

A Family Medicine Training Program in the Republic of Georgia: Incorporating a Model of Chronic Disease Management

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Background: This study describes a different approach to increase the number of family medicine physicians trained with specific competencies in the management of chronic disease.

Methods: In 1999 the Republic of Georgia initiated an ambitious program designed to retrain practicing physicians in the specialty of family medicine. At 2 of the implementation sites, the Center for International Health worked with local health authorities to augment the official 940-hour curriculum to include lesson plans, workshops, and practicum experiences emphasizing a model of chronic disease management, giving particular attention to hypertension.

Results: The population served by the training sites has benefited in a cost-effective manner by achieving blood pressure control for as little as \$8 per year per patient; the physician learners have performed above their peer group on standardized national testing.

Conclusion: Family medicine training programs in resource-poor settings can incorporate chronic disease management models into their curriculum and achieve high-quality patient care outcomes. (J Am Board Fam Med 2007;20:557–564.)

From the early days of its independence in 1991, the Republic of Georgia recognized that it had 2 major health problems, which, although separate, were also interrelated. The first problem was the country's death rates as related to chronic disease, especially cardiovascular disease. By the end of the 1990s, 70% of all deaths were attributed to cardiovascular causes; over half of these deaths were in people still considered to be in their productive years.¹ The morbidities associated with these

chronic diseases were contributing to an economic downturn through a lack of worker production, reduced efficiency, lack of employment tax revenue, and the corresponding increase in expenditures within the country's health budget.^{2–4} The second problem was the lack of doctors and nurses competently trained to address the management of chronic diseases and other common ailments within communities using strategies focused on primary and secondary prevention. There were simply too many medical specialists and not enough competent community-based generalists—a situation that could no longer be supported by a shrinking health budget.

Georgian policymakers approached these interlinking problems by acknowledging 2 facts about primary care physicians. First, primary care physicians are a cost-effective means by which to furnish health services. Indeed, countries with more primary care physicians enjoy a higher health status for less cost than those countries with more specialty-based care.^{5–7} Second, because primary care physicians tend to work in community-based centers and are competently trained to screen for and manage chronic diseases and other common health concerns, they could replace the medical specialist

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Figure 1. Map of The Republic of Georgia.⁴

who hitherto had been given responsibilities for these health priorities. Realizing that a workforce with access to primary care would be more productive, the Georgian government moved aggressively to retrain specialty-based physicians to become primary care physicians, specifically family physicians. This strategy (referred to as the National Master Plan) was encouraged and supported by donor governments from both Europe and North America as well as by international monetary agencies.⁸

Training physicians in a less developed country can be very different from the training of physicians in a fully developed country. There are often constraints that impede the full realization of the educational goals; just striving for high-quality care can be fraught with frustrations. Examples of common limitations include learning resources, patient continuity, access to medical technologies, communication, health information management, ancillary services, security, transportation logistics, nursing support, and infrastructure management, to name just a few.

Background

Georgia is bordered by the Black Sea in the west, by Turkey and Armenia in the south, by Azerbaijan in the east, and by Russia in the north. The country also includes the autonomous republic of Abkhazia and the former autonomous regions of Ajara and South Ossetia (see Figure 1).

From 1921 to 1991, the Georgian health system was part of the Soviet system. Like so much in the Soviet system, health care was characterized by almost complete public ownership and was heavily tilted toward secondary and tertiary care. Financing came from the government and almost all of the

planning, organization, and allocation of resources were under Moscow's control. The system emphasized the cure over prevention and was weighted toward inpatient care delivered by specialists. The outpatient care was also largely in the hands of specialists working in polyclinics or dispensaries. Hospitals dominated the delivery system. In addition to the Ministry of Labor, Health, and Social Affairs' facilities, the Ministry of Defense, the Ministry of Internal Affairs, and the Department of Railways all had their own health facilities for their workers. A system such as this was highly redundant, resource intensive, carried high bed numbers, and required very large numbers of medical personnel to maintain its functioning. The Georgians were given few responsibilities and were mainly relegated to reporting health performance indicators to the authorities in Moscow.⁹ Health care was a guaranteed right to be enjoyed, free of charge, by every Soviet citizen. Although Georgian physicians received a salary from the government, out-of-pocket payments for services were also quite common.¹⁰

Georgia proclaimed its independence from the USSR on April 6, 1991. Over the subsequent years, the government's annual health expenditures declined from about US \$13.00 per capita in 1990 to less than US \$1 per capita in 1994. Because of this shrinking health budget, public health facilities became severely neglected, as did medical technology and equipment.⁹ The population's demand for government-supported health services plummeted even though health morbidity was on the rise. Provision of health services through the private sector became increasingly prevalent and direct out-of-pocket payments became the standard means of

Table 1. Republic of Georgia's Demographic Indicators^{4,13}

Current age of marrying is at an all time high
Crude deaths rate is higher than anytime since 1980
Total fertility rate is lower than anytime since 1958
Infant mortality rate is 23.8% (2004)
The country's population size is at its lowest point since 1959

access to health services. Realistically, however, private payment was not a means to accessing health care for the majority of Georgians because they were much too poor.^{11,12} The health system was in disarray, with a government that proclaimed universal access to health care but that did not have the budgetary capacity to provide for it and a private sector that was too expensive for the average Georgian.

Today, Georgia is marked by a rapidly aging population and a burden of chronic diseases. The birth rate is below replacement and the population size is experiencing negative growth (see Table 1).^{4,13} The death rate is the highest it has ever been since 1980, with cardiovascular disease, cancer, and respiratory illnesses accounting for the vast majority of deaths.¹³ Unemployment in Georgia's capital, Tbilisi, is currently around 26%.¹⁴

Methods

In 1996, the Center for International Health (CIH), a US-based, nongovernmental organization, headquartered in Milwaukee, Wisconsin, conducted a 2-stage cluster design survey of 321 people aged 40 to 65 years in Georgia's capital city of Tbilisi. In that study, 58% of the population was found to have uncontrolled high blood pressure and another 17% was found to have controlled high blood pressure. A rural village north of Tbilisi was also surveyed and similar results were found.¹ These studies demonstrated that hypertension in Georgia had reached epidemic proportions.

Also in 1996, the Republic of Georgia's Ministry of Labor, Health, and Social Affairs, supported by the United Kingdom's Department for International Development, introduced a 940-hour Georgian Family Medicine Curriculum designed to retrain licensed, specialty-trained physicians to become family physicians. Table 2 lists the curriculum's topical components, the teaching formats, and the corresponding hours of dedicated instruc-

tion. In 1999, CIH became involved in this endeavor through a grant from the United States Agency for International Development and the American International Health Alliance. This grant (United States Agency for International Development [USAID]/American International Health Alliance [AIHA] Partnerships in Health Care grant program for the NIS) facilitated the partnership with the Mtianeti regional health department and established the first regional family medicine training site in Georgia outside of the capital city of Tbilisi.

In addition to providing quality oversight to the Ministry of Labor, Health, and Social Affairs's Georgian Family Medicine Curriculum, CIH used the opportunity to perform 2 additional tasks. First and foremost, CIH implemented an antihypertensive program. The program was an evidenced-based initiative, the objective of which was to use readily available and inexpensive antihypertensive medication to reduce the population's epidemic levels of untreated hypertension. A protocol was developed whereby simple guidelines allowed clinicians to easily and quickly initiate thiazide-type diuretics and/or, a β -blocker to treat patients. Over a 30-month follow-up period, 251 hypertensive patients were managed with this protocol. The results, first published in *Ethnicity and Disease*, showed that by the end of the study period blood pressure control had increased to 59%.¹⁵

Secondly, CIH also recognized the importance of teaching this model of chronic disease management and integrating it with the Georgian Family Medicine Curriculum. As Georgia continued to strain under the burden of chronic diseases among its aging population, training primary care physicians in this new paradigm seemed not only relevant but also practical. By using an antihypertension project as a teaching model for chronic disease management, CIH assisted in teaching Georgian physicians a host of valuable competencies, including team-based care, lifelong learning, community-oriented primary care, cultural competency, understanding of health policy, development of community-based health systems, evidence-based medicine, and locally relevant practice management techniques (including cost recovery, quality assurance, time management, preventive services, and networks of care). CIH realized that in order for adult learners to learn effectively they must have

Table 2. 2006 Family Medicine Retraining Curriculum in the Republic of Georgia

Number	Module	Curriculum Elements	Hours (n)	
			Small Group Teaching	Clinical Teaching
I	Family medicine in Georgia	1.1. Introduction, general overview, training methodology	8	
		1.2. Definition and elements of primary care	16	
		1.3. A patient-centered service		
		1.4. Philosophy of primary care		
		1.5. Role of primary care	16	
		1.6. Role of primary care team		
		1.7. Role of family medicine physician		
II	Patient consultation	2.1. The process, patients attitudes, flexibility, the diagnostic model, negotiations, dealing with patients	16	8
III	Basic clinical skills: clinical theory and practice	3.1. Prevention—general principles, cost effective health care skills, screening	14	2
		3.2. Chronic disease management	96	40
		3.2.1. Evidence-based medicine, clinical practice guidelines		
		3.2.2. Coronary heart disease		
		3.2.3. Hypertension		
		3.2.4. Diabetes mellitus		
		3.2.5. Bronchial asthma		
		3.2.6. Epilepsy		
		3.2.7. Parkinson's disease		
		Management of common medical problems in general practice		
		3.3. The management of syndromes and symptoms with especially high prevalence in general practice	38	34
		3.3.1. Sore throat		
		3.3.2. Headache		
		3.3.3. Fatigue		
		3.3.4. Diarrhea		
		3.3.5. Abdominal pain		
		3.3.6. Chest pain		
		3.3.7. Back pain		
		3.3.8. Dyspepsia		
		3.3.9. Dizziness		
		3.3.10. Jaundice		
		3.4. Other systems		
		3.4.1. Cardiovascular system	8	4
		3.4.2. Respiratory system	6	2
		3.4.3. Tuberculosis	8	8
		3.4.4. Gastroenterology	6	2
		3.4.5. Endocrinology	16	8
3.4.6. Neurological problems	10	6		
3.4.7. Hematology	6	2		
3.4.8. Rheumatology	6	2		
3.4.9. Urinary system	6	2		
3.4.10. Pediatrics	64	56		
3.4.11. Women's health	64	56		
3.4.12. Minor surgery	16	32		
3.4.13. Geriatrics	12	4		

(Table continues)

Table 2. Continued

Number	Module	Curriculum Elements	Hours (n)	
			Small Group Teaching	Clinical Teaching
III		3.4.14. Palliative surveillance	12	4
		3.4.15. Psychiatry	16	16
		3.4.16. Ear-nose-throat	8	16
		3.4.17. Ophthalmology	8	16
		3.4.18. Dermatology	8	16
IV	Clinical epidemiology	4.1. Incidence, prevalence, morbidity, mortality, risk-factors, relative and absolute risk, etc.		
		4.2. Main types of research and their importance	16	
V	Professional responsibility	Medical ethics	16	
		Medical legal		
		Clinical governance		
VI	Center management	Planning, management, and finance	56	
		Information management		
		Human resource management		
		Organizational audit		
VII	Project (audit and research)	Determination of sphere of interest, problem formulation, search of literature	32	
		Collection of data, analysis of data		
Total hours (n)			604	336

This training program was last accredited by the Republic of Georgia's State Continues Professional Development Board 16 June 2006.

practical patient-based experiences to complement the official curriculum's didactic lessons. This multiyear and multitiered effort included building appreciation for the physician–nurse team approach to patient care; the joint inclusion of nurses and doctors for local and regional workshops; in-service trainings on the approach to chronic diseases (with particular attention paid to hypertension); monthly visits by either expatriate or Georgian consultant physicians; annual intensive US-based trainings for several Georgian nurses and physicians; and several Train the Trainer-type week-long courses dedicated to topics such as evidence based medicine, professionalism, and medical information management.

CIH's approach to integrating the chronic disease model with the training of family physicians was later expanded to include the cities of Gori and Kareli in the Shida Kartli region. Table 2 demonstrates that much of the official retraining curriculum is classroom based and emphasizes didactic lectures. Although the Georgian Family Medicine Curriculum is taught at numerous training sites around the country, it is only at the 2 regional CIH training sites of Mtianeti and Gori that the CIH model of chronic disease management has been fully incorporated into the

lesson plans and practicum experiences of the student family physicians.

Results

The CIH training program is now in its seventh year and is favorably recognized among student physicians and Ministry of Labor, Health, and Social Affairs' administrators alike. The Mtianeti site is noteworthy for being the only family medicine practice training site to be officially recognized by the Ministry of Labor, Health, and Social Affairs outside of Tbilisi. To date, over 60 physicians and 74 nurses have been trained in primary care competencies at the Mtianeti region site. As a group, physician graduates have scored higher on their Georgian Family Medicine Curriculum exams than any of their physician colleagues trained at other sites, with 70% of the Mtianeti group passing with high marks. And, unlike other family medicine training centers in Georgia, the Mtianeti site has never had a graduate fail the State Licensing Exams. In addition, 4 of the physician graduates and 2 nurse graduates have gone on to become certified trainers of the Georgian Family Medicine Curriculum, an accomplishment that represents the beginning of

Table 3. The Average Blood Pressure and the Percent of Patients Under Control in Various Subgroups

Groups	Baseline*			After 30 Months' Follow-up				Patients Under Control† (%)
	Patients (n)	Systolic BP	Diastolic BP	Systolic BP	Change in Systolic BP	Diastolic BP	Change in Diastolic BP	
Total	251	170	95	140	-30	82	-13	59
Male	67	173	98	136	-37	80	-18	66
Female	184	169	94	141	-28	83	-11	56
Age <60	123	166	95	139	-27	82	-13	64
Age ≥60	128	174	96	142	-32	83	-13	53
Stage I of hypertension	81	152	89	138	-14	81	-8	68
Stage II of hypertension (JNC VI)	102	168	93	139	-29	81	-12	63
Stage III of hypertension (JNC VI)	68	194	106	145	-49	85	-21	41
Isolated systolic hypertension	63	158	84	139	-19	83	-1	74
Systolic BP ≥200	25	213	112	150	-63	87	-25	20
Diastolic BP ≥110	27	201	112	152	-49	88	-24	17
Patients with major comorbid conditions‡	68	172	98	148	-24	86	-12	30

Blood pressure values presented as mm Hg. BP, blood pressure; JNC VI, Joint National Committee VI.

*Baseline data are for all patients before the treatment; data shown in the category "After 30 Months' Follow-up" are for those who continued participation after 30 months of follow-up.

†Blood pressure less than 140/90 mm Hg was considered as hypertension control.

‡Major comorbid conditions include congestive heart failure, stroke, myocardial infarction, diabetes, peripheral vascular diseases, and renal diseases.

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a sustained initiative to enhance the national capacity for professional development (Kavachantiradze L, American Health International Alliance, Tbilisi, Georgia, personal email communication, 13 November 2006).

Within 6 months of beginning the high blood pressure control program, results revealed an average decrease in systolic blood pressure of 30 mm Hg and an average decrease in diastolic blood pressure of 13 mm Hg. A subsequent cost analysis also demonstrated that this low blood pressure could be maintained for as little as US \$8 per year.¹⁵ Table 3¹⁵ describes the blood pressure program's results in more detail. Drawing on the experience of other researchers, the average drops in blood pressure achieved in Mtianeti would yield estimated reductions in morbidity from stroke by at least 40%, myocardial infarction by at least 20%, congestive heart failure by more than 50%, and all causes of death by more than 20%.¹⁶ Outcome data for both the training program and the high blood pressure project is still being acquired from the Gori region training site.

Discussion

Since the end of the Cold War many less developed countries have seen their health sector's budget

shrink as a result of the loss of generous external subsidies. The Republic of Georgia was no exception to this phenomenon; its governmental health expenditure was reduced to a nominal amount per capita with the withdrawal of money from Moscow. Without an obvious short-term solution for this dilemma, policymakers within Georgia decided to create a long-term solution and began to build a health system that was more in keeping with the country's health needs and projected health budgets. They decided that the expansion of the specialty of Family Medicine within Georgia would be the most prudent choice.

The United Nations, in its seminal report on the burden of chronic disease, has called for new methods to address this expanding health issue.³ Reactive, autocratic approaches have their place with certain disease processes, such as infectious epidemics, but experience has shown that, over time, a more proactive, anticipatory approach yields more favorable health outcomes for chronic diseases. The Institute of Medicine has proposed a model of chronic disease management for use in the United States and many family medicine training programs in the United States have started to look at this model with the idea of incorporating it into current curriculum.⁵ To my knowledge, few family medi-

cine training programs in less developed countries have attempted to integrate the management of chronic disease into their curriculum.

Expanding the results of the Mtianeti experience to other areas within the Republic of Georgia may not be easy. For example, the persistent lack of resources within the health system negatively impacts both the training of primary care physicians and the harmonious workings of a chronic disease management model. Despite the tremendous value that US \$8 per year per hypertensive patient buys the Georgian government, it still represents a large amount in proportion to total per capita health expenditure. Whether or not the Georgian health system can supplant the private funds that were used to support the hypertension program remains to be seen. Further, there is also no doubt that Georgia remains influenced by the Soviet system's model of specialty care delivered in a multispecialty clinical setting. For some medical professional groups, as well as for some patients, changing to a health system that emphasizes primary care might prove difficult. It must also be acknowledged that there is a certain political seductiveness to dramatic, tertiary care interventions; Georgian policymakers may have a hard time deemphasizing this approach in favor of primary prevention and secondary prevention in a primary care setting.

Conclusion

Using a model of chronic disease management and linking it with the national Georgian Family Medicine Curriculum, the CIH has been successful in developing high-functioning and competent community-based physicians. Although results are still preliminary, early data from the graduates suggests that, by incorporating a model of chronic disease management into family medicine training curriculums, competencies of care may be achieved earlier and more fully by learners than would occur with other traditional methods of family medicine education. In addition, this project is an example of how a community-based primary care health team can work with patients to achieve good quality and cost-effective health outcomes. CIH's successes in Georgia have shown that these are achievements that can assist with the development of Georgia's family medicine specialty. In turn, Georgia's em-

phasis on community-based primary health care can serve as a model for other countries struggling to make their health budgets go further in the face of a mounting number of compelling health needs and stagnant general revenues.

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