC facilities nationwide; designing and delivering training to facility management
- **Family Medicine:** developing up-to-date curricula and training materials for continuous medical education; creating free-standing family medicine group practices; providing training to family physicians and nurses
- **Open Enrollment:** introducing the open enrollment principle in the Armenian healthcare sector to promote customer-oriented services by fostering competition among providers
- **Quality of Care:** improving the quality of care by introducing state-of-the-art quality standards and quality assurance procedures
- **Healthcare Finance:** increasing the transparency and efficiency of the distribution of healthcare funds through improved service costing and performance-based contracting practices; enhancing accountability at the facility level; facilitating the use of National Health Accounts
- **Public Education:** enhancing awareness about PHC services offered; improving understanding of open enrollment and acceptance of family medicine providers; promoting healthy lifestyle and health-seeking behavior.

The project utilizes a regional scale-up approach, which allows for the zonal expansion of the reforms throughout the country over the life of the project. While applying this approach, the project primarily focuses on upgrading physical conditions and enhancing delivery of care in selected facilities in each zone, overall targeting approximately three hundred facilities throughout Armenia. The project targeted Kotayk, Tavush, and Gegharkunik marzes in 2007-2008.

The project conducted several activities in its target facilities, including renovation, furnishing, and provision of equipment, as well as training of medical and administrative staff in family medicine, quality of care, management, financing/accounting, implementation of software for accounting and open enrollment. Selected communities served by the targeted facilities also became targets, particularly, for the public education component of the PHCR project in terms of getting involved in establishing and running Community Health Committees, utilizing small grant projects. However, not all selected facilities were targeted for all types of activities: the PHCR project implemented different sets of activities in different facilities, based on local needs and priorities.

1.2 PHCR Project Monitoring & Evaluation Plan: The following assessments are being conducted throughout the project to monitor its implementation and evaluate its impact:

1) Baseline assessments, including:

Facility level assessments in target facilities at the start of the project activities in each marz. These include: 1) Facility resource assessment covering structural indicators for all project components, with some of them being Performance Management Plan (PMP) indicators; 2) Facility performance assessment covering performance of facility and providers which could serve as a basis for measuring improvement in quality of care;

Population-based assessments. These include: 1) Client satisfaction survey; 2) KAP survey covering the health information topics provided to selected communities by the PHCR project through Community Health Committees (CHC); 3) Countrywide household health survey covering main health outcome measures of the population including perceived health status, health dynamics, use of early diagnostics and preventive services, accessibility and perceived quality of care, and exposure to/attitude towards activities implemented by the PHCR project.

2) Intermediate and final assessments, including:

Repeating the facility level assessments mentioned above upon completion of the project activities in target facilities of each marz.

Repeating the population-based assessments upon completion of the project activities in target marzes (for client satisfaction and KAP surveys) and countrywide (for the household health survey) covering all the areas mentioned in the baseline surveys.¹

This report summarizes the data on follow-up facility and provider performance assessment conducted in facilities targeted by the PHCR project in Kotayk, Tavush, and Gegharkunik marzes. This assessment evaluates the project's impact on targeted PHC facilities in the second zone.

2. Methods

The PHCR Project staff and corresponding marz health department staff jointly selected target facilities in Kotayk, Tavush, and Gegharkunik marzes (Zone 2), where the project activities were implemented from 2007 through 2008. PHCR implemented the following activities in the targeted facilities and their communities:

- 1) Renovation of PHC facilities
- 2) Provision of basic furniture, medical equipment and supplies
- 3) Training of rural nurses in family and community nursing
- 4) Establishment of Community Health Committees (CHCs) in rural communities to provide preventive and promotional health education to the members of communities
- 5) Distribution of health education materials (TV and radio announcements, posters, and leaflets) to boost awareness of PHC reforms and services and selected health issues
- 6) Training of referral-level facility managers in PHC reforms, strategic planning, financial and human resource management, labor legislation, and quality of care basics
- 7) Training of referral-level facility accountants in accounting standards, cost accounting, tax legislation, and in use of computerized accounting software.

¹ Because of financial constraints, the final assessments planned for the fifth year of PHCR project were not conducted.

During 2007-2008, the PHCR Project also implemented several nationwide activities. These activities addressed efforts to shift to an open enrollment-based PHC model and to strengthen the financing of the facilities through performance-based payment and enrollment-based financing. Activities included providing requisite hardware and software to all referral-level PHC facilities (medical ambulatories (MAs), health centers (HCs), and polyclinics (PCs)) and trainings of the relevant staff (e.g., operators and accountants).

The PHCR Monitoring and Evaluation (M&E) team conducted two types of assessments in the selected facilities: facility resource assessment and facility/provider performance assessment.

Facility performance assessment instrument. The M&E team adapted the facility performance assessment questionnaire from the one used by Project NOVA as part of its facility-level quality improvement strategy and the facility organization/management tool used by the Armenia Social Transition Program at its pilot sites. After the baseline implementation in Zone 1 (Lori and Shirak marzes), the questionnaire was further modified: the items on provider skills/performance developed with the PHCR project's Family Medicine team and intended to measure providers' clinical skills/competences were separated from the main instrument as a supplemental questionnaire. The latter was completed during face-to-face interview with providers rather than with the facility head who served as the respondent for the main body of the questionnaire.

After the baseline implementation in Zone 2, the M&E team further modified the instrument based on guidance received from an external review by USAID/PHCR consultants in 2008 and in light of changes in PHCR project objectives and USAID funding channels. At the follow-up assessment in Zone 2, the main body of the instrument did not change, but the supplemental questionnaire, intended to measure providers' clinical skills and performance, was substantially changed with joint efforts of PHCR Project's Family Medicine and M&E teams. Many new items were included in this questionnaire and two observation checklists were added to evaluate FAP nurses' compliance with protocols in performing blood pressure and blood glucose level measurements. The supplemental questionnaire was administered concurrently with the facility assessment interview, but with providers serving as respondents.

The facility/provider performance assessment instrument covered the following domains:

- Access to/provision of care
- Provider relations with community and clients
- Environment
- Management
- Primary and secondary prevention
- Provider skills/performance (in the form of supplemental questionnaire)

Sample. A total of 56 PHC facilities were assessed at baseline in 2007. Two sites (Aghberk FAP and its referral site Shorja MA) were dropped following the baseline assessment because of being excluded from the project target sites and a new site was added as a target site (Nor Yerznka MA in Kotayk marz). Thus, 55 facilities were assessed in April-June 2009 (30 facilities in Kotayk marz, 13 in Tavush, and 12 in Gegharkunik) but only 54 facilities were included in a paired pre-post analysis. Table 1 presents the list of target and referral facilities in Kotayk, Tavush, and Gegharkunik marzes included in this assessment.

Table 1. PHCR Project target facilities in Kotayk, Tavush, and Gegharkunik marzes

Renovated facilities	Referral facilities for renovated FAPs
<u>Kotayk marz</u>	
1. Getamej FAP	17. Nor Hachn PC
2. Goght FAP	18. Garni HC
3. Jraber FAP	19. Mayakovski MA
4. Kamaris FAP	20. Geghashen MA
5. Katnaghbyur FAP	21. Aramus MA
6. Ptghni FAP	22. Verin Ptghni MA
7. Nor Gyugh FAP	23. Kotayk MA
8. Nurnus FAP	24. Byureghavan PC
9. Radiostation FAP	25. Balahovit MA
10. Saralanj FAP	26. Aragyugh MA*
11. Sevaberd FAP	27. Zar MA*
12. Teghenik FAP	28. Argel HC
13. Zoravan FAP	
14. Zovashen FAP	29. Kaputan MA*
15. Zovk FAP	30. Dzoraghbyur MA
16. Nor Yerznka MA [†]	
<u>Tavush marz</u>	
1. Gosh FAP	10. Haghartsin MA
2. Nerkin Gosh FAP	
3. Hovk FAP	11. Idjevan Mother & Child PC
4. Lusahovit FAP	12. Khashtarak MA
5. Tovuz FAP	
6. V. Karmir Aghbyur FAP	
7. V. Tsaghkavan FAP	13. Paravaqar MA
8. Varagavan FAP	
9. Zorakan MA	
<u>Gegharkunik marz</u>	
1. Getik FAP	
2. Akhpradzor FAP	9. Tsovak MA
3. Makenis FAP	
4. Chkalovka FAP	10. Sevan PC
5. Gagarin FAP	
6. Djaghatsadzor FAP	11. Vardenis PC
7. Norabak FAP	
8. Zovaber FAP	12. Ddmashen MA

* Referral facility that was also renovated by PHCR Project

[†] Nor Yerznka MA was included in the list of target facilities (and renovated) after the baseline assessment.

Logistics. During a two-day workshop, the M&E team trained interviewers to consistently and effectively implement the facility resource assessment and facility/provider performance assessment survey protocols, including ensuring the knowledge and skills necessary to evaluate the performance of blood pressure and glucose measurements through observations. The M&E team (re)trained two interviewers in Kotayk marz, two in Gegharkunik, and one in Tavush (all local physicians who had also implemented the baseline assessment) to conduct the assessments. Locally hired drivers took the interviewers to the selected facilities. The fieldwork took place in April-June 2009. The M&E team conducted periodic spot-checks of the interview process to assure compliance with the survey protocol.

Analysis. The data entry team of the Center for Health Services Research and Development (CHSR), American University of Armenia (AUA) coded responses into computer databases using SPSS 11.0 software. For each of the domains in the facility/provider performance assessment survey questionnaire, the M&E team computed a summative score, which included all variables/questions in a particular section. The maximum score of “3” was given to positive replies and “0” to negative replies. In case of a Likert-type scale, the responses were scored from 0 to 3 as well, with intermediate scores of 1, 1.5, and 2 assigned. The mean score was calculated and compared using a paired sample t-test (pre-post comparisons) and an independent samples t-test (across facility comparisons). For proportions, the M&E team used the Wilcoxon Signed Ranks Test (pre-post comparisons) and Chi-square test (across facility comparisons).

3. Results: Facility/Provider Performance Assessment

Of the 55 facilities included in the follow-up assessment, PHCR project renovated 36 sites: 31 FAPs and 5 medical ambulatories. The remaining facilities served as referral sites for the renovated FAPs (Table 1). Renovated facilities received furniture, medical equipment, and public educational materials from the Project. In addition, one nurse per each FAP received training in Family and Community Nursing (a 6.5-month certification course) and the PHCR Project established Community Health Committees in all target communities.

PHCR Project interventions in referral-level PHC facilities included staff training on financing, management, quality assurance², and clinical topics, introduction of computerized accounting and open enrollment systems, and provision of medical equipment.

Overall, 31 FAPs (56.4%), 17 MAs (30.9%), 2 HCs (3.6%), and 5 PCs (9.1%) participated in the follow-up assessment. Respondents (both administration representatives and providers) from each facility answered a set of questions investigating performance of the facility and providers. However, as mentioned above, 54 facilities with baseline data available were included in the paired pre-post analysis (Nor Yerznka MA was excluded).

² Trainings on quality assurance (first phase, which includes Quality Improvement Board establishment, facility self-assessment and tracking of 10 quality indicators) in Zone 2 marzes were conducted during April 2009 in larger referral-level facilities (Geghashen and Haghartsin MAs; Garni HC; Sevan, Vardenis, Byureghavan, Nor Hahn, and Ijevan Mother & Child PCs).

3.1. Access to/provision of care

As summarized in Table 2, access to care improved across the majority of measured dimensions. However, only for two dimensions this improvement reached the level of statistical significance ($p^3 < 0.05$). In 2009, educational materials describing the Ministry of Health (MOH) Basic Benefit Package (BBP) services were available in 96.3% of the assessed facilities compared to 59.3% in 2007 ($p=0.000$). The BBP poster was visible to clients in 94.4% of the facilities compared to 48.1% in 2007 ($p=0.000$). These changes were also significant for FAPs (11 versus 29 for the first dimension and 10 versus 29 for the second). Facilities' availability to customers during working hours and convenience of working hours for clients also slightly improved (for the latter, 12.9% increase was observed for FAPs). Providers routinely conducted pre/postnatal home visits in 100.0% of the assessed facilities. The situation remained the same for posting in the facilities working hours (35.2% of facilities and 22.6% of FAPs in 2009) and emergency instructions for non-working hours (13.0% of facilities and 3.2% of FAPs in 2009).

In many aspects, FAPs were significantly different from referral-level facilities in both 2007 and 2009. FAPs were less accessible during working hours and fewer FAPs had working hours and/or emergency instructions for non-working hours posted, than referral-level facilities. Some statistically significant differences between these facility types concerning availability of the BBP posters and educational materials describing BBP services were evident at baseline and disappeared at follow-up; thus, justifying the FAP-centered approach applied by the PHCR project.

FAP specific access/care. A supervising physician visited 83.9% of FAPs at least once per month (71.0% in 2007). In 2009, visiting physicians made home visits at least once per month at 67.7% of the FAPs (58.1% in 2007) and less frequently than once in three months at 9.7 % of the FAPs (38.7% in 2007). Visiting physicians always saw patients in the clinic at 70.0% of the facilities, and usually at 23.3% in 2009 (in 2007, 45.2% and 25.8%, respectively, $p < 0.05$). Supervising physicians notified FAPs in advance about their visits (always/usually) to 26 facilities in 2007 and 29 facilities in 2009. Emergency transport (the responsibility of village mayors) was still rare in most facilities in 2009 (Table 3).

Table 4 depicts the distribution of the scores measuring access to care by the type of facility and by marz. Polyclinics and Health Centers generally scored higher than other facility types. FAPs had lower scores than referral-level facilities and this difference was statistically significant in both 2007 and 2009. There were no significant differences between marzes at baseline, while at follow-up, facilities in Kotayk scored higher than in Tavush (statistically significant difference: $p < 0.01$). The mean score for all facilities was 1.9 (out of 3) in 2007 and 2.3 in 2009, a statistically significant difference. The mean score for FAPs also improved significantly: from 1.6 to 2.1 ($p < 0.01$).

³ P-value is a measure of statistical significance. It represents the probability that a difference between groups happened by chance. A lower P-value for any difference in outcomes indicates a lower probability that the difference was a result of chance. Results with a low P value are considered statistically significant. For example, a p-value of 0.01 ($p = 0.01$) means there is a 1 in 100 chance the result occurred by chance. For most social science research, a p-value of 0.05 or less is considered acceptable.

Table 2. Access to/provision of care by facility type

% (n)	FAPs		Referral-level facilities								TOTAL	
			Ambulatory		Health Center		Polyclinic		Total Referral			
	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Facility open and available during official hours												
Always	41.9 [†] (13)	45.2 [†] (14)	81.3 (13)	87.5 (14)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	87.0 [†] (20)	91.3 [†] (21)	61.1 (33)	64.8 (35)
Usually	35.5 (11)	41.9 (13)	18.8 (3)	12.5 (2)	-	-	-	-	13.0 (3)	8.7 (2)	25.9 (14)	27.8 (15)
Occasionally	6.5 (2)	12.9 (4)	-	-	-	-	-	-	-	-	3.7 (2)	7.4 (4)
Never	16.1 (5)	-	-	-	-	-	-	-	-	-	9.3 (5)	-
Community aware of the free (BBP) services offered												
Yes, all of them	64.5(20)	67.7(21)	68.8(11)	81.3(13)	100.0 (2)	100.0 (2)	100.0 (5)	60.0 (3)	78.3(18)	78.3(18)	70.4(38)	72.2(39)
Yes, the majority	25.8 (8)	32.3(10)	31.3 (5)	18.8 (3)	-	-	-	40.0 (2)	21.7 (5)	21.7 (5)	24.1(13)	27.8(15)
Some of them	9.7 (3)	-	-	-	-	-	-	-	-	-	5.6 (3)	-
No	-	-	-	-	-	-	-	-	-	-	-	-
Working hours posted in the facilities												
Yes	19.4 [†] (6)	22.6 [†] (7)	56.3 (9)	43.8 (7)	-	50.0 (1)	100.0 (5)	80.0 (4)	60.9 [†] (14)	52.2 [†] (12)	37.0(20)	35.2(19)
No	80.6(25)	77.4(24)	43.8 (7)	56.3 (9)	100.0(2)	50.0 (1)	-	20.0 (1)	39.1 (9)	47.8 (11)	63.0 (34)	64.8 (35)
Working hours convenient for clients												
Yes	77.4 [†] (24)	90.3 (28)	100.0 (16)	100.0 (16)	100.0 (2)	100.0 (2)	100.0 (5)	80.0 (4)	100.0 [†] (23)	95.7 (22)	87.0 (47)	92.6 (50)
No	22.6 (7)	9.7 (3)	-	-	-	-	-	20.0 (1)	-	4.3 (1)	13.0 (7)	7.4 (4)
Educational materials available describing free services												
Yes	35.5 [†] (11)	93.5 (29)*	87.5 (14)	100.0 (16)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	91.3 [†] (21)	100.0 (23)	59.3 (32)	96.3 (52)*
No	64.5 (20)	6.5 (2)	12.5 (2)	-	-	-	-	-	8.7 (2)	-	40.7 (22)	3.7 (2)
MOH state order (BBP) posters visible to clients												
Yes	32.3 [†] (10)	93.5 (29)*	56.3 (9)	93.8 (15)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	69.6 [†] (16)	95.7 (22)*	48.1 (26)	94.4 (51)*
No	67.7 (21)	6.5 (2)	43.8 (7)	6.3 (1)	-	-	-	-	30.4 (7)	4.3 (1)	51.9 (28)	5.6 (3)
Providers routinely conduct pre/postnatal home visits												
Yes	93.5 (29)	100.0 (31)	93.8 (15)	100.0 (16)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	95.5 (21)	100.0 (23)	94.3 (50)	100.0 (54)
No	6.5 (2)	-	6.3 (1)	-	-	-	-	-	4.5 (1)	-	5.7 (3)	-
Emergency instructions posted for non-working hours												
Yes	6.5 (2)	3.2 [†] (1)	12.5 (2)	18.8 (3)	-	50.0 (1)	40.0 (2)	40.0 (2)	17.4 (4)	26.1 [†] (6)	11.1 (6)	13.0 (7)
No	93.5 (29)	96.8 (30)	87.5 (14)	81.3 (13)	100.0 (2)	50.0 (1)	60.0 (3)	60.0 (3)	82.6(19)	73.9 (17)	88.9 (48)	87.0 (47)

* Statistically significant difference between baseline and follow-up, $p < 0.05$

† Statistically significant difference between FAPs and referral-level facilities, $p < 0.05$

Table 3. FAP access to care and details on services

	2007 % (n)	2009 % (n)	2007 % (n)	2009 % (n)	2007 % (n)	2009 % (n)	2007 % (n)	2009 % (n)
	At least once per month		Once per two months		Once per three months		Less frequently than once per three months	
Frequency of supervising physician visits	71.0 (22)	83.9 (26)	3.2 (1)	-	9.7 (3)	9.7 (3)	16.1 (5)	6.5 (2)
Frequency of supervising physician home visits	58.1 (18)	67.7 (21)	-	9.7 (3)	3.2 (1)	12.9 (4)	38.7 (12)	9.7 (3)
	Always		Usually		Occasionally		Never	
Frequency of supervising physician seeing patients in the clinic*	45.2 (14)	70.0 (21)	25.8 (8)	23.3 (7)	3.2 (1)	6.7 (2)	25.8 (8)	-
Frequency of supervising physician notifying facility about visit in advance	64.5 (20)	83.3 (25)	19.4 (6)	13.3 (4)	3.2 (1)	3.3 (1)	12.9 (4)	-
Frequency of mayors providing emergency transport	25.8 (8)	30.0 (9)	29.0 (9)	23.3 (7)	32.3 (10)	20.0 (6)	12.9 (4)	26.7 (8)

* Statistically significant difference between baseline and follow-up, $p < 0.05$

Table 4. Access to/provision of care: mean scores by facility type and by marz

Facility type	2007		2009	
	mean	(n)	mean	(n)
FAP*	1.6	(31)	2.1	(31)
Referral (Ambulatory/ Health Center/ Polyclinic)	2.3	(22)	2.5	(23)
<i>Ambulatory</i>	2.2	(16)	2.4	(16)
<i>Health Center</i>	2.3	(2)	2.6	(2)
<i>Polyclinic</i>	2.8	(4)	2.6	(5)
Marz				
Gegharkunik	1.7	(11)	2.2	(12)
Kotayk*	1.9	(29)	2.4	(29)
Tavush	2.1	(13)	2.1	(13)
Total*	1.9	(53)	2.3	(54)

* Statistically significant difference between baseline and follow-up, $p < 0.05$

3.2. Provider relations with community and clients

The assessment revealed that the number of FAPs where providers conduct regular (monthly) health education sessions with communities increased from 19.4% in 2007 to 29.0% in 2009 ($p<0.05$). Overall, the number of facilities providing health education sessions to communities at least once in three months increased from 21 (38.9%) in 2007 to 31 (57.4%) in 2009. The number of facilities where providers always/usually adequately prepare for these sessions also increased from 12 (22.3%) in 2007 to 23 (42.6%) in 2009 ($p<0.05$). The trend was similar for FAPs: from seven (22.6%) to 15 (48.4%). The revealed increase in the number of facilities where health education materials were always/usually provided to clients was also remarkable: 27 facilities in 2007 versus 49 in 2009; this increase was statistically significant for both FAPs and referral-level facilities. The frequency with which providers conduct health talks with patients always/usually was quite high both in 2007 and 2009 (96.2% and 96.3%, respectively). Patients were more involved in selecting treatment options at follow-up: 30 facilities in 2007 versus 44 in 2009; this improvement was also significant in both FAPs and referral-level facilities. No positive changes were reported concerning the frequency of Mayors' involvement in solving community health problems. Most surveyed facilities lacked suggestion boxes in 2007 and 2009 (86.8% and 85.2%, respectively). Among those with boxes, patient suggestions never led to changes (Table 5).

In terms of the proportion of facilities with private space for counseling sessions, physical exams and procedures, there was significant difference between FAPs and referral-level facilities both in 2007 and in 2009. Most of the referral-level facilities had private space (15 in 2007 and 17 in 2009), while only few FAPs (5 in 2007 and 7 in 2009) reported having such space. No problem concerning the confidentiality of information in patient records was detected both in 2007 and in 2009.

At follow-up, providers kept records of the community's composition (e.g., age, gender) in 75.9% of the facilities (versus 52.8% in 2007, $p<0.05$) and kept lists of vulnerable community members who were eligible for free services in 57.4% of the facilities (versus 39.6% in 2007, $p<0.05$). Here also, the difference between FAPs and referral-level facilities was statistically significant, with the referral-level facilities consistently better keeping the lists of vulnerable community members (59.1% of referral-level facilities versus 25.8% of FAPs in 2007, and 78.3% versus 41.9% in 2009). However, the situation in FAPs improved significantly in terms of keeping records of community composition (from 25.8% in 2007 to 41.9% in 2009, $p<0.05$). Both in 2007 and in 2009, only 2 facilities (one FAP and one ambulatory) reported conducting patient satisfaction surveys.

Table 5. PHC providers' relationship with community and clients

	FAPs		Referral-level facilities								TOTAL	
	% (n)		Ambulatory		Health Center		Polyclinic		Total Referral		% (n)	
	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Frequency providers conduct health education sessions with the community												
At least once per month	19.4* (6)	29.0* (9)	12.55 (2)	25.0 (4)	50.0 (1)	-	40.0 (2)	20.0 (1)	21.7 (5)	21.7 (5)	20.4* (11)	25.9* (14)
Once per 2-3 months	22.6 (7)	25.8 (8)	18.8 (3)	43.8 (7)	-	-	-	40.0 (2)	13.0 (3)	39.1 (9)	18.5 (10)	31.5 (17)
Once or twice a year	9.7 (3)	29.0 (9)	31.3 (5)	12.5 (2)	-	-	-	20.0 (1)	21.7 (5)	13.0 (3)	14.8 (8)	22.2 (12)
Less frequently/never	48.4 (15)	16.1 (5)	37.5 (6)	18.8 (3)	50.0 (1)	100.0 (2)	60.0 (3)	20.0 (1)	43.5 (10)	26.1 (6)	46.3 (25)	20.4 (11)
Frequency providers adequately prepare for health education sessions												
Always	6.5* (2)	9.7* (3)	-	-	-	-	20.0 (1)	-	4.3 (1)	-	5.6* (3)	5.6* (3)
Usually	16.1 (5)	38.7 (12)	25.0 (4)	43.8 (7)	-	-	-	20.0 (1)	17.4 (4)	34.8 (8)	16.7 (9)	37.0 (20)
Occasionally	25.8 (8)	22.6 (7)	37.5 (6)	37.5 (6)	-	50.0 (1)	20.0 (1)	40.0 (2)	30.4 (7)	39.1 (9)	27.8 (15)	29.6 (16)
Never	51.6 (16)	29.0 (9)	37.5 (6)	18.8 (3)	100.0 (2)	50.0 (1)	60.0 (3)	40.0 (2)	47.8 (11)	26.1 (6)	50.0 (27)	27.8 (15)
Frequency providers distribute health education materials												
Always	6.5* (2)	41.9* (13)	13.3 (2)	50.0 (8)	-	-	40.0 (2)	40.0 (2)	18.2* (4)	43.5* (10)	11.3* (6)	42.6* (23)
Usually	35.5 (11)	48.4 (15)	40.0 (6)	50.0 (8)	50.0 (1)	100.0 (2)	60.0 (3)	20.0 (1)	45.5 (10)	47.8 (11)	39.6 (21)	48.1 (26)
Occasionally	51.6 (16)	9.7 (3)	46.7 (7)	-	50.0 (1)	-	-	40.0 (2)	36.4 (8)	8.7 (2)	45.3 (24)	9.3 (5)
Never	6.5 (2)	-	-	-	-	-	-	-	-	-	3.8 (2)	-
Frequency providers conduct health talks with patients												
Always	61.3 (19)	51.6 (16)	73.3 (11)	68.8 (11)	100.0 (2)	50.0 (1)	80.0 (4)	40.0 (2)	77.3 (17)	60.9 (14)	67.9 (36)	55.6 (30)
Usually	32.3 (10)	45.2 (14)	26.4 (4)	25.0 (4)	-	50.0 (1)	20.0 (1)	60.0 (3)	22.7 (5)	34.8 (8)	28.3 (15)	40.7 (22)
Occasionally	6.5 (2)	3.2 (1)	-	6.3 (1)	-	-	-	-	-	4.3 (1)	3.8 (2)	3.7 (2)
Never	-	-	-	-	-	-	-	-	-	-	-	-
Frequency the Mayor is involved in solving community health problems												
Always	6.5 (2)	6.5 (2)	6.7 (1)	12.5 (2)	-	50.0 (1)	20.0 (1)	20.0 (1)	9.1 (2)	17.4 (4)	7.5 (4)	11.1 (6)
Usually	25.8 (8)	12.9 (4)	26.7 (4)	25.0 (4)	-	-	-	40.0 (2)	18.2 (4)	26.1 (6)	22.6 (12)	18.5 (10)
Occasionally	51.6 (16)	64.5 (20)	60.0 (9)	50.0 (8)	50.0 (1)	-	80.0 (4)	20.0 (1)	63.6 (14)	39.1 (9)	56.6 (30)	53.7 (29)
Never	16.1 (5)	16.1 (5)	6.7 (1)	12.5 (2)	50.0 (1)	50.0 (1)	-	20.0 (1)	9.1 (2)	17.4 (4)	13.2 (7)	16.7 (9)
Frequency patients are involved in selecting among treatment options												
Always	16.4* (6)	32.3* (10)	33.3 (5)	56.3 (9)	-	50.0 (1)	20.0 (1)	20.0 (1)	27.3* (6)	47.8* (11)	22.6* (12)	38.9* (21)
Usually	29.0 (9)	41.9 (13)	33.3 (5)	43.8 (7)	100.0 (2)	50.0 (1)	40.0 (2)	40.0 (2)	40.9 (9)	43.5 (10)	34.0 (18)	42.6 (23)
Occasionally	38.7 (12)	25.8 (8)	33.3 (5)	-	-	-	20.0 (1)	40.0 (2)	27.3 (6)	8.7 (2)	34.0 (18)	18.5 (10)
Never	12.9 (4)	-	-	-	-	-	20.0 (1)	-	4.5 (1)	-	9.4 (5)	-

Follow-up Performance Assessment of Targeted PHC Facilities in Gegharkunik, Kotayk, and Tavush Marzes

	FAPs		Referral-level facilities								TOTAL	
	% (n)		Ambulatory		Health Center		Polyclinic		Total Referral		% (n)	
	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Presence of a suggestion box												
Yes	6.5 (2)	6.5 (2)	13.3 (2)	12.5 (2)	50.0 (1)	100.0 (2)	40.0 (2)	40.0 (2)	22.7 (5)	26.1 (6)	13.2 (7)	14.8 (8)
No	93.5 (29)	93.5 (29)	86.7(13)	87.5 (14)	50.0 (1)	-	60.0 (3)	60.0 (3)	77.3 (17)	73.9 (17)	86.8 (46)	85.2 (46)
Changes due to patient suggestions in the last three months												
Yes	-	-	-	-	-	-	-	-	-	-	-	-
No	100.0(31)	100.0(31)	100.0(15)	100.0(16)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	100.0(22)	100.0(23)	100.0(53)	100.0(54)
Possibility for an outsider to get information from patient records												
Yes	-	6.5 (2)	-	-	-	-	-	20.0 (1)	-	4.3 (1)	-	5.6 (3)
No	100.0(31)	93.5 (29)	100.0(15)	100.0(16)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	100.0(22)	95.7 (22)	100.0(53)	94.4 (51)
Presence of private space for counseling sessions, physical exams, and procedures												
Yes	16.1 [†] (5)	22.6 [†] (7)	66.4 (10)	75.0 (12)	100.0 (2)	100.0 (2)	60.0 (3)	60.0 (3)	68.2 [†] (15)	73.9 [†] (17)	37.7 (20)	44.4 (24)
No	83.9 (26)	77.4 (24)	33.3 (5)	25.0 (4)	-	-	40.0 (2)	40.0 (2)	31.8 (7)	26.1 (6)	62.3 (33)	55.6 (30)
Provider records of community composition (e.g., age, gender)												
Yes	41.9 [*] (13)	71.0 [*] (22)	60.0 (9)	75.0 (12)	100.0 (2)	100.0 (2)	80.0 (4)	100.0 (5)	68.2 (15)	82.6 (19)	52.8 [*] (28)	75.9 [*] (41)
No	58.1 (18)	29.0 (9)	40.0 (6)	25.0 (4)	-	-	20.0 (1)	-	31.8 (7)	17.4 (4)	47.2 (25)	24.1 (13)
Provider records of vulnerable community members eligible for free (BBP) services												
Yes	25.8 [†] (8)	41.9 [†] (13)	46.7 (7)	68.8 (11)	100.0 (2)	100.0 (2)	80.0 (4)	100.0 (5)	59.1 [†] (13)	78.3 [†] (18)	39.6 [*] (21)	57.4 [*] (31)
No	74.2 (23)	58.1 (18)	53.3 (8)	31.3 (5)	-	-	20.0 (1)	-	40.9 (9)	21.7 (5)	60.4 (32)	42.6 (23)
Patient satisfaction surveys regularly conducted at the facility												
Yes	3.2 (1)	3.2 (1)	6.7 (1)	6.3 (1)	-	-	-	-	4.5 (1)	4.3 (1)	3.8 (2)	3.7 (2)
No	96.8 (30)	96.8 (30)	93.3 (14)	93.8 (15)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	95.5 (21)	95.7 (22)	96.2 (51)	96.3 (52)

^{*} Statistically significant difference between baseline and follow-up, $p < 0.05$

[†] Statistically significant difference between FAPs and referral-level facilities, $p < 0.05$

Table 6 shows the distribution of scores measuring providers' relationship with community and clients by the type of facility and by marz in 2007 and 2009. Overall, the detected increase in total scores from baseline was statistically significant (1.3 in 2007 versus 1.5 in 2009, $p=0.000$). Statistically significant increase was observed also for FAPs, ambulatories, and referral-level facilities as a whole. This improvement was statistically significant in Gegharkunik and Kotayk: referral-level facilities (ambulatories, health centers and polyclinics) received higher scores than FAPs both in 2007 (1.5 and 1.1, respectively, $p=0.001$) and in 2009 (1.7 and 1.4, respectively, $p=0.002$). At follow-up, facilities in Kotayk scored higher than those in Tavush (1.6 and 1.3, respectively, $p=0.046$).

Table 6. Providers' relationship with community and clients scores by facility type and by marz

	2007:		2009:	
	mean (n)		mean (n)	
Facility type				
FAP*	1.1	(31)	1.4	(31)
Referral* (Ambulatory/ Health Center/Polyclinic)	1.5	(22)	1.7	(23)
<i>Ambulatory*</i>	1.4	(15)	1.7	(16)
<i>Health Center</i>	1.7	(2)	1.8	(2)
<i>Polyclinic</i>	1.6	(5)	1.7	(5)
Marz				
Gegharkunik*	1.1	(11)	1.6	(12)
Kotayk*	1.3	(29)	1.6	(29)
Tavush	1.3	(13)	1.3	(13)
Total*	1.3	(53)	1.5	(54)

* Statistically significant difference between baseline and follow-up, $p < 0.05$

3.3. Environment

As shown in Table 7, providers at most of the ambulatories, all health centers, and all polyclinics maintained complete records of cold chain conditions for vaccines, while providers at only 12 out of 31 FAPs completed such records in 2007 and 2009. However, these data should be interpreted with caution, as – according to several nurses – FAP nurses were not required or allowed to keep such records as keeping the records are the responsibility of the supervising ambulatory, and nurses only “borrowed” the vaccine bag for vaccinations to return it back to the ambulatory/polyclinic within a brief specified period.

The number of facilities with appropriate working conditions increased significantly from 28.3% in 2007 to 79.6% in 2009. This increase was most prominent (almost eightfold increase since 2007) in FAPs where the PHCR project was active during 2007-2008. All facilities but one FAP were regularly ventilated during working hours in 2009 (while 13 FAPs and 4 ambulatories were not ventilated in 2007, statistically significant increase across FAPs and ambulatories). All facilities were cleaned regularly in 2009 versus 73.6% of the facilities in 2007 (again, statistically significant increase).

Official security checks were conducted regularly at only 26 surveyed facilities in 2009 (statistically significant increase from 17 facilities at baseline). There was a significant increase for ambulatories from 40.0% in 2007 to 87.5% in 2009. FAPs and referral-level facilities were significantly different in this regard in 2007 and 2009 with regular security checks being conducted in referral-level facilities more frequently than in FAPs. Regular trainings on emergency situations/disaster preparedness for the facility staff were also infrequent: reported by only 29.6% of the facilities in 2009 (statistically significant increase

from 13.0% at baseline, mainly due to significant increase in ambulatories from 6.3% to 50.0%). Again, these trainings were being conducted in referral-level facilities more frequently than in FAPs (statistically significant difference in 2009). A few facilities (two polyclinics, one health center, two ambulatories, and one FAP) reported having equipment maintenance staff in 2009, while this number was even less in 2007 (three polyclinics). Here also, statistically significant difference was detected between FAPs and referral-level facilities, with the latter reporting availability of such staff more frequently.

Consumable medical supplies were replenished regularly at only 7.4% of the facilities (mainly in referral-level facilities) both in 2007 and in 2009. Used needles always were disposed in sharp containers at 77.8% of the facilities (versus 64.8% in 2007, $p < 0.05$). This increase was consistent in both FAPs and referral-level facilities.

Providers from only 14 facilities always washed their hands with soap and water before and after each patient in 2009 (versus 10 in 2007). Providers from 20 facilities usually washed their hands and providers from the remaining 20 facilities – occasionally. No one reported never washing hands before and after each patient (this was reported by four FAPs and one ambulatory in 2007). However, the slight improvement in this function did not reach the level of statistical significance.

SanEpid regulations on infection control and medical waste management were available at 33.3% of facilities in 2009 versus 14.8% in 2007 (statistically significant increase mainly due to prominent increase in ambulatories). Referral-level facilities were doing significantly better in terms of having the infection control regulations more often than FAPs at both baseline and follow-up assessments.

Table 7. Facility environment

	FAPs		Referral-level facilities								TOTAL	
	% (n)		Ambulatory		Health Center		Polyclinic		Total Referral		% (n)	
	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Vaccine cold chain records maintained												
Yes	38.7 ^f (12)	38.7 ^f (12)	71.4 (10)	81.3 (13)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	81.0 ^f (17)	87.0 ^f (20)	55.8 (29)	59.3 (32)
No	61.3 (19)	61.3 (19)	12.5 (1)	12.5 (1)	-	-	-	-	19.0 (4)	13.0 (3)	44.2 (23)	40.7 (22)
Appropriate working conditions for providers												
Yes	9.7 ^f (3)	74.2 [*] (23)	33.3 (5)	81.3 [*] (13)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	54.5 ^f (12)	87.0 [*] (20)	28.3 (15)	79.6 [*] (43)
No	90.3 (28)	25.8 (8)	66.7 (10)	18.8 (3)	-	-	-	-	45.5 (10)	13.0 (3)	71.7 (38)	20.4 (11)
Facility regularly ventilated during working hours												
Yes	58.1 (18)	96.8 [*] (30)	73.3 (11)	100.0 [*] (16)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	81.8 (18)	100.0 [*] (23)	67.9 (36)	98.1 [*] (53)
No	41.9 (13)	3.2 (1)	26.7 (4)	-	-	-	-	-	18.2 (4)	-	32.1 (17)	1.9 (1)
Facility regularly cleaned												
Yes	64.5 (20)	100.0 [*] (31)	80.0 (12)	100.0 (16)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	86.4 (19)	100.0 (23)	73.6 (39)	100.0 [*] (54)
No	35.5 (11)	-	20.0 (3)	-	-	-	-	-	13.6 (3)	-	26.4 (14)	-
Official security checks regularly conducted												
Yes	12.9 ^f (4)	19.4 ^f (6)	40.0 (6)	87.5 [*] (14)	100.0 (2)	100.0 (2)	100.0 (5)	80.0 (4)	59.1 ^f (13)	87.0 [*] ^f (20)	32.1 (17)	48.1 [*] (26)
No	87.1 (27)	80.6 (25)	60.0 (9)	12.5 (2)	-	-	-	20.0 (1)	40.9 (9)	13.0 (3)	67.9 (36)	51.9 (28)
Regular staff training on emergency situations/disaster preparedness												
Yes	9.7 (3)	9.7 ^f (3)	6.3 (1)	50.0 [*] (8)	-	100.0 (2)	60.0 (3)	60.0 (3)	17.4 (4)	56.5 [*] ^f (13)	13.0 (7)	29.6 [*] (16)
No	90.3 (28)	90.3 (28)	93.8 (15)	50.0 (8)	100.0 (2)	-	40.0 (2)	40.0 (2)	82.6 (19)	43.5 (10)	87.0 (47)	70.4 (38)
Equipment maintenance staff												
Yes	- ^f	3.2 ^f (1)	-	12.5 (2)	-	50.0 (1)	60.0 (3)	60.0 (3)	13.6 ^f (3)	26.1 ^f (6)	5.7 (3)	13.0 (7)
No	100.0 (31)	96.8 (30)	100.0 (15)	87.5 (14)	100.0 (2)	50.0 (1)	40.0 (2)	40.0 (2)	86.4 (19)	73.9 (17)	94.3 (50)	87.0 (47)
Consumable supplies/equipment regularly replenished												
Yes	- ^f	3.2 (1)	12.5 (2)	12.5 (2)	-	50.0 (1)	40.0 (2)	-	17.4 ^f (4)	13.0 (3)	7.4 (4)	7.4 (4)
No	100.0 (31)	96.8 (30)	87.5 (14)	87.5 (14)	100.0 (2)	50.0 (1)	60.0 (2)	100.0 (5)	82.6 (19)	87.0 (20)	92.6 (50)	92.6 (50)

Follow-up Performance Assessment of Targeted PHC Facilities in Gegharkunik, Kotayk, and Tavush Marzes

	FAPs		Referral-level facilities								TOTAL	
	% (n)		Ambulatory		Health Center		Polyclinic		Total Referral		% (n)	
	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Frequency used needles disposed in sharp containers												
Always	64.5 (20)	77.4 (24)	56.3 (9)	81.3 (13)	100.0 (2)	50.0 (1)	80.0 (4)	80.0 (4)	65.2 (15)	78.3*(18)	64.8 (35)	77.8 (42)
Usually	9.7 (3)	9.7 (3)	6.3 (1)	6.3 (1)	-	50.0 (1)	-	20.0 (1)	4.3 (1)	13.0 (3)	7.4 (4)	11.1 (6)
Occasionally	-	6.5 (2)	6.3 (1)	12.5 (2)	-	-	-	-	4.3 (1)	8.7 (2)	1.9 (1)	7.4 (4)
Never	25.8 (8)	6.5 (2)	31.3 (5)	-	-	-	20.0 (1)	-	26.1 (6)	-	25.9 (14)	3.7 (2)
Frequency providers wash hands with soap and water before and after each patient												
Always	12.9 (4)	25.8 (8)	31.3 (5)	31.3 (5)	-	50.0 (1)	20.0 (1)	-	26.1 (6)	26.1 (6)	18.5 (10)	25.9 (14)
Usually	48.4 (15)	25.8 (8)	37.5 (6)	56.3 (9)	50.0 (1)	-	40.0 (2)	60.0 (3)	39.1 (9)	52.2 (12)	44.4 (24)	37.0 (20)
Occasionally	25.8 (8)	48.4 (15)	25.0 (2)	12.5 (1)	50.0 (1)	50.0 (1)	40.0 (2)	40.0 (2)	22.7 (5)	21.7 (5)	27.8 (15)	37.0 (20)
Never	12.9 (4)	-	6.3 (1)	-	-	-	-	-	4.3 (1)	-	9.3 (5)	-
Presence of MOH/San Epid regulations on infection control and medical waste management												
Yes	6.5 [†] (2)	9.7 [†] (3)	12.5 (2)	62.5*(10)	-	-	80.0 (4)	100.0 (5)	26.1 [†] (6)	65.2* [†] (15)	14.8 (8)	33.3*(18)
No	93.5 (29)	90.3 (28)	87.5 (14)	37.5 (6)	100.0 (2)	100.0 (2)	20.0 (1)	-	73.9 (17)	34.8 (8)	85.2 (46)	66.7 (36)

* Statistically significant difference between baseline and follow-up, $p < 0.05$

[†] Statistically significant between FAPs and referral-level facilities, $p < 0.05$

As shown in Table 8, polyclinics received the highest cumulative facility environment score in 2007 (2.4). However, there was no positive change in this score in polyclinics, while all other types of facilities improved since baseline and this improvement was statistically significant both for FAPs and for ambulatories. In both 2007 and 2009, referral-level facilities scored significantly higher than FAPs (respectively, 1.6 vs. 0.9 in 2007, $p=0.001$, and 2.1 vs. 1.4 in 2009, $p=0.000$). Gegharkunik and Kotayk marzes had statistically significant increase in environment scores since baseline, while the difference in Tavush marz did not reach the level of statistical significance. These three marzes were not different from each other in terms of environment scores either in 2007, or in 2009. The total mean score was low in 2007 (1.2); it increased significantly to 1.7 at follow-up.

Table 8. Environment: mean score by facility type and by marz

	2007:		2009:	
	mean (n)		mean (n)	
Facility type				
FAP*	0.9	(31)	1.4	(31)
Referral* (Ambulatory/ Health Center/Polyclinic)	1.6	(21)	2.1	(23)
<i>Ambulatory*</i>	1.2	(14)	2.0	(16)
<i>Health Center</i>	1.8	(2)	2.3	(2)
<i>Polyclinic</i>	2.4	(5)	2.3	(5)
Marz				
Gegharkunik*	1.2	(11)	1.7	(12)
Kotayk*	1.1	(28)	1.7	(29)
Tavush	1.3	(13)	1.6	(13)
Total*	1.2	(52)	1.7	(54)

* Statistically significant difference between baseline and follow-up, $p < 0.05$

3.4. Facility management

The respondents from each facility answered a set of questions investigating facets of facility management (Table 9). Written documents describing providers' job responsibilities existed in 24.1% of the facilities in 2009, compared to 14.8% of the facilities in 2007. This increase, however, did not reach the level of statistical significance. All polyclinics and health centers, 68.8% of ambulatories, but only 19.4% of FAPs maintained chronic disease registers. This indicator did not improve since baseline, and there was statistically significant difference between FAPs and referral-level facilities with the latter maintaining such register much more frequently (78.3% vs. 19.4%, respectively).

At follow-up, most respondents (90.7%) thought that their current staff was sufficient to provide high quality and cost-effective services to the population. The improvement for this questions was statistically significant since baseline for FAPs (from 64.5% to 93.5%) and for the whole sample (from 75.9% to 90.7%). Most facilities (90.7% in 2007, 81.5% in 2009) lacked an established procedure to respond to client complaints.

The number of facilities where primary health care standards were available to providers as a reference increased significantly for the whole sample (20 in 2007 versus 38 in 2009, $p=0.000$) and separately for ambulatories (from 37.5% to 93.8%) and referral-level facilities as a whole (from 47.8% to 95.7%). The providers at 48.4% of FAPs, 87.5% of ambulatories, and 100.0% of health centers and polyclinics used these standards during their daily work. Here also statistically

significant increase was detected since baseline for the whole sample (from 35.8% to 66.7%) and separately for ambulatories and all referral-level facilities.

The majority of referral-level facilities and over half of FAPs held regular staff meetings; however, records were rarely maintained both in 2007 and in 2009 (only one health center and two polyclinics maintained such records in 2009). Most of facilities (79.6% at follow-up) lacked any type of financial reward system for good provider performance. The difference between FAPs and referral-level facilities was statistically significant with the former having such system much more infrequently (6.5% vs. 39.1%, respectively). In 2009, providers of 56.6% of facilities were satisfied with their job (an increase from 43.4% at baseline, $p < 0.05$). In 2007, providers in FAPs were significantly less satisfied with their job than those in referral-level facilities (30.0% vs. 60.9%, $p < 0.05$). This difference disappeared in 2009 due to significant increase in job satisfaction among providers in FAPs (from 30.0% to 56.7%, $p < 0.05$).

At follow-up assessment, respondents in referral-level facilities were asked a set of new questions concerning the status of some quality assurance activities being introduced through centralized trainings in larger PHC facilities (having three or more PHC doctors employed) by PHCR project and MOH. At the time of the assessment in 2009, the first stage of these trainings was completed countrywide. This stage included establishment of an internal Quality Improvement Board at larger PHC facilities, implementation of Facility self-assessment tool, and monitoring/reporting on ten healthcare quality indicators. The second stage (implementation of Medical chart/record review and Patient satisfaction survey system) did not start yet^{4;5}. The sample included nine referral-level facilities covered with these trainings and 14 non-covered. Among those nine facilities, eight reported conducting self-assessment, three – medical chart review and one – patient satisfaction survey. Representatives of 14 smaller referral-level facilities reported the following results: six reported that they conduct self-assessment, seven – medical chart review and five – patient satisfaction survey. While these self-reported results look somewhat better for the smaller facilities [that did not participate in quality improvement trainings], the M&E team suggests that respondents of larger facilities had better understanding of the terms self-assessment, chart-review, and satisfaction surveys and smaller facilities were not familiar with these activities and, thus, often misreported in their answers about these activities (Table 10).

Respondents working in FAPs answered a more focused set of questions (Table 11). Many aspects of management in FAPs were still below the desired level and improvements since 2007 were not statistically significant. According to 25.8% of the respondents, supervisors always engaged providers in problem solving during their visits to FAPs in 2009, an increase from 13.3% at baseline. In 2009, supervisors always provided clinical and administrative support to providers at 45.2% and 19.4% of facilities, respectively, while in 2007 – only at 25.8% and 12.9% of facilities. When problems could not be solved locally, the supervisor always made reasonable efforts to solve them by raising the issue with authorities at 19.4% of FAPs (9.7% in 2007). At follow-up in 25.8% of FAPs, the supervisor always reported back to providers on the status of the issue (an increase from 12.9% at baseline).

⁴ Kirakosyan M. & Segal M. Strengthening Quality Assurance in Primary Health Care in the Republic of Armenia: Quality Assurance Toolkit. USAID/PHCR Project, Yerevan, 2009

⁵ Kirakosyan M., Segal M., Crigler L. Strengthening Quality Assurance in Primary Health Care in the Republic of Armenia: Implementation Plan. USAID/PHCR Project, Yerevan, 2009

Table 9. Facility management attributes

	FAPs		Referral-level facilities								TOTAL	
	% (n)		Ambulatory		Health Center		Polyclinic		Total Referral		% (n)	
	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Written documents describing provider job responsibilities												
Yes	16.1 (5)	12.9 [†] (4)	18.3 (3)	43.8 (7)	-	-	-	40.0 (2)	13.0 (3)	39.1 [†] (9)	14.8 (8)	24.1 (13)
No	83.9 (26)	87.1 (27)	81.3 (13)	56.3 (9)	100.0 (2)	100.0 (2)	100.0 (5)	60.0 (3)	87.0 (20)	60.9 (14)	85.2 (46)	75.9 (41)
Chronic diseases register maintained												
Yes	22.6 [†] (7)	19.4 [†] (6)	68.8 (11)	68.8 (11)	100.0 (2)	100.0 (2)	100.0 (5)	100.0 (5)	78.3 [†] (18)	78.3 [†] (18)	46.3 (25)	44.4 (24)
No	77.4 (24)	80.6 (25)	31.3 (5)	31.3 (5)	-	-	-	-	21.7 (5)	21.7 (5)	53.7 (29)	55.6 (30)
Current staff sufficient to provide high quality and cost-effective services												
Yes	64.5 [†] (20)	93.5 [*] (29)	93.8 (15)	93.8 (15)	100.0 (2)	50.0 (1)	80.0 (4)	80.0 (4)	91.3 [†] (21)	87.0 (20)	75.9 (41)	90.7 [*] (49)
No	35.5 (11)	6.5 (2)	6.3 (1)	6.3 (1)	-	50.0 (1)	20.0 (1)	20.0 (1)	8.7 (2)	13.0 (3)	24.1 (13)	9.3 (5)
Established official procedure for responding to client complaints												
Yes	6.5 (2)	3.2 [†] (1)	12.5 (2)	25.0 (4)	-	50.0 (1)	20.0 (1)	80.0 (4)	13.0 (3)	39.1 ^{**†} (9)	9.3 (5)	18.5 (10)
No	93.5 (29)	96.8 (30)	87.5 (14)	75.0 (12)	100.0 (2)	50.0 (1)	80.0 (4)	20.0 (1)	87.0 (20)	60.9 (14)	90.7 (49)	81.5 (44)
Availability of primary health care standards (clinical guidelines, criteria, protocols)												
Yes	30.0 (9)	51.6 [†] (16)	37.5 (6)	93.8 [*] (15)	50.0 (1)	100.0 (2)	80.0 (4)	100.0 (5)	47.8 (11)	95.7 ^{**†} (22)	37.7 (20)	70.4 [*] (38)
No	70.0 (21)	48.4 (15)	62.5 (10)	6.3 (1)	50.0 (1)	-	20.0 (1)	-	52.2 (12)	4.3 (1)	62.3 (33)	29.6 (16)
Health care standards used in daily work												
Yes	26.7 (8)	48.4 [†] (15)	37.5 (6)	87.5 [*] (7)	50.0 (1)	100.0 (2)	80.0 (4)	100.0 (5)	47.8 (11)	91.3 ^{**†} (21)	35.8 (19)	66.7 [*] (36)
No	73.3 (22)	51.6 (16)	62.5 (10)	12.5 (1)	50.0 (1)	-	20.0 (1)	-	52.2 (12)	8.7 (2)	64.2 (34)	33.3 (18)
Regular staff meetings												
Yes	29.0 [†] (9)	51.6 (16)	93.8 (15)	68.8 (11)	100.0 (2)	100.0 (2)	100.0 (5)	80.0 (4)	95.7 [†] (22)	73.9 (17)	57.4 (31)	61.1 (33)
No	71.0 (22)	48.7 (15)	6.3 (1)	31.3 (5)	-	-	-	20.0 (1)	4.3 (1)	26.1 (6)	42.6 (23)	38.9 (21)
Records of staff meetings kept												
Yes	3.2 (1)	-	6.3 (1)	-	-	50.0 (1)	40.0 (2)	40.0 (2)	13.0 (3)	13.0 (3)	7.4 (4)	5.6 (3)
No	96.8 (30)	100.0 (31)	93.8 (15)	100.0 (16)	100.0 (2)	50.0 (1)	60.0 (3)	60.0 (3)	87.0 (20)	87.0 (20)	92.6 (50)	94.4 (51)
Presence of a financial reward system for good provider performance[†]												
Yes		6.5 (2)		37.5 (6)		-		60.0 (3)		39.1 (9)		20.4 (11)
No		93.5 (29)		62.5 (10)		100.0 (2)		40.0 (2)		60.9 (14)		79.6 (43)
Provider satisfaction with job												
Yes, all of them	30.0 [†] (9)	56.7 [*] (17)	62.5 (10)	75.0 (12)	50.0 (1)	-	60.0 (3)	20.0 (1)	60.9 [†] (14)	56.5 (13)	43.4 (23)	56.6 [*] (30)
Yes, some of them	16.7 (5)	23.3 (7)	25.0 (4)	25.0 (4)	50.0 (1)	100.0 (2)	40.0 (2)	60.0 (3)	30.4 (7)	39.1 (9)	22.6 (12)	30.2 (16)
No	53.3 (16)	20.0 (6)	12.5 (2)	-	-	-	-	20.0 (1)	8.7 (2)	4.3 (1)	34.0 (18)	13.2 (7)

* Statistically significant difference between baseline and follow-up, $p < 0.05$

[†] Statistically significant difference between FAPs and referral-level facilities, $p < 0.05$

[‡] This question was included only in the follow-up questionnaire.

Table 10. Quality Assurance activities in referral-level facilities

	Number (%) of referral-level facilities practicing tools	
	Larger facilities (n=9)	Smaller facilities (n=14)
Self-assessment of performance	8 (88.9%)	6 (46.2%)
Medical chart/case review	3 (33.3%)	7 (53.8%)
Patient satisfaction survey	1 (11.1%)	5 (38.5%)

Table 11. Facility management in FAPs

	Always % (n)		Usually % (n)		Occasionally % (n)		Never % (n)	
	2007	2009	2007	2009	2007	2009	2007	2009
Supervisor engages providers in problem solving during their visits	13.3 (4)	25.8 (8)	63.3 (19)	51.6 (16)	10.0 (3)	12.9 (4)	13.3 (4)	9.7 (3)
Supervisor provides clinical support to providers	25.8 (8)	45.2 (14)	61.3 (19)	35.5 (11)	9.7 (3)	16.1 (5)	3.2 (1)	3.2 (1)
Supervisor provides administrative support to providers	12.9 (4)	19.4 (6)	22.6 (7)	29.0 (9)	45.2 (14)	32.3 (10)	19.4 (6)	19.4 (6)
Supervisor makes all the reasonable efforts to solve problems	9.7 (3)	19.4 (6)	29.0 (9)	22.6 (7)	41.9 (13)	22.6 (7)	19.4 (6)	35.5 (11)
Supervisor reports back to the provider on the status of the issue	12.9 (4)	25.8 (8)	54.8 (17)	32.3 (10)	22.6 (7)	9.7 (3)	9.7 (3)	32.3 (10)

Table 12 shows the distribution of facility management scores by facility type and by marz in 2007 and 2009. Facility management scores improved statistically significantly between 2007 and 2009 (1.2 and 1.5, respectively, $p=0.000$). The change was also statistically significant at the level of FAPs (from 0.8 to 1.2, $p=0.005$), ambulatories (from 1.5 to 1.9, $p=0.014$), and referral-level facilities as a whole (from 1.6 to 2.0, $p=0.003$). Among marzes, statistically significant increase was observed in Kotayk (from 1.3 to 1.6, $p=0.001$) and Tavush (from 0.9 to 1.4, $p=0.007$). Referral-level facilities scored significantly higher than FAPs (1.6 vs. 0.8 at baseline and 2.0 vs. 1.2 at follow-up). Statistically, marzes were not different from each other both in 2007 and in 2009.

Table 12. Facility management: mean scores by facility type and by marz

	2007 mean (n)	2009 mean (n)
Facility type		
FAP*	0.8 (29)	1.2 (30)
Referral (Ambulatory/ Health Center/Polyclinic)*	1.6 (23)	2.0 (23)
<i>Ambulatory*</i>	1.5 (16)	1.9 (16)
<i>Health Center</i>	1.6 (2)	2.0 (2)
<i>Polyclinic</i>	1.9 (5)	2.2 (5)
Marz		
Gegharkunik	1.2 (11)	1.3 (11)
Kotayk*	1.3 (29)	1.6 (29)
Tavush*	0.9 (12)	1.4 (13)
Total*	1.2 (52)	1.5 (53)

* Statistically significant difference between baseline and follow-up, $p < 0.05$

3.5. Primary and secondary prevention

Table 13 describes the primary and secondary prevention efforts in the assessment sites. Prevention activities increased significantly since 2007 in four of the measured domains. In 2009, 96.3% of the facilities reported about complete immunization of children at 24-months of age (defined as coverage of more than 75% of the population) versus 72.2% in 2007 ($p=0.002$). Clinical urine and blood tests at 12 months of age were reportedly conducted for more than 75% of eligible children at 35.2% of the facilities versus 7.4% at baseline ($p=0.000$). Approximately 54.7% of facilities reported conducting examination and consultation on reproductive health for more than 75% of 15-17 years old female adolescents (28.3% in 2007, $p=0.000$). In 66.7% of facilities, more than 75% of the patients with type 2 diabetes reportedly had received at least one blood glucose test per month (40.7% at baseline, $p=0.002$). Some improvements (although, statistically insignificant) were reported also in some other areas. Consultations on healthy pregnancy, breastfeeding, childcare, and personal and sexual hygiene were provided to reportedly more than 75% of pregnant women in 70.4% of facilities versus 59.3% at baseline. In 38.9% of facilities, more than 75% of first antenatal visits were within the first trimester of pregnancy (24.1% in 2007). Preventive blood pressure measurement at least once per year (with a corresponding record in medical chart) and counseling of 15-50 years old women on FP were the least commonly practiced preventive measures in 2009 (13.0% and 7.4% of facilities (respectively) reported covering more than 75% of the corresponding population with these interventions).

Table 13. Facilities reporting of primary and secondary prevention activities by the proportion of the specific population served

	More than 75%		50-75%		25- 50%		Less than 25%	
	2007 % (n)**	2009 % (n)	2007 % (n)	2009 % (n)	2007 % (n)	2009 % (n)	2007 % (n)	2009 % (n)
Children fully immunized at 24 months*	72.2 (39)	96.3 (52)	22.2 (12)	3.7 (2)	5.6 (3)	-	-	-
Pregnant women receiving consultation on healthy pregnancy, breastfeeding, child care, personal and sexual hygiene	59.3 (32)	70.4 (38)	14.8 (8)	16.7 (9)	13.0 (7)	7.4 (4)	13.0 (7)	5.6 (3)
Female adolescents 15-17 years old examined and advised on reproductive health*	28.3 (15)	54.7 (29)	5.7 (3)	13.2 (7)	17.0 (9)	3.8 (2)	49.1 (26)	28.3 (15)
Patients with type 2 diabetes receiving regular blood glucose control (at least one blood glucose test per month)*	40.7 (22)	66.7 (36)	18.5 (10)	14.8 (8)	11.1 (6)	7.4 (4)	29.6 (16)	11.1 (6)
First antenatal visits within the first trimester of pregnancy	24.1 (13)	38.9 (21)	40.7 (22)	25.9 (14)	7.4 (4)	11.1 (6)	27.8 (15)	24.1 (13)
Children receiving clinical urine and blood tests at 12 months*	7.4 (4)	35.2 (19)	7.4 (4)	14.8 (8)	13.0 (7)	14.8 (8)	72.2 (39)	35.2 (19)
Those at least 20 years old receiving preventive blood pressure measurement at least once per year and having a corresponding record in the medical chart	9.4 (5)	13.0 (7)	9.4 (5)	16.7 (9)	24.5 (13)	27.8 (15)	56.6 (30)	42.6 (23)
Sexually active women (15-50 years) receiving counseling on FP [†]		7.4 (4)		24.1 (13)		33.3 (18)		35.2 (19)

** - % (n) of PHC facilities

* Statistically significant difference between baseline and follow-up, $p < 0.05$

[†] This question was included only in the follow-up questionnaire.

The survey also included a set of questions investigating primary and secondary prevention specific to ambulatories, polyclinics, and health centers. Again, coverage of population with these preventive activities increased and the reported increase in four areas reached the level of statistical significance. As Table 14 shows, more than 75% of patients with hypertension and coronary heart disease (CHD) reportedly received regular electrocardiogram (ECG) (at least one ECG per year) in 78.3% of surveyed facilities (versus 40.9% of facilities in 2007, $p=0.008$). More than 75% of patients with type 2 diabetes received regular eye fundoscopy in 69.6% of the facilities (versus 39.1% in 2007, $p=0.005$). More than 75% of preschool age children reportedly received preventive examinations by neurologist and ophthalmologist in 65.2% of the facilities (versus 43.5% at baseline, $p=0.034$). Less than half of the studied facilities reported that over 75% of children had their hemoglobin level measured at 9-months of age. Still, the increase since baseline was statistically significant (43.5% in 2009 vs. 13.0% in 2007, $p=0.001$). Reportedly, in 69.6% of facilities (versus 47.8% in 2007) more than 75% of pregnant women were examined at least four times during their pregnancy. Providers of 69.6% facilities reported that more than 75% of their patients with CHD received regular blood cholesterol tests (at least once per year).

The proportion of patients over 40 years old undergoing blood cholesterol screening at least once a year was insufficient. No single facility reported that over 75% of the population was covered with this test both in 2007 and in 2009, while providers of only three facilities reported that 50-75% of the population was covered with it at follow-up (one facility at baseline). Clinical breast examination and Pap-smear tests were infrequently performed. No facility mentioned that in 2009 more than 75% of the female population over 40 years of age received clinical breast examination at least once a year, while providers of seven facilities reported that 50-75% of women undergo such examination. Pap smear tests were even rarer: providers at only three facilities reported that over half of the female population 30-60 years old underwent this screening in 2009.

Table 15 shows the distribution of summative primary and secondary prevention measure scores by the facility type and by marz in 2007 and 2009. Primary and secondary prevention mean scores significantly increased since 2007 (from 1.5 to 2.0, $p=0.000$). Statistically significant increase was detected in these scores separately for FAPs (from 1.4 to 1.8), ambulatories (from 1.6 to 2.2), and referral-level facilities as a whole (from 1.7 to 2.3). The increase in all three marzes was also statistically significant, while marzes were not different from each other at both baseline and follow-up assessments. As to differences across facility types, referral-level facilities consistently scored significantly higher than FAPs (at follow-up assessment, referral-level facilities scored 2.3 and FAPs 1.8, $p=0.001$).

Table 14. Primary and secondary prevention efforts at referral-level facilities (ambulatories, health centers, and polyclinics)

	More than 75%		50-75%		25- 50%		Less than 25%	
	2007 % (n)**	2009 % (n)	2007 % (n)	2009 % (n)	2007 % (n)	2009 % (n)	2007 % (n)	2009 % (n)
Children having their hemoglobin level measured at 9-months of age*	13.0 (3)	43.5 (10)	13.0 (3)	17.4 (4)	13.0 (3)	17.4 (4)	60.9 (14)	21.7 (5)
Preschool age children undergoing preventive examinations by neurologist and ophthalmologist*	43.5 (10)	65.2 (15)	13.0 (3)	8.7 (2)	13.0 (3)	17.4 (4)	30.4 (7)	8.7 (2)
Those over 40 years old having their blood cholesterol level measured at least once a year	-	-	4.5 (1)	13.0 (3)	36.4 (8)	47.8 (11)	59.1 (13)	39.1 (9)
Females over 40 years old undergoing clinical breast examination at least once per year	4.3 (1)	-	8.7 (2)	30.4 (7)	26.1 (6)	4.3 (1)	60.9 (14)	65.2 (15)
Females 30-60 years old undergoing Pap-smear at least once per 3 years	-	4.3 (1)	4.3 (1)	8.7 (2)	4.3 (1)	8.7 (2)	91.3 (21)	78.3 (18)
Pregnant women examined at least four times during their pregnancy	47.8 (11)	69.6 (16)	8.7 (2)	-	8.7 (2)	4.3 (1)	34.8 (8)	26.1 (6)
Patients with type 2 diabetes receiving regular eye funduscopy (at least 1 exam per year)*	39.1 (9)	69.6 (16)	13.0 (3)	13.0 (3)	8.7 (2)	4.3 (1)	39.1 (9)	13.0 (3)
Patients with Hypertension and Coronary Heart Disease (CHD) receiving at least 1 ECG per year*	40.9 (9)	78.3 (18)	27.3 (6)	8.7 (2)	22.7 (5)	13.0 (3)	9.1 (2)	-
Patients with Coronary Heart Disease testing their blood cholesterol at least 1 per year†		69.6 (16)		13.0 (3)		4.3 (1)		13.0 (3)

** - % (n) of PHC facilities

* Statistically significant difference between baseline and follow-up, $p < 0.05$

† This question was included only in the follow-up questionnaire.

Table 15. Primary and secondary prevention: mean scores by facility type and marz

	2007		2009	
	mean score (n)		mean score (n)	
Facility type				
FAP*	1.4	(30)	1.8	(30)
Referral*(Ambulatory/ Health Center/ Polyclinic)	1.7	(22)	2.3	(23)
<i>Ambulatory*</i>	1.6	(16)	2.2	(16)
<i>Health Center</i>	1.8	(2)	2.6	(2)
<i>Polyclinic</i>	1.9	(4)	2.5	(5)
Marz				
Gegharkunik*	1.4	(12)	1.9	(12)
Kotayk*	1.6	(28)	2.1	(28)
Tavush*	1.4	(12)	1.9	(13)
Total*	1.5	(52)	2.0	(53)

* Statistically significant difference between baseline and follow-up, $p < 0.05$

3.6. Overall performance score

The total performance scores were also calculated by adding the mean scores for each section and dividing the sum by the number of sections. The total mean scores ranged from 0.6 to 2.3 in 2007 and from 1.0 to 2.7 in 2009. As Table 16 shows, referral-level facilities performed significantly better than FAPs both in 2007 and in 2009. Performance of Gegharkunik, Kotayk, and Tavush facilities was comparable at both baseline and follow-up assessments. The positive changes since 2007 were statistically significant in all three marzes. Appendix 2 presents the total mean performance scores for each facility.

Table 16. Total mean scores (all sections) by facility type and marz

	2007		2009	
	mean score (n)		mean score (n)	
Facility type				
FAP*	1.2	(28)	1.6	(29)
Referral* (Ambulatory/ Health Center/Polyclinic)	1.7	(19)	2.1	(23)
<i>Ambulatory*</i>	1.5	(14)	2.1	(16)
<i>Health Center</i>	1.8	(2)	2.3	(2)
<i>Polyclinic</i>	2.1	(3)	2.3	(5)
Marz				
Gegharkunik*	1.2	(9)	1.7	(11)
Kotayk*	1.4	(27)	1.9	(28)
Tavush*	1.3	(11)	1.7	(13)
Total*	1.4	(47)	1.8	(52)

* Statistically significant difference between baseline and follow-up, $p < 0.05$

3.7. Technical competence of primary health care providers

3.7.1. Physicians of ambulatories, health centers and polyclinics

The next part of this assessment investigated usage of medical equipment by PHC physicians, whether they apply a range of clinical skills, and whether they use job aids, developed by the PHCR project, in their daily practice. Table 17 shows the assessed referral-level facilities' physicians' frequency of using common medical equipment. All 66 doctors regularly used a stethophonendoscope in their daily practice. About 89.4% of physicians regularly used the adult sphygmomanometer. An equal proportion of doctors (57.6%) regularly used adult and child scales. The next more or less regularly used instrument was the glucometer (37.9%). Over quarter of physicians regularly used otoscope and ECG device (27.3% and 25.8%, respectively). Less than one-fifth of physicians regularly used the remaining items. The most rarely used equipment included tests for fecal occult blood, camertone, and pik flow meter (not regularly used by any doctor), followed by gynecologic speculum (regularly used by two respondents), small surgical kit (three respondents), reflex hummer (three respondents) and microscope (four respondents).

Table 18 depicts the distribution of these responses by physician type (family physicians versus therapists and pediatricians). Family doctors use many items (adult sphygmomanometer, adult and child scales, glucometer, otoscope, ECG device, child sphygmomanometer, syringe for ear irrigation, urine tests, ophthalmoscope, microscope, and reflex hammer) more frequently than therapists and pediatricians do (the difference is statistically significant).

Table 17. Reported physician use of common medical equipment (ambulatories, health centers, and polyclinics)

Item	Yes, regularly	Yes, occasionally	Yes, rarely	Never
Stethophonendoscope	100.0 (66)	-	-	-
Adult sphygmomanometer	89.4 (59)	10.6 (7)	-	-
Scale – adult	57.6 (38)	19.7 (13)	7.6 (5)	15.2 (10)
Scale – child	57.6 (38)	9.1 (6)	1.5 (1)	31.8 (21)
Glucometer	37.9 (25)	10.6 (7)	9.1 (6)	42.4 (28)
Otoscope	27.3 (18)	21.2 (14)	21.2 (14)	30.3 (20)
ECG device	25.8 (17)	9.1 (6)	6.1 (4)	59.1 (39)
Child sphygmomanometer	18.2 (12)	22.7 (15)	7.6 (5)	51.5 (34)
Syringe for ear irrigation	12.1 (8)	19.7 (13)	10.6 (7)	57.6 (38)
Urine tests	10.6 (7)	18.2 (12)	9.1 (6)	62.1 (41)
Ophthalmoscope	9.1 (6)	22.7 (15)	18.2 (12)	50.0 (33)
Microscope	6.1 (4)	3.0 (2)	-	90.9 (60)
Reflex hammer	4.5 (3)	25.8 (17)	24.2 (16)	45.5 (30)
Small surgical kit	4.5 (3)	3.0 (2)	15.2 (10)	77.3 (51)
Gynecologic speculum	3.0 (2)	4.5 (3)	3.0 (2)	89.4 (59)
Peak flow meter	-	7.6 (5)	10.6 (7)	81.8 (54)
Camertone	-	4.5 (3)	3.0 (2)	92.4 (61)
Test for occult fecal blood	-	3.0 (2)	3.0 (2)	93.9 (62)

Table 18. Reported use of common medical equipment by physician type

Item	Yes, regularly (%)		Yes, occasionally (%)		Yes, rarely (%)		Never (%)	
	FDs (n=50)	Other [†] (n=16)	FDs (n=50)	Other [†] (n=16)	FDs (n=50)	Other [†] (n=16)	FDs (n=50)	Other [†] (n=16)
Stethophonendoscope	100.0	100.0	-	-	-	-	-	-
Adult sphygmomanometer*	94.0	75.0	6.0	25.0	-	-	-	-
Scale – adult*	68.0	25.0	24.0	6.3	2.0	25.0	6.0	43.8
Scale – child*	66.0	31.3	12.0	-	2.0	-	20.0	68.8
Glucometer*	46.0	12.5	14.0	-	6.0	18.8	34.0	68.8
Otoscope*	32.0	12.5	24.0	12.5	22.0	18.8	22.0	56.3
ECG device*	30.0	12.5	12.0	-	6.0	6.3	52.0	81.3
Child sphygmomanometer*	22.0	6.3	30.0	-	8.0	6.3	40.0	87.5
Syringe for ear irrigation*	14.0	6.3	26.0	-	12.0	6.3	48.0	87.5
Urine tests*	14.0	-	24.0	-	12.0	-	50.0	100.0
Ophthalmoscope*	12.0	-	26.0	12.5	20.0	12.5	42.0	75.0
Microscope	8.0	-	4.0	-	-	-	88.0	100.0
Reflex hammer**	6.0	-	30.0	12.5	26.0	18.8	38.0	68.8
Small surgical kit	4.0	6.3	4.0	-	18.0	6.3	74.0	87.5
Gynecologic speculum	4.0	-	6.0	-	4.0	-	86.0	100.0
Peak flow meter	-	-	6.0	12.5	10.0	12.5	84.0	75.0
Camertone	-	-	4.0	6.3	4.0	-	92.0	93.8
Test for occult fecal blood	-	-	4.0	-	4.0	-	92.0	100.0

[†]Therapist and/or pediatrician

* Statistically significant difference between specialties ($p < 0.05$, Linear-by-Linear Association)

Family medicine skills. Providers at ambulatories, health centers and polyclinics answered a set of questions about the skills routinely performed during their practice. Table 19 shows the distribution of responses by physician specialty (in descending overall frequency of use). All providers counseled on healthy lifestyle (100.0%). Eighty-eight percent prescribed chest X-ray for patients at-risk for TB; a similar percentage managed patients with low back pain. Almost 84.8% prescribed aspirin to patients with coronary artery disease and 83.3% performed dehydration therapy in children with diarrhea. Most physicians prescribed exercises to prevent musculoskeletal disorders (77.3%), and calculated a patient’s risk for cardiovascular disease (75.8%). Sixty-eight percent treated patients with fungal skin infections. Over 60 percent managed patients with otitis media, assessed visual acuity, and prescribed exercises to prevent cardiovascular disease. Over 57 percent felt confident in managing anaphylactic shock. Less than 50% of the providers performed other procedures listed in Table 19. No one performed Pap-smear and very few removed an in-grown nail.

Many skills (14 of 21) were practiced by family physicians more often than by therapists or pediatricians. For ten skills, the difference was statistically significant, as demonstrated in Table 19.

For each physician, a summative practice score was computed as a percentage of skills he/she routinely practiced of the 21 included in the questionnaire. Table 20 shows the distribution of mean summative percent scores by physician specialty and by marz. The overall mean score was 55.4%. Kotayk physicians utilized essentially the same number of skills as their Tavush colleagues (both 57.7%). Gegharkunik physicians utilized fewer skills (48.2%), but the

difference between marzes was not statistically significant. Family physicians used significantly more skills on average than therapists and pediatricians (60.3% vs. 40.2%, $p=0.000$).

Table 19. Reported routinely used skills and procedures by doctors of ambulatories, health centers and polyclinics, by physician specialty

	Total (n=66) % (n)	Family Physicians (n=50), % (n)	Theraputists/ Pediatricians (n=16), % (n)
Counsel on healthy lifestyle	100.0 (66)	100.0 (50)	100.0 (16)
Prescribe chest X-ray for those at risk of TB	87.9 (58)	86.0 (43)	93.8 (15)
Treat patients with low back pain*	87.9 (58)	94.0 (47)	68.8 (11)
Prescribe aspirin to patients with coronary artery disease	84.8 (56)	90.0 (45)	68.8 (11)
Perform dehydration therapy in children with diarrhea*	83.3 (55)	94.0 (47)	50.0 (8)
Prescribe exercises to prevent musculoskeletal disorders	77.3 (51)	80.0 (40)	68.8 (11)
Calculate patient risk for cardiovascular disease*	75.8 (50)	82.0 (41)	56.3 (9)
Treat patients with fungal skin infections*	68.2 (45)	78.0 (39)	37.5 (6)
Manage patients with otitis media*	63.6 (42)	78.0 (39)	18.8 (3)
Assess visual acuity*	62.1 (41)	76.0 (38)	18.8 (3)
Prescribe exercises to prevent cardiovascular disease	60.6 (40)	60.0 (30)	62.5 (10)
Feel confident to manage anaphylactic shock	57.6 (38)	54.0 (27)	68.8 (11)
Treat patients with acne*	48.5 (32)	58.0 (29)	18.8 (3)
Remove earwax*	45.5 (30)	54.0 (27)	18.8 (3)
Feel confident in cardiopulmonary resuscitation skills	40.9 (27)	40.0 (20)	43.8 (7)
Prescribe contraceptives/counsel on family planning methods*	31.8 (21)	42.0 (21)	-
Perform dipstick urine test*	31.8 (21)	42.0 (21)	-
Feel confident in the early management of severe trauma	27.3 (18)	26.0 (13)	31.3 (5)
Perform suturing/wound care	21.2 (14)	24.0 (12)	12.5 (2)
Remove an in-grown nail	7.6 (5)	8.0 (4)	6.3 (1)
Perform Pap-smear	-	-	-

* Statistically significant difference between specialties, $p<0.05$

Table 20. Mean practice skills score by marz and specialty

	Mean score (%)
Specialty*	
Family Physician	60.3
Therapeutist/ Pediatrician	40.2
Marz	
Gegharkunik	48.2
Kotayk	57.7
Tavush	57.7
Total	55.4

* Statistically significant difference between specialties, $p<0.05$

As 20 of the 21 items measuring the number of skills practiced by physicians were included in the baseline questionnaire as well, baseline and follow-up mean summative skill scores

(computed for these 20 items) were compared, and Table 21 demonstrates the results. Statistically significant improvement in total scores was detected since the baseline assessment (43.7% in 2007 vs. 54.0% in 2009, $p=0.001$). The increase in mean summative skill scores was statistically significant also for physicians employed in ambulatories and for those from Kotayk facilities.

The range of skills practiced by physicians employed in ambulatories and health centers was higher than for those in polyclinics (statistically significant difference) at both baseline and follow-up. At follow-up, the scores in Gegharkunik were considerably lower than in the remaining two marzes; this difference, however, did not reach the level of statistical significance.

Table 21. Mean practice skills score by facility type and marz

	Mean score, %, 2007 (n [†] =67)	Mean score, %, 2009 (n=66)
Facility type		
Ambulatory*	49.2	61.0
Health Center	50.0	59.7
Polyclinic	38.4	44.0
Marz		
Gegharkunik	40.4	47.2
Kotayk*	46.8	56.5
Tavush	42.5	55.6
Total*	43.7	54.0

[†] Number of physician respondents

* Statistically significant difference between baseline and follow-up, $p<0.05$

The instrument used at follow-up assessment included additional items on the availability and usage of eleven job aids developed by PHCR Project. The project, however, started distributing personal copies of these job aids to PHC physicians in June 2009, while the assessment was conducted before that. Nevertheless, larger PHC facilities⁷ received copies of these job aids within the package of QA training materials before the assessment. As Table 22 shows, job aids for management of the three conditions in adults (type 2 diabetes mellitus, ischemic heart disease, and hypertension) were both more widely used and more available in larger facilities, which is understandable for the reasons mentioned above. For some reason, however, job aids for management of the eight conditions in children (fever, convulsive syndrome, acute respiratory infections, acute otitis media, tonsillitis, pneumonia, acute diarrhea, and anemia) were more widely used in smaller facilities. This can perhaps be explained by significantly higher proportion of family physicians in smaller facilities than in larger ones (94.4% vs. 68.8%, respectively, $p=0.026$) and their higher interest in management of childhood conditions, which motivated them to actively obtain these job aids even prior to their official distribution.

⁷ There are nine such facilities (with three or more physicians employed) in our sample: all five polyclinics (Sevan, Vardenis, Byureghavan, Nor Hachn, and Ijevan Mother and Child), two health centers (Argel and Garni), and two ambulatories (Geghashen and Haghartsin).

Table 22. Availability and usage of PHCR project job aids by PHC physicians

Job Aids for management of:	Number (%) of PHC physicians in:			
	Larger facilities (n=48)		Smaller facilities (n=18)	
	Use in daily work	Don't use, but available	Use in daily work	Don't use, but available
Type-2 Diabetes Mellitus	47.9 (23)	35.4 (17)	33.3 (6)	16.7 (3)
Patients with Ischemic Heart Disease	68.8 (33)	14.6 (7)	27.8 (5)	22.2 (4)
Hypertension in Adults	75.0 (36)	8.3 (4)	50.0 (9)	5.6 (1)
Fever in Children	29.2 (14)	25.0 (12)	50.0 (9)	11.1 (2)
Convulsive syndrome in Children	25.0 (12)	27.1 (13)	27.8 (5)	27.8 (5)
Acute Upper Respiratory Tract Infections in Children	25.0 (12)	27.1 (13)	55.6 (10)	5.6 (1)
Acute Otitis Media in Children	20.8 (10)	31.3 (15)	50.0 (9)	11.1 (2)
Tonsillitis in Children	25.0 (12)	27.1 (13)	55.6 (10)	5.6 (1)
Pneumonia in Children	25.0 (12)	27.1 (13)	55.6 (10)	5.6 (1)
Acute diarrhea in Children	25.0 (12)	27.1 (13)	55.6 (10)	5.6 (1)
Anemia in Children	25.0 (12)	27.1 (13)	55.6 (10)	5.6 (1)

3.7.2. Nurses of FAPs

The next part of this assessment investigated technical competence of primary health care nurses employed in FAPs. After baseline assessment, the M&E team revised this section of the facility assessment tool upon suggestion of the Family Medicine team, and included many new items measuring application of family nursing skills in practice. Two observation checklists were also included in this part of the instrument to observe nurses' performance of blood pressure measurement and blood glucose level measurement. The final instrument covered the use of medical equipment by FAP nurses, application of 33 family nursing skills by them and two observation checklists.

Equipment use. Table 23 shows the use of common medical equipment by the FAP nurses. All 44 nurses used stethophonendoscope regularly (90.9%) or occasionally (9.1%) in their daily practice. They also used adult sphygmomanometer regularly (86.4%), occasionally (9.1%), or rarely (4.5%). These were the only instruments used by 100% of the respondents. The next most commonly used equipments included child scales (regularly or occasionally by 84.1%), followed by adult scales (81.9%), and glucometers (70.4%). Approximately 22.7% of respondents reported regular or occasional use of urine tests, and 15.9% occasionally used child sphygmomanometers. Syringe for ear irrigation, gynecologic speculum, and otoscope were regularly used by one nurse each. The nurses did not use regularly or occasionally the rest of the equipment listed in Table 24. None had ever used tests for occult fecal blood in their daily practice, although they were trained on their use.

The sample included 27 community nurses⁸ (61.4%). Analysis showed no statistically significant differences between these and the other 17 nurses (who did not have Community Nurse Certificate) in terms of usage of any of the listed equipment in their daily practice.

⁸ Those nurses who completed the 6.5-month Unified Family Nursing course developed by the PHCR project and received the Community Nurse Certificate.

Table 23. Reported frequency of use of common medical equipment in daily practice by FAP nurses

	Yes, regularly % (n)	Yes, occasionally % (n)	Yes, rarely % (n)	Never % (n)
Adult sphygmomanometer	90.9 (40)	9.1 (4)	-	-
Stethophonendoscope	86.4 (38)	9.1 (4)	4.5 (2)	-
Scale – child	70.5 (31)	13.6 (6)	-	15.9 (7)
Scale – adult	61.4 (27)	20.5 (9)	-	18.2 (8)
Glucometer	40.9 (18)	29.5 (13)	13.6 (6)	15.9 (7)
Urine tests	13.6 (6)	9.1 (4)	20.5 (9)	56.8 (25)
Child sphygmomanometer	-	15.9 (7)	2.3 (1)	81.8 (36)
Small surgical kit	2.3 (1)	2.3 (1)	-	95.5 (42)
Syringe for ear irrigation	2.3 (1)	-	6.8 (3)	90.9 (40)
Gynecologic speculum	2.3 (1)	-	2.3 (1)	93.2 (41)
Otoscope	-	-	2.3 (1)	97.7 (43)
Peak flow meter	-	-	-	100.0 (44)
Ophthalmoscope	-	-	-	100.0 (44)
Test for occult blood in feces	-	-	-	100.0 (44)
Camertone	-	-	-	100.0 (44)
Microscope	-	-	-	100.0 (44)
Reflex hammer	-	-	-	100.0 (44)
ECG device	-	-	-	100.0 (44)

As this part of the instrument was included in the baseline questionnaire as well, but the scale of responses was changed,⁹ we compared the percentages of those nurses who reported using the given equipment “regularly”. Table 24 provides the results. Statistically significant difference was found in the usage of glucometers (regularly used by 15.0% of the nurses at baseline and by 40.9% at follow-up, $p=0.008$). The observed increase in the usage of urine tests was marginally significant.

Table 24. Percentages of nurses who reported regular usage of the given equipment, 2007 vs. 2009[†]

	2007 (n=41)	2009 (n=44)
Adult sphygmomanometer	97.5 (39)	90.9 (40)
Stethophonendoscope	95.1 (39)	86.4 (38)
Scale – child	75.6 (31)	70.5 (31)
Scale – adult	68.3 (28)	61.4 (27)
Glucometer*	15.0 (6)	40.9 (18)
Urine tests	2.4 (1)	13.6 (6)
Small surgical kit	2.4 (1)	2.3 (1)
Syringe for ear irrigation	4.9 (2)	2.3 (1)
Gynecologic speculum	10.0 (4)	2.3 (1)
Reflex hammer	7.5 (3)	-
Child sphygmomanometer	2.4 (1)	-

* Statistically significant difference between baseline and follow-up, $p<0.05$

[†] The remaining seven instruments were not used by any nurse in both 2007 and 2009.

⁹ Baseline instrument provided three response options for each equipment use: regularly, occasionally, and never; while the follow-up instrument - four options: regularly, occasionally, rarely, and never.

Family nursing skills. FAP nurses answered a set of questions about the skills routinely performed during their practice. Table 25 shows the distribution of responses by skills (in descending frequency). The ten most frequently performed skills included measuring blood pressure (100.0%), counseling on healthy nutrition for children (100.0%), positioning of baby at the breast (97.7%), first aid for allergic reactions (95.5%), preventing dehydration with Rehidron (95.5%), counseling on family planning (93.2%), and administering IV infusions (88.6%). Very few nurses routinely take throat cultures/smears or sputum samples for TB diagnosis (only two nurses reported doing these). The skills such as urinary bladder catheterization or taking vaginal, cervical or urethral cultures/smears are also among those performed by few nurses (respectively, 7 and 8 nurses reported ever applying those skills).

Table 25. Reported application of nursing skills in practice

Skill	Routinely applied by: % (n)	Times used, past 2 weeks mean (min - max)
1. Measuring blood pressure	100.0 (44)	18.5 (3 - 70)
2. Counseling on healthy nutrition for children	100.0 (44)	3.7 (0 - 13)
3. Positioning baby at the breast	97.7 (43)	1.3 (0 - 4)
4. Providing first aid for allergic reactions	95.5 (42)	0.8 (0 - 6)
5. Preventing dehydration with Rehidron	95.5 (42)	0.5 (0 - 3)
6. Counseling on Family Planning	93.2 (41)	2.7 (0 - 20)
7. Administering intravenous (IV) infusions	88.6 (39)	2.6 (0 - 15)
8. Weighing children	86.4 (38)	7.1 (0 - 30)
9. Administering childhood vaccines	84.1 (37)	4.3 (0 - 27)
10. Caring for burns	81.8 (36)	0.2 (0 - 2)
11. Measuring height of children	79.5 (35)	7.6 (0 - 30)
12. Measuring head circumference of children	79.5 (35)	6.9 (0 - 30)
13. Checking serum glucose level	79.5 (35)	3.4 (0 - 20)
14. Measuring respiration rate	72.7 (32)	0.7 (0 - 5)
15. Teaching breast self-examination technique	68.2 (30)	1.1 (0 - 5)
16. Weighing pregnant women	65.9 (29)	2.3 (0 - 8)
17. Providing TB counseling	65.9 (29)	1.7 (0 - 12)
18. Directing the care of terminally ill patients	65.9 (29)	0.3 (0 - 2)
19. Preventing and caring for bed sores	63.6 (28)	0.3 (0 - 1)
20. Immobilizing fractures	59.1 (26)	0.1 (0 - 2)
21. Counseling patients with STI and HIV/AIDS	54.5 (24)	0.6 (0 - 5)
22. Counseling on PAP test screening	50.0 (22)	1.1 (0 - 6)
23. Administering insulin injection	43.2 (19)	0.2 (0 - 4)
24. Using urine test strips	40.9 (18)	1.4 (0 - 8)
25. Overseeing TB patients' treatment	36.4 (16)	1.8 (0 - 8)
26. Performing adult CPR	36.4 (16)	0.1 (0 - 1)
27. Measuring Fundal height in pregnant women	34.1 (15)	2.5 (0 - 10)
28. Palpating thyroid gland	27.3 (12)	0.5 (0 - 2)
29. Performing child CPR	22.7 (10)	0
30. Taking vaginal, cervical and urethral culture/smear	18.2 (8)	0
31. Catheterizing urinary bladder	15.9 (7)	0.1 (0 - 1)
32. Taking throat culture/smear	4.5 (2)	0.5 (0 - 1)
33. Taking sputum sample for TB diagnosis	4.5 (2)	0

The M&E team calculated a summative nursing practice score as a percent of these 33 skills practiced by a nurse. For the whole sample of FAP nurses, the mean practice score was 61.0% (Table 26) with community nurses scoring significantly higher than other FAP nurses (65.7% versus 53.5%, $p < 0.05$). Nurses from Tavush marz scored significantly higher than

those from Gegharkunik and Kotayk marzes (75.1% versus 53.0% and 55.2%, respectively, for both comparisons, $p < 0.01$).

Table 26. Mean scores, application of FN skills

	N	Nursing Practice score, % (n=44)
Nurse status*		
Community nurse	27	65.7
Non-community nurse	17	53.5
Marz*		
Gegharkunik	12	53.0
Kotayk	18	55.2
Tavush	14	75.1
Total	44	61.0

* Statistically significant difference between categories, $p < 0.05$

Since a baseline summative nursing practice score was not available from Zone 2, the M&E team tried to compare the follow-up nursing practice score from Zone 2 with the baseline score from Zone 3-1: the summative nursing practice score at baseline among 56 FAP nurses in Zone 3-1 (Aragatsotn, Armavir, and Ararat marzes) was much lower (35.5%; for details see the report “Facility and provider performance assessment: Baseline assessment of targeted primary health care facilities in Ararat, Armavir, and Aragatsotn marzes, 2008”) than the follow-up score of 44 FAP nurses from Zone 2 (61.0%).

Reasons for not practicing certain skills were also investigated. As Table 27 shows, among community nurses, a lack of clients applying with the given issue was mentioned as the main reason (38.4%) for not practicing a certain skill. The next common reason (34.2%) was referring clients with the given problem to a higher-level facility or another provider (a physician or nurse) routinely or in accordance with the protocol. Lack of knowledge or lack of appropriate equipment and supplies were mentioned less frequently as reasons for community nurses for not practicing certain skills (14.0% and 13.4%, respectively).

Non-community nurses reported almost similar reasons for not practicing certain skills: lack of clients and referring them to other facility/provider were mentioned with almost equal frequency (33.7% and 33.3%, respectively). Lack of knowledge was the next reason (18.4%), followed by lack of equipment/supplies (14.6%).

When considering the total sample of FAP nurses, the most common reason for not practicing the given skill was lack of clients referring with such problem (36.1%), closely followed by the routine of referring such clients to other facility/provider (34.0%). Lack of knowledge was the third reason (16.0%), and lack of equipment/supplies – the least common reason (13.9%). This order of reasons for not practicing the selected nursing skills closely repeated that detected at the follow-up survey among FAP nurses in Zone 1 (see the report “Facility and provider performance assessment: Follow-up assessment of targeted facilities in Lori and Shirak marzes, 2008”).

Table 27. Reason for not practicing specific family nursing skills

	Referred client to another facility/provider (n)		Lack of knowledge (n)		Lack of equipment/supplies (n)		No clients applying with such problem (n)		N
	Non-CN* (n=17)	CN* (n=27)	Non-CN (n=17)	CN (n=27)	Non-CN (n=17)	CN (n=27)	Non-CN (n=17)	CN (n=27)	
1. Positioning baby at the breast	-	-	-	-	-	-	-	1	1
2. Providing first aid for allergic reactions	1	-	-	-	-	-	-	1	2
3. Counseling on Family Planning	1	1	1	-	-	-	-	-	3
4. Preventing dehydration with Rehidron	-	-	-	-	-	-	2	2	4
5. Administering intravenous (IV) infusions	-	-	2	-	-	-	2	1	5
6. Weighing children	-	-	-	-	3	2	1	-	6
7. Administering childhood vaccines	2	3	-	-	-	-	2	-	7
8. Caring for burns	-	2	-	-	-	-	3	3	8
9. Measuring head circumference of children	-	-	-	3	4	1	1	-	9
10. Checking serum glucose level	1	2	-	-	2	1	1	2	9
11. Measuring height of children	-	-	-	-	3	5	1	-	9
12. Measuring respiration rate	3	2	2	-	-	2	2	1	12
13. Teaching breast self-examination technique	4	1	6	2	-	-	-	1	14
14. Weighing pregnant women	2	5	-	-	5	3	-	-	15
15. Directing the care of terminally ill patients	1	-	1	-	-	-	6	7	15
16. Providing TB counseling	2	-	-	-	-	-	6	7	15
17. Preventing and caring for bed sores	1	-	-	-	-	-	7	8	16
18. Immobilizing fractures	1	1	1	-	2	1	6	6	18
19. Counseling patients with STI and HIV/AIDS	-	1	-	1	-	-	8	10	20
20. Counseling on PAP test screening	6	4	4	4	1	1	-	2	22
21. Administering insulin injection	1	2	3	-	-	1	7	11	25
22. Using urine testing strips	2	2	1	3	6	9	-	3	26
23. Overseeing TB patients' treatment	5	-	1	1	-	-	7	14	28
24. Administering adult CPR	1	-	5	1	-	-	7	14	28
25. Measuring fundal height in pregnant women	7	15	3	3	1	-	-	-	29
26. Palpating thyroid gland	9	10	2	8	-	-	1	2	32
27. Administering child CPR	-	-	8	6	-	-	8	12	34
28. Taking vaginal, cervical and urethral smear	8	13	1	3	6	5	-	-	36
29. Catheterizing urinary bladder	5	4	6	5	2	5	4	6	37
30. Taking throat culture/smear	13	18	1	2	3	4	-	1	42
31. Taking sputum sample for TB diagnosis	12	19	-	1	-	1	5	4	42
TOTAL, n (%)	88 (33.7)	105 (34.2)	48 (18.4)	43 (14.0)	38 (14.6)	41 (13.4)	87 (33.3)	118 (38.4)	261+307
Overall TOTAL, n (%)	193 (34.0)		91 (16.0)		79 (13.9)		205 (36.1)		568

* Non-CN – Non-Community nurse, CN – Community nurse

Structured observation. The evaluation of technical competence of FAP nurses included assessment of compliance of their performance with the existing protocols when measuring blood pressure and conducting glucometry. The interviewers asked nurses to perform these procedures and observed them thoroughly, completing a structured observation checklist consisting of 14 items for each task. The checklist captured interpersonal skills, technical performance, and adherence to sanitary/safety regulations throughout the process (see Appendix 1).

Blood pressure. Table 28 depicts performance of community nurses and non-community nurses by each of these skills for blood pressure measurement. Both categories of nurses demonstrated good interpersonal skills in terms of approaching patients respectfully and obtaining their consent for the procedure. Technical performance steps were conducted accurately by fewer nurses in both groups, with lower performance observed in the group of non-community nurses. Adherence to sanitary/safety regulations during the procedure was unsatisfactory in both groups: nobody cleaned the stethoscope bell after the procedure and only 9.5% washed hands before and after the procedure.

Table 28. Non-community nurses (N-CN) and community nurses (CN), blood pressure measurement compliance checklist

Step	N-CN (%) (n=16)	CN (%) (n=26)	All (%) (n=42)
1. Greeted the patient respectfully & explained the procedure	87.5	88.5	88.1
2. Received the patient's consent	81.3	88.5	85.7
3. Asked the patient to sit quietly for 3-5 minutes	37.5	69.2	57.1
4. Washed and dried his/her hands	25.0	-	9.5
5. Correct patient body position	50.0	76.9	66.7
6. Proper cuff placement	37.5	57.7	50.0
7. Palpated the brachial artery to place the stethoscope	12.5	65.4	45.2
8. Inflated the cuff properly	50.0	42.3	45.2
9. Placed the stethoscope bell over the brachial artery	25.0	46.2	38.1
10. Released the cuff slowly enough	68.8	79.6	73.8
11. Repeated the measurement on another arm	18.8	19.2	19.0
12. Recorded the highest result	43.8	34.6	38.1
13. Cleaned the stethoscope bell	-	-	-
14. Washed his/her hands	18.8	3.8	9.5

Table 29 demonstrates the distribution of total procedure scores by the type of nurses. The highest score observed for the blood pressure measurement in both groups was nine (of 14 maximum). Four community nurses and only one non-community nurse received this score. The median score for this procedure was five among non-community nurses and seven among community nurses. The lowest score was three in the group of non-community nurses (3 nurses scored 3) and four in the group of community nurses (one nurse).

Table 30 shows mean scores for the whole sample, for the two subgroups and for each marz. The overall mean score for blood pressure measurement was 6.26 (44.7%). This score was significantly higher among community nurses compared with non-community nurses (6.69 or 47.8% versus 5.56 or 39.7%), but still rather low (under 50.0% of the best possible performance).

The differences were significant between the three marzes. Nurses from Tavush demonstrated the highest performance for blood pressure measurement scoring significantly

higher than those in Gegharkunik and Kotayk (7.21 or 51.5% in Tavush versus 6.31 (45.1%) in Kotayk and 5.08 (36.3%) in Gegharkunik). Gegharkunik nurses scored significantly lower than those from the other two marzes (Table 30).

Table 29. Distribution of total procedure score, blood pressure measurement and glucometry

Total score (max=14)	Blood pressure measurement				Glucometry			
	% (n)		% (n)		% (n)		% (n)	
	N-CN*		CN*		N-CN*		CN*	
2	-	-	-	-	7.1	(1)	-	-
3	18.8	(3)	-	-	7.1	(1)	-	-
4	12.5	(2)	3.8	(1)	7.1	(1)	-	-
5	25.0	(4)	19.2	(5)	-	-	8.0	(2)
6	6.3	(1)	19.2	(5)	7.1	(1)	4.0	(1)
7	18.8	(3)	34.6	(9)	7.1	(1)	16.0	(4)
8	12.5	(2)	7.7	(2)	35.7	(5)	4.0	(1)
9	6.3	(1)	15.4	(4)	14.3	(2)	40.0	(10)
10	-	-	-	-	14.3	(2)	24.0	(6)
11	-	-	-	-	-	-	4.0	(1)
Total	100.0	(16)	100.0	(26)	100.0	(14)	100.0	(25)

* Non-CN – Non-Community nurse, CN – Community nurse

Table 30. Mean scores, BP measurement and glucometry by type of nurse and by marz

	Mean Blood Pressure Score		Mean Glucometry score	
Nurse status*				
Community nurse	6.69	(26)	8.52	(25)
Non-community nurse	5.56	(16)	7.14	(14)
Marz*				
Gegharkunik	5.08	(12)	6.30	(10)
Kotayk	6.31	(16)	9.40	(15)
Tavush	7.21	(14)	7.79	(14)
Total	6.26	(42)	8.03	(39)

* Statistically significant difference between categories for both scores, p<0.05

Glucometry. Table 31 shows that the best performance was again for the steps measuring interpersonal skill. Over 90% of nurses in both groups greeted the patient respectfully, explained the procedure and received the patient’s consent. The proportion of nurses adhering to the steps of technical performance of the procedure was lower than that for interpersonal skills. Community nurses demonstrated better performance here compared to non-community nurses. The lowest proportion of nurses with relatively better (but still unsatisfactory) results in the group of community nurses adhered to the steps for safety and hygiene (removing and disposing the needle and strip safely, washing hands).

Of 42 nurses, nobody scored 12 or over (out of 14 maximum) for the procedure of glucometry and only one community nurse scored 11 (the highest score in this sample). Six community nurses scored ten and ten nurses scored nine. Among non-community nurses, only two scored 10 and two – nine. The lowest score observed among community nurses was five (two nurses), while three non-community nurses scored less (2, 3, and 4). The median score in the group of non-community nurses was eight, and in the group of community nurses – nine (Table 29).

Table 30 shows the mean scores for glucometry by nurse category and by marz. The overall mean score for this procedure was 8.03 (57.4%), which is significantly higher than the mean score for blood pressure measurement 6.26 (44.7%). Again, the mean glucometry score was significantly higher among community nurses versus non-community nurses (8.52 or 60.9% versus 7.14 or 51.0%). And again, marzes were significantly different from each other in terms of this score: nurses from Kotayk demonstrated significantly better performance than those from Tavush and Gegharkunik (9.40 or 67.1% in Kotayk versus 7.79 or 55.6% in Tavush and 6.30 or 45.0% in Gegharkunik).

Table 31. Non-community nurses (N-CN) and community nurses (CN), serum glucose measurement compliance checklist

Step	N-CN* (%) (n=14)	CN* (%) (n=25)	Whole sample (%) (n=42)
1. Greeted the patient respectfully and explained the procedure	92.9	96.0	94.9
2. Received the patient's consent	92.9	92.0	92.3
3. Prepared the necessary medical supplies and tools	50.0	70.8	63.2
4. Asked the patient to wash his/her hands and dry them	57.1	52.0	53.8
5. Washed and dried his/her hands	64.3	64.0	64.1
6. Had the patient comfortably seated	64.3	80.0	74.4
7. Inserted a new needle into the device	64.3	76.0	71.8
8. Checked the validity period of the test strip	21.4	24.0	23.1
9. Checked the conformity of the strip and glucometer codes	21.4	40.0	33.3
10. Dropped the blood on the strip correctly	78.6	100.0	92.3
11. Recorded the data of the display	78.6	80.0	79.5
12. Took the strip out with a napkin and threw it properly	7.1	12.0	10.3
13. Removed the needle safely and disposed it properly	7.1	40.0	28.2
14. Washed his/her hands	14.3	28.0	23.1

* Non-CN – Non-Community nurse, CN – Community nurse

Overall, the results of structured observations of blood pressure measurement and glucometry revealed considerably better performance among nurses of target FAPs in Zone 1 (Lori and Shirak marzes) than among the FAP nurses in Zone 2 (for more details, see the report “Facility and provider performance assessment. Follow-up assessment of targeted facilities in Lori and Shirak marzes, 2008”).

4. Main findings

The following main findings of the facility and provider performance assessment of Zone 2 target facilities are highlighted.

Facility Performance Assessment

- **Target facilities demonstrate better performance at follow-up compared to baseline.** The overall mean performance score increased from 1.4 to 1.8 (of maximum 3). This increase was statistically significant in all three marzes and at both types of facilities: FAPs (from 1.2 to 1.6) and referral-level facilities (from 1.7 to 2.1). Improvements were observed in all measured constituents of performance:
 - **Facilities improved their accessibility of care.** Access to/provision of care score increased statistically significantly: from 1.9 in 2007 to 2.3 in 2009. This increase was largely due to significant improvement of this score in FAPs (from 1.6 to 2.1), resulting in smoothening of some significant differences between FAPs and referral-level facilities and justifying the FAP-centered approach applied by PHCR project.
 - **Provider relations with community and clients improved.** The cumulative mean score for this function increased statistically significantly from 1.3 to 1.5. This was mainly due to reported increase in the frequency of better-planned health education sessions with communities with wider availability of health education materials – areas, specifically targeted by Public Education component of PHCR project.
 - **Facilities' work environment enhanced.** Environment scores improved statistically significantly from 1.2 in 2007 to 1.7 in 2009, with almost eightfold (from 9.7% to 74.2%) increase of the proportion of FAPs with appropriate working conditions due to PHCR project input. However, lack of piped water remained as the main problem faced by the vast majority of the assessed facilities; as a result, providers rarely washed their hands with soap and water before and after each patient. Most facilities lacked regular replenishment of medical supplies.
 - **Facilities demonstrated improved management function.** Facility management scores improved statistically significantly from 1.2 to 1.5. In referral-level facilities, this improvement was primarily due to increased availability and usage of clinical standards and protocols, while in FAPs due to improved providers' job satisfaction. However, a number of management areas were still problematic: most facilities lacked any type of financial reward system for good provider performance, many lacked an established procedure to respond to clients' compliance, majority had no written documents describing providers' job responsibilities. Many aspects of supervisory management in FAPs were still below the desired level and did not improve statistically significantly since the baseline assessment.
 - **Primary and secondary prevention efforts improved.** Prevention score increased from 1.3 at baseline to 1.9 at follow-up. The observed increase was statistically significant not only for the whole sample, but also separately for FAPs and referral-level facilities. However, the coverage of eligible population with the majority of recommended screenings including regular blood pressure measurement, counseling on family planning, measuring blood cholesterol, conducting clinical breast exam and PAP-smear test was very low.

- **FAPs score lower than other facility types.** FAPs scored lower both at baseline and at follow-up. The improvement curve for FAPs (percent change), however, was similar to the improvement curve for other facility types.
- **Facilities in Kotayk marz score slightly higher than those in Tavush and Gegharkunik marzes.** At follow-up, this difference was statistically significant for accessibility of care and provider/client relation scores. The differences between marzes in overall performance score did not reach the level of statistical significance. The observed improvements since baseline were similar in all three marzes.
- **Findings on facility performance indicators from Zone 2 are quite comparable to those from Zone 1.** Both, the absolute performance scores and the percent changes since baseline were similar in Zone 1 and Zone 2 facilities (for both zones, the overall performance score of 1.4 at baseline and 1.8 at follow-up). This could serve as a proof for both the reliability of measurement technique and the consistency of project achievements across marzes.

Provider Performance Assessment

- **Physicians' summative skill scores improve but do not reach the desired level.** Since baseline, statistically significant increase was observed in summative practice skill scores of physicians employed in the assessed facilities (from 43.7% to 54.0%).
- **Family physicians regularly use wider range of medical equipment and practice a broader array of skills than other specialists.** Family physicians practiced 60.3% of the selected skills versus 40.2% for other specialists (theraputists and pediatricians). However, less than one-fifth of family physicians regularly used 10 of 18 types of medical equipment they are expected to use.
- **Community nurses practice wider range of skills than non-community nurses do.** The summative nursing practice score was 61.0% for the whole sample of FAP nurses with Community nurses scoring statistically significantly higher than non-community nurses (65.7% vs. 53.5%). The main reason for not practicing certain skills was lack of patients applying to nurses with the given problem.
- **Between-marz differences are found among nurses, but not among physicians.** Tavush nurses practiced a broader array of skills than Kotayk and Gegharkunik nurses did (75.1% vs. 55.2% and 53.0%, respectively). No statistically significant between-marz differences were detected in physicians' practice skill scores; although Gegharkunik physicians scored lower than those from the other two marzes.
- **Community nurses adhere more rigorously to protocols than non-community nurses.** Community nurses correctly completed 47.8% of the 14 tasks when measuring blood pressure and 60.9% of the 14 tasks for glucometry, while non-community nurses completed 39.7% and 51.0%, respectively. However, these scores are still below the desired level.
- **The observed level of performance of Zone 2 community nurses is significantly lower than that in Zone 1.** Community nurses from Kotayk, Tavush and Gegharkunik marzes demonstrated lower performance than those from Lori and

Shirak marzes (47.8% vs. 72.1% for blood pressure measurement and 60.9% vs. 81.4% for glucometry).

- **Gegharkunik nurses perform worse than their Tavush and Kotayk colleagues in terms of blood pressure measurement and glucometry.** Gegharkunik nurses scored statistically significantly lower than Tavush and Kotayk nurses for blood pressure measurement (36.3% in Gegharkunik vs. 51.5% in Tavush and 45.1% in Kotayk) and glucometry (45.0% in Gegharkunik vs. 67.1% in Kotayk and 55.6% in Tavush).

Appendix 1. Facility & provider performance assessment tool

PHCR- Follow-up

Dear colleagues,

Primary Health Care Reform Project conducts this survey together with the Ministry of Health with the aim to assess the services in your facility. This is not an official assessment, but we hope that this tool will help you and us to get more clear and structured picture of the problems at your facility and the ways for improvement. That is why it is very important that you respond honestly to our questions. Your participation in this study is voluntary. However, we think that the effort you will put into this task is worthwhile and very important for your facility.

Thank you!

1. Date ____/____/____

1.1 Facility code _____

2. Marz _____

Type of health facility:

FAP (Feldsher/obstetrical point)

Health Center

SVA (Village ambulatory)

Policlinic

3. Name of the facility: _____

4. Name of the facility responsible/director: _____ 5.1 Phone: _____

A. ACCESS TO/PROVISION OF CARE

	Always	Usually	Occasionally	Never
5. Is the facility open and available during official hours?	3	2	1	0
	Yes, all of them	Yes, the majority	Some of them	No
6. Is the community aware of the free services offered?	3	2	1	0
			Yes	No
7. Are the working hours posted in the facilities?			3	0
8. Are the working hours convenient for clients?			3	0
9. Are educational materials available describing free services?			3	0
10. Are MOH state order (BBP) posters visible to clients?			3	0
11. Do providers routinely conduct postnatal home visits?			3	0
12. Are there emergency instructions posted for non-working hours?			3	0

FOR FAPs ONLY!

	<i>Once per month or more frequently</i>	<i>Once in two months</i>	<i>Once in three months</i>	<i>Less frequently than once in three months</i>
13. How frequently does a supervising physician visit the facility?	3	2	1	0
14. How frequently does a supervising physician carry out home visits?	3	2	1	0
	<i>Always</i>	<i>Usually</i>	<i>Occasionally</i>	<i>Never</i>
15. Does a supervising physician take time to see patients in the clinic?	3	2	1	0
16. Does a supervising physician notify the facility of the time and date of the visit?	3	2	1	0
17. Do village mayors provide transportation in case of an emergency with a community member?	3	2	1	0

B. PROVIDER RELATIONS WITH COMMUNITY AND CLIENTS

	<i>Once per month or more frequently</i>	<i>Once in 2-3 months</i>	<i>Once or twice a year</i>	<i>Less frequently than once a year or never</i>
18. How frequently do providers conduct health education sessions with the community?	3	2	1	0
	<i>Always</i>	<i>Usually</i>	<i>Occasionally</i>	<i>Never</i>
19. How frequently do providers prepare for health education sessions adequately (inform community, prepare agenda, organize location)?	3	2	1	0
20. How frequently do providers provide clients with educational materials?	3	2	1	0
21. How frequently do providers conduct health talks with the patients during their visits?	3	2	1	0
22. How frequently the Mayor is involved in solving health problems in the community?	3	2	1	0
23. How frequently patients have the opportunity to choose between different treatment options?	3	2	1	0
	<i>Yes</i>	<i>No</i>		
24. Does facility have a suggestion box?	3	0		
25. In the last three months has anything changed in your facility based on the suggestions of clients?	3	0		
26. Could an outsider get information from patient records at your facility?	3	0		
27. Does your facility have private space so that counseling sessions, physical exams, and procedures cannot be observed or overheard?	3	0		
28. Do providers keep records of the community's composition (age, gender)?	3	0		

29. Do providers keep lists of people in the community who are vulnerable and eligible to get free services?	3	0
30. Are patient satisfaction surveys regularly conducted at the facility? (the survey of clients about the quality of and satisfaction with the care received; conducted using the standardized questionnaire)	3	0

C. ENVIRONMENT

	Yes	No		
31. Do providers maintain complete records of cold chain conditions for vaccines?	3	0		
32. Does the facility offer appropriate working conditions for providers?	3	0		
33. Does the facility have staff who checks the problems with facility equipment and makes repairs if necessary?	3	0		
34. Is the facility being regularly ventilated during working hours?	3	0		
35. Is the facility being regularly cleaned?	3	0		
36. Are official security checks regularly conducted at the facility?	3	0		
37. Are trainings on emergency situations/disaster preparedness regularly conducted for the facility staff?	3	0		
38. Is medical equipment being refilled regularly?	3	0		
39. Are there any MOH /San Epid regulations on infection control and medical waste management available at the facility?	3	0		
	Always	Usually	Occasionally	Never
40. How frequently do providers wash hands before and after each patient with soap and water?	3	2	1	0
41. How frequently are the used needles removed into the sharp containers?	3	2	1	0

D. MANAGEMENT

	Yes	No	
42. Are there written documents describing job responsibilities of providers?	3	0	
43. Are the registers of patients with chronic diseases maintained at the facility?	3	0	
44. Is the current number of staff sufficient to provide high quality services to the population?	3	0	
45. Is there an established official procedure of responding to the client complaints?	3	0	
46. Do providers have primary health care clinical practice standards available at the facility for reference (clinical guidelines, Job Aids, criteria, protocols)?	3	0	
47. Do providers use the standards during their daily work?	3	0	
48. Are internal meetings regularly conducted to evaluate the facility activities?	3	0	
49. Are records of these meetings maintained?	3	0	
50. Is there some type of financial rewarding system for good provider performance at your facility?	3	0	
	Yes, all	Yes, some	No
51. Are providers satisfied with their job?	3	1.5	0

FOR AMBULATORIES, HEALTH CENTERS, AND POLICLINICS ONLY!

	Yes	No
52. Do providers participate in identifying performance gaps and planning for improvement through using in their routine practice the following quality assurance techniques/tools?		
1. Self-assessment of performance.	3	0
2. Medical chart/case review.	3	0
3. Patient satisfaction surveillance.	3	0
4. Other (please describe)_____	3	0

FOR FAPs ONLY!

	Always	Usually	Occasionally	Never
53. Does a supervisor engage providers in problem solving during their visits?	3	2	1	0
54. Do supervisors provide clinical support to providers?	3	2	1	0
55. Do supervisors provide administrative support to providers?	3	2	1	0
56. When problems cannot be solved locally, does the supervisor make all reasonable efforts to solve it by raising it with the authorities?	3	2	1	0
57. Does the supervisor report back to the provider on the status of the issue?	3	2	1	0

E. PRIMARY AND SECONDARY PREVENTION

	More than 75%	50-75%	25- 50%	Less than 25%
58. What proportion of the served population over 20 years old receives preventive blood pressure measurement at least once per year and have a corresponding record in medical chart?	3	2	1	0
59. For what proportion of the served children clinical urine and blood tests are performed at 12 months?	3	2	1	0
60. What proportion of female adolescents 15-17 years are examined and consulted on reproductive health	3	2	1	0
61. What proportion of first antenatal visits is within the first trimester of pregnancy?	3	2	1	0
62. What proportion of pregnant women receive consultation on healthy pregnancy, breastfeeding, child care, personal and sexual hygiene?	3	2	1	0
63. What proportion of the children at age 24 months fully complete immunizations in accordance with the National Plan?	3	2	1	0

	More than 75%	50-75%	25- 50%	Less than 25%
64. What proportion of patients with Type 2 Diabetes receives regular blood glucose control - at least 1 blood glucose test per month?	3	2	1	0
65a. What proportion of women of reproductive age (15-50 years) receives FP counseling?	3	2	1	0

FOR AMBULATORIES, HEALTH CENTERS, AND POLICLINICS ONLY!

	More than 75%	50-75%	25- 50%	Less than 25%
65. <i>What proportion of the served population over 40 years old undergoes blood cholesterol level measurement at least once a year?</i>	3	2	1	0
66. <i>What proportion of the served children receives hemoglobin measurement at 9 months of age?</i>	3	2	1	0
67. <i>What proportion of the served preschool age children receive preventive examination by neurologist and ophthalmologist?</i>	3	2	1	0
68. <i>What proportion of the served female population over 40 receive clinical breast examination at least once per year?</i>	3	2	1	0
69. <i>What proportion of served female population 30-60 years old undergoes Pap-smear test at least once in 3 years</i>	3	2	1	0
70. <i>What proportion of pregnant women are examined at your facility at least four times for the period of pregnancy?</i>	3	2	1	0
71. <i>What proportion of patients with Type 2 Diabetes receives regular eye funduscopy control - at least 1 eye funduscopy exam per year?</i>	3	2	1	0
72. <i>What proportion of patients with Hypertension and Coronary Heart Disease (CHD) received regular ECG-control - at least 1 ECG-exam per year?</i>	3	2	1	0
73. <i>What proportion of patients with Coronary Heart Disease (CHD) received regular blood cholesterol control - at least 1 test per year?</i>	3	2	1	0

FORM “F1” – For PHC Physicians (of MAs, HCs, and PCs)

a. Facility code _____

b. Do you have a status of a family doctor? Yes No

1. Do you use the following instruments in your daily practice:	Yes, regularly	Yes, occasionally	Yes, rarely	Never
1. Stethophonendoscope	3	2	1	0
2. Child sphygmomanometer	3	2	1	0
3. Reflex hammer	3	2	1	0
4. Otoscope	3	2	1	0
5. Adult sphygmomanometer	3	2	1	0
6. Glucometer	3	2	1	0
7. Peekfluometer	3	2	1	0
8. Ophthalmoscope	3	2	1	0
9. Camertone	3	2	1	0
10. Urine tests	3	2	1	0
11. Test for occult blood in feces	3	2	1	0
12. Gynecologic speculum	3	2	1	0
13. Small surgical kit	3	2	1	0
14. Scale – child	3	2	1	0
15. Scale – adult	3	2	1	0
16. Microscope	3	2	1	0
17. Syringe for ear irrigation	3	2	1	0
18. ECG device	3	2	1	0

<i>Do you routinely</i>	<i>Yes</i>	<i>No</i>
19. ...perform pap-smear test?	3	0
20. ...treat patients with acne?	3	0
21. ...treat patients with skin fungal infections?	3	0
22. ... calculate patients’ risk for cardiovascular disease?	3	0
23. ...manage patients with otitis media?	3	0
24. ...prescribe exercises for prevention of musculoskeletal disorders?	3	0
25. ...prescribe exercises for prevention of cardiovascular disease?	3	0
26. ... remove earwax?	3	0
27. ... assess the vision acuity?	3	0
28. ... prescribe contraceptives/ counsel on family planning methods?	3	0
29. ... treat patients with low back pain?	3	0
30. ...perform suturing/caring of wounds?	3	0
31. ... perform removing in-grown nail?	3	0
32. ...prescribe chest X-ray exam to TB risk group patients?	3	0
33. ...perform dipstick urine tests?	3	0
34. ...provide consultation on healthy lifestyle?	3	0
35. ...prescribe aspirin to patients with coronary artery disease?	3	0
36. ...feel confident in early management of severe trauma?	3	0
37. ...feel confident in cardiopulmonary resuscitation?	3	0

<i>Do you routinely</i>	<i>Yes</i>	<i>No</i>
38. ...feel confident in management of anaphylactic shock?		
38a. ...perform dehydration therapy in children with diarrhea?	3	0

3. Do you use in your daily work the following job aids for PHC Practice?	Yes	No, but available	No, not available
39. Job Aid for Management of Type-2 Diabetes Mellitus	3	1.5	0
40. Job Aid for management of patients with Ischemic Heart Disease	3	1.5	0
41. Job Aid for management of Hypertension in Adults	3	1.5	0
42. Job Aid for management of Fever in Children	3	1.5	0
43. Job Aid for management of Convulsive syndrome in Children	3	1.5	0
44. Job Aid for management of Acute Upper Respiratory Tract Infections in Children	3	1.5	0
45. Job Aid for management of Acute Otitis Media in Children	3	1.5	0
46. Job Aid for management of Tonsillitis in Children	3	1.5	0
47. Job Aid for management of Pneumonia in Children	3	1.5	0
48. Job Aid for management of Acute diarrhea in Children	3	1.5	0
49. Job Aid for management of Anemia in Children	3	1.5	0

Thanks for participation!

FORM “F2” – For FAP nurses

a. Facility code _____

b. Are you qualified as a family & community nurse? Yes No

1. Do you use the following instruments in your daily practice?	Yes, regularly	Yes, occasionally	Yes, rarely	Never
1. Stethophonendoscope	3	2	1	0
2. Adult sphygmanometer	3	2	1	0
3. Child sphygmanometer	3	2	1	0
4. Reflex hammer	3	2	1	0
5. Otoscope	3	2	1	0
6. Glucometer	3	2	1	0
7. Peekfluometer	3	2	1	0
8. Ophthalmoscope	3	2	1	0
9. Camertone	3	2	1	0
10. Urine tests	3	2	1	0
11. Test for occult blood in feces	3	2	1	0
12. Gynecologic speculum	3	2	1	0
13. Small surgical kit	3	2	1	0
14. Scale – child	3	2	1	0
15. Scale – adult	3	2	1	0
16. Microscope	3	2	1	0
17. Syringe for ear irrigation	3	2	1	0
18. ECG device	3	2	1	0

2. Do you routinely apply the following skills in your practice?	a. 1= Yes, 0= No	b. If Yes, how many times in the last 2 weeks?	c. If No, please, indicate the main reason for not applying this skill: 1. Referred client to another facility 2. Lack of knowledge 3. Lack of equipment/supplies 4. There was no need, because there were no clients with such problems 5. Other (<i>specify</i>)
19. Measuring blood pressure			
20. Checking glucose level in blood			
21. Urine strip testing			
22. Weighting children			
23. Measuring head circumference of children			
24. Measuring height of children			
25. Administering childhood vaccines			

26. Administering intravenous infusions			
27. Administering insulin injection			
28. Vaginal, cervical and urethral smear taking			
29. Taking smear from throat			
30. Taking sputum sample for TB diagnosis			
31. Overseeing TB patients' treatment			
32. Providing TB counseling			
33. Directing the care of terminally ill patients			
34. Bed sore prevention and care			
35. Performing immobilization of fractures			
36. First aid in allergic reactions			
37. Preventing dehydration with Rehidron			
38. Care of burns			
39. Administering Cardiopulmonary Resuscitation (CRP) to children			
40. Administering Cardiopulmonary Resuscitation (CRP) to adults			
41. Measuring respiration rate			
42. Providing counseling on Family Planning			
43. Counseling on PAP test screening			
44. Weighting pregnant women			
45. Fundal height measurement in pregnant women			
46. Positioning of baby at the breast			
47. Counseling patients with STI and HIV/AIDS			
48. Thyroid gland palpation			
49. Teaching breast self-examination technique			
50. Urinary bladder catheterization			
51a. Counseling on healthy nutrition for children			

3. Observation checklist: Measuring blood pressure

Procedure		Yes=1 No=0	Notes
	<i>Had the nurse</i>		
1	Greeted the patient respectfully and kindly, explained what should be done?		
2	Received the patient's consent?		
3	Asked the patient to sit quietly for 3-5 minutes?		
4	Washed and dried his/her hands?		
5	Had the patient comfortably seated with the back up straight, both feet flat on the floor (feet and knees not crossed), the arm on the table and at the level of the heart?		
6	Placed the blood pressure cuff on the patient's unclothed upper arm, 2-3 centimeters above the elbow area, so that the middle part of the rubber bag is on the inner side of the arm, and so that there is a room for one finger between the cuff and the arm (the clothes should not press on the arm above the cuff area)?		
7	Palpated the brachial artery in the area of cubital fossa to properly place the stethoscope?		
8	Inflated the cuff rapidly, simultaneously palpating the pulse on the brachial or radial artery (so that she continues to inflate the cuff up to 30 mm HG above the level at which the pulse disappears)?		
9	Placed the stethoscope bell over the brachial artery. The bell should not touch the cuff or tubing?		
10	Released the cuff slowly enough (2-3 mm HG/second) to be able to capture the moment of the appearance and obliteration of the brachial pulse tones?		
11	Repeated the measurement on another arm?		
12	Recorded the highest results of the measurements obtained from two arms (if the difference between the two arms' measurements is more than 10 mm HG, she should record both, indicating which arm they are taken from)?		
13	Cleaned the stethoscope bell with the spirit saturated cotton ball?		
14	Washed his/her hands?		
	Total		

4. Observation checklist: Glucometry

Procedure		Yes=1 No=0	Notes
	<i>Had the nurse</i>		
1	Greeted the patient respectfully and kindly, explained what should be done?		
2	Received the patient's consent?		
3	Prepared the necessary medical supplies and tools: glucometer, scarifier with needle, strip, cotton ball, and napkin?		
4	Asked the patient to wash his/her hands and dry them?		
5	Washed and dried his/her hands?		
6	Had the patient comfortably seated?		
7	Inserted a new needle onto the scarifier (device)?		
8	Checked the validity period of the strip?		
9	Checked the conformity of the strip and glucometer codes?		
10	Dropped the blood on the strip correctly?		
11	Recorded the data of the display?		
12	Took the strip out with a napkin and threw it into a special box?		
13	Removed the needle safely (the tip covered with a ball) and threw it into a special box?		
14	Washed his/her hands?		
	Total		

Thank you for participation!

Appendix 2. Mean performance scores by target facilities in Gegharkunik, Kotayk, and Tavush marzes

Facility	Mean score: Access to care		Mean score: Provider relations with community and clients		Mean score: Environment		Mean score: Facility management		Mean score: Primary prevention		Mean score: Total	
	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Sevan PC	2.63	2.63	1.15	1.38	2.27	2.09	2.17	1.83	1.86	2.00	2.02	1.99
Vardenis PC	.	2.63	1.46	2.31	2.73	2.27	1.33	2.00	1.43	2.71	.	2.38
Byureghavan PC	3.00	2.50	1.46	1.15	2.36	2.27	2.00	2.00	1.86	2.29	2.14	2.04
Nor Hachn PC	3.00	2.63	1.92	1.92	1.73	2.64	2.33	2.83	2.29	3.00	2.25	2.60
Ijevan M&C PC	2.63	2.50	2.08	1.54	2.91	2.27	1.83	2.50	.	2.57	.	2.28
Argel HC	2.25	3.00	1.77	1.92	1.82	2.36	1.17	2.17	1.86	2.86	1.77	2.46
Garni HC	2.25	2.25	1.62	1.77	1.73	2.27	2.00	1.83	1.71	2.29	1.86	2.08
Ddmashen SVA	3.00	3.00	.	2.38	.	2.73	3.00	2.33	2.86	2.86	.	2.66
Tsovak SVA	2.25	2.00	1.77	1.62	2.45	2.09	2.00	1.50	1.29	1.86	1.95	1.81
Aragyugh SVA	1.88	2.25	1.00	1.23	.	2.00	2.33	2.00	1.43	1.43	.	1.78
Aramus SVA	2.63	3.00	1.69	1.92	0.55	2.45	2.00	2.67	1.71	2.43	1.72	2.49
Balahovit SVA	3.00	3.00	2.00	2.23	2.09	2.09	2.00	2.33	2.43	2.57	2.30	2.45
Geghashen SVA	2.63	2.63	1.92	1.77	1.55	2.27	1.33	2.33	1.57	2.29	1.80	2.26
Zar SVA	0.88	2.25	1.00	1.31	0.73	2.18	1.00	0.67	0.86	1.57	0.89	1.60
Kaputan SVA	1.63	2.13	1.00	1.38	1.18	1.82	0.83	1.33	0.43	1.43	1.01	1.62
Kotayk SVA	2.50	2.63	0.77	1.85	1.36	2.18	1.33	2.33	2.14	2.71	1.62	2.34
Dzoraghbyur SVA	2.63	2.63	2.31	2.15	1.36	2.45	1.33	2.33	1.86	2.57	1.90	2.43
Mayakovski SVA	2.13	2.63	1.08	1.69	1.00	1.82	1.33	2.00	1.14	1.71	1.34	1.97
Verin Ptghni SVA	1.63	2.25	1.46	1.77	1.27	1.55	1.17	1.67	1.57	2.43	1.42	1.93
Khashtarak SVA	1.88	1.75	1.00	1.38	0.64	2.18	0.33	1.17	1.71	2.29	1.11	1.75
Haghartsin SVA	2.25	2.13	1.46	1.54	0.45	1.55	0.83	2.17	1.14	2.29	1.23	1.93
Paravaqar SVA	2.25	2.25	1.46	1.46	1.91	1.55	1.83	2.33	1.71	2.43	1.83	2.00
Zorakan SVA	2.25	2.25	1.31	1.62	0.64	1.82	1.00	1.17	1.57	2.71	1.35	1.91
Akhpradzor FAP	0.75	2.00	1.00	1.62	0.36	1.73	0.33	0.83	0.57	2.00	0.60	1.64
Gagarinavan FAP	1.50	2.25	1.00	1.54	0.55	1.45	2.67	1.67	1.71	1.86	1.49	1.75
Getik FAP	1.25	1.13	0.77	1.08	0.55	1.18	0.33	0.67	0.57	0.86	0.69	0.98
Zovaber FAP	3.00	2.50	1.46	1.77	1.45	1.45	0.67	.	1.57	2.71	1.63	.

Facility	Mean score: Access to care		Mean score: Provider relations with community and clients		Mean score: Environment		Mean score: Facility management		Mean score: Primary prevention		Mean score: Total	
	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Maqenis FAP	1.50	1.75	0.54	1.23	0.55	1.27	0.00	0.50	1.43	1.86	0.80	1.32
Norabak FAP	0.75	2.13	1.00	1.77	0.00	1.18	0.00	0.83	1.43	1.00	0.64	1.38
Chkalovka FAP	1.38	2.38	0.69	0.92	1.18	1.45	0.33	1.00	1.57	2.14	1.03	1.58
Jaghatsadzor FAP	0.50	2.13	0.92	1.38	0.64	1.45	.	1.33	0.86	1.00	.	1.46
Getamej FAP	2.00	2.13	0.85	1.15	1.27	1.45	0.83	1.67	1.43	2.57	1.28	1.79
Goghtn FAP	2.25	2.25	1.31	1.77	0.64	1.91	1.00	2.00	1.43	2.29	1.32	2.04
Zovashen FAP	0.50	2.00	0.85	1.69	1.00	0.91	0.00	0.33	1.43	1.43	0.75	1.27
Zovk FAP	1.50	2.63	1.62	1.69	1.00	1.64	1.00	1.67	1.71	2.00	1.37	1.92
Zoravan FAP	1.38	2.25	0.85	1.85	1.27	1.64	0.67	1.33	1.00	2.29	1.03	1.87
Teghenik FAP	1.38	2.63	1.08	1.85	1.00	1.36	1.33	1.67	.	1.86	.	1.87
Katnaghbyur FAP	1.25	2.38	1.38	1.15	1.00	1.09	0.67	1.00	1.71	1.29	1.20	1.38
Kamaris FAP	1.38	2.25	1.54	1.46	0.36	1.00	2.17	2.17	2.29	2.29	1.55	1.83
Nor Gyugh FAP	1.00	2.63	0.77	1.85	0.55	1.82	0.33	1.33	0.71	2.43	0.67	2.01
Nurnus FAP	1.88	2.13	1.15	1.38	0.55	1.36	1.33	1.00	1.14	1.14	1.21	1.40
Nerkin Ptghni FAP	1.50	2.13	1.46	1.15	0.73	1.27	1.33	0.67	1.29	2.00	1.26	1.44
Jraber FAP	1.38	2.00	1.15	1.08	0.82	1.27	0.67	0.33	1.43	2.14	1.09	1.37
Getargel FAP	2.63	3.00	1.69	1.77	1.36	1.36	1.33	2.00	2.00	2.43	1.80	2.11
Sevaberd FAP	1.38	2.13	1.15	1.00	0.73	0.91	0.83	0.67	1.71	1.71	1.16	1.28
Saralanj FAP	0.75	1.25	1.00	1.00	0.09	1.09	0.67	0.67	1.86	.	0.87	.
Gosh FAP	2.00	1.75	1.15	1.46	1.82	1.36	0.67	1.17	1.00	1.14	1.33	1.38
Tovuz FAP	2.63	2.25	1.62	1.62	1.27	1.55	1.83	1.33	2.29	2.71	1.93	1.89
Lusahovit FAP	1.13	2.13	0.85	1.31	0.91	1.27	0.33	1.17	0.71	1.14	0.79	1.40
Tsaghkavan FAP	2.13	2.25	1.46	1.85	1.00	1.82	0.33	1.67	0.86	1.57	1.16	1.83
Hovq FAP	1.13	1.50	0.92	0.77	0.91	1.36	0.00	0.67	0.71	1.14	0.73	1.09
Varagavan FAP	2.13	2.25	1.00	0.85	1.55	1.64	.	1.33	1.14	1.86	.	1.58
V.Karmir Aghbyur FAP	2.63	2.25	1.31	1.23	1.36	1.55	1.67	1.17	2.29	1.86	1.85	1.61
Nerkin Gosh FAP	2.00	1.88	0.92	0.92	1.00	0.45	0.00	1.00	1.14	1.43	1.01	1.14