Promoting the health of marginalized populations in Ecuador through international collaboration and educational innovations

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Abstract
This paper examines two innovative educational initiatives for the Ecuadorian public health workforce: a Canadian-funded Masters programme in ecosystem approaches to health that focuses on building capacity to manage environmental health risks sustainably, and the training of Ecuadorians at the Latin American School of Medicine in Cuba (known as Escuela Latinoamericana de Medicina in Spanish). We apply a typology for analysing how training programmes address the needs of marginalized populations and build capacity for addressing health determinants. We highlight some ways we can learn from such training programmes with particular regard to lessons, barriers and opportunities for their sustainability at the local, national and international levels and for pursuing similar initiatives in other countries and contexts. We conclude that educational efforts focused on the challenges of marginalization and the determinants of health require explicit attention not only to the knowledge, attitudes and skills of graduates but also on effectively engaging the health settings and systems that will reinforce the establishment and retention of capacity in low- and middle-income settings where this is most needed.

Introduction
Much attention has been paid to the pronounced shortage of health workers in low- and middle-income countries (LMICs). 1–3 In addition, greater recognition of interrelated determinants of health suggests that personnel with new skills must be added to the mix of human resources mobilized to improve health. Nevertheless, there is little evidence that training programmes for LMIC health personnel are meeting this challenge. Furthermore, the way that international assistance is provided to assist education of health workers may be contributing as much to the problem as providing solutions.

To examine this concern, we studied two post-secondary educational initiatives for the Ecuadorian health workforce: a Canadian-funded Masters Programme in Ecosystem Approaches to Health (MEAH) that focuses on building capacity to sustainably manage environmental health risks; 1 and the training of Ecuadorians at the Latin American School of Medicine in Cuba (ELAM – using the acronym from the Spanish name Escuela Latinoamericana de Medicina). 5 We suggest a typology to guide analysis of challenges and gaps. We then consider key elements for learning from such programmes with particular regard to lessons, barriers and opportunities at the local, national and international level.

Training to meet the needs of marginalized populations
In reviewing challenges in building a global public health workforce, Beaglehole & Dal Poz drew attention to the limitations of traditional approaches to public health education, which include narrow disciplinary focus, isolation from field experience, overly medicalized orientations and weak incentives to work in LMIC settings where need is greatest. 6 In keeping with the framing of the public health workforce as those who are “primarily involved in protecting and promoting the health of whole or specific populations” [emphasis added], 6 we concentrate on the challenge of educating health workers whose mandate is to focus on marginalized communities. In doing so we recognize the inevitable tensions and controversies in describing specific populations as “marginalized”, “disadvantaged” or “vulnerable”, and the dual importance of recognizing the assets and capacity of such communities as well as the structural power differentials and processes of exclusion that drive health inequities from global and local levels. 7–11 With these challenges in mind, we suggest a typology for training programmes in LMICs (Table 1) that points to where greater attention is needed to equip graduates with specific capabilities to address: (i) determinants of health to complement skills necessary for delivery of clinical services; and (ii) the needs of marginalized populations that are particularly vulnerable to poor health conditions, status and services and other manifestations of structural inequities.

In the context of our typology, MEAH is explicitly oriented to building skills for addressing health determinants that affect vulnerable communities. On the other hand, ELAM focuses on providing clinical health services to disadvantaged populations, but in a context that is sensitive to health determinants. Examining these two examples in the Ecuadorian context, we argue that a range of training innovations is required to create a public health workforce capable of responding to emerging challenges.

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Health inequities experienced by marginalized communities in Ecuador are exacerbated by socioeconomic trends, including growing income inequalities. This is illustrated by an increase in the Gini coefficient (where a score of 0 indicates perfectly equal income distribution and 1 complete inequality) from 0.54 in 1995 to 0.59 in 1999. Research in the past decade has also drawn attention to a range of global and local driving forces (such as expansion of the petroleum, mining and agro-industrial sectors) with worrying implications for social and environmental conditions in Ecuador. Such pressures demand more than service from “health services providers” and call for explicit and critical consideration of health determinants. This includes what Breilh describes as both the destructive and protective interactions of global and singular influences on the health of individuals and communities, as well as the design of community-based interventions to respond to inequitable distribution of hazardous exposures such as toxic pollutants, stress and “modes of life”. These trends not only reinforce the importance of ecosystem approaches to health with an emphasis on transdisciplinary, multi-stakeholder participation and social equity. 

To respond to these challenges, human resources must be trained for interdisciplinary and intersectoral team work, sensitive to the realities of disadvantaged populations. Yet education of health professionals in Ecuador has paid little attention to these concerns. Rather, a “traditional” health service training, oriented to hospitals and urban health centres, has implicitly encouraged health professionals to seek upward mobility in the private sector, rather than contributing to improving health at the community level in marginalized areas. While relevance of skills such as cooperation, interdisciplinary interaction and community-level participatory health promotion may arise during such experiences as the año rural (a compulsory year of rural, often isolated, practice for graduating Ecuadorian medical students), these tend to be short-term rather than valued as long-term career trajectories.

### A new generation of international training programmes

**Escuela Latinoamericana de Medicina (ELAM)**

While Cuba (11.3 million) and Ecuador (13.7 million) are relatively close in population size, their capacities for training human resources for health are quite different. Between 2004 and 2005, 300 physicians graduated from Ecuador’s five public and three private medical schools, while Cuba’s 22 medical schools produced 3708 national and 1610 foreign graduates. Building on Cuba’s infrastructure for large-scale training, over 8500 foreigners from 29 countries throughout Africa and the Americas (including the United States of America) are presently studying medicine at ELAM and will train alongside Cuban nationals in 14 affiliated medical schools (Table 2). These foreign students (like the Cubans) do not pay for tuition, residence, food, clothes or resources while studying in Cuba. Their only “cost” is a moral commitment to return to their home communities to apply their skills.

The idea for ELAM emerged after the devastation caused by Hurricane Mitch in Central America in 1998. Cuban medical brigades realized that without long-term capacity building, their services would always be required. Cuba therefore initiated a programme to train local people from affected regions as doctors – with the understanding that they would eventually return to their home communities to replace Cuban medical brigades. In 1999, the programme expanded beyond the countries affected by Hurricane Mitch to include the majority of countries in the Americas and some in Africa. Taking between 1600 and 2200 students per year, ELAM is unparalleled in generating health workers for developing countries. As of August 2007, close to 5000 physicians, including 542 Ecuadorians, had graduated from ELAM. The school’s curriculum is heavily focused on community-based practice, with graduates trained to return to their home countries to work alongside, or replace, Cuban medical brigades, often in marginalized and underserved communities. As there are currently no Cuban brigades in Ecuador, Ecuadorian graduates return to serve an año rural alongside other Ecuadorian medical graduates.

**Masters Programme in Ecosystem Approaches to Health (MEAH)**

A complementary approach to promoting health in Ecuador’s disadvantaged populations is MEAH, a Canadian-Ecuadorian-Cuban-Mexican collaboration funded by CIDA (Canadian International Development Agency). Five years of previous Canadian-Cuban collaborative experience in developing and refining training strategies for environmental health provided the foundation for the 6-year project entitled “Sustainably managing environmental health risks in Ecuador”. Launched in 2005, this project aims to build human resources and institutional capacities for improving social and ecological determinants of health, particularly in marginalized populations (e.g. rural and indigenous communities); and to demonstrate that associated health impacts can be reduced. The project seeks to enhance existing Ecuadorian capacity by strengthening links between universities and communities, building an international network involving Latin American centres of excellence in Cuba and Mexico, in addition to Canadian and other Ecuadorian partners, to enhance sustainability. While the programme has a multi-level
Table 2. Characteristics of the two programmes analysed

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>ELAM</th>
<th>MEAH</th>
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<tbody>
<tr>
<td>Graduates</td>
<td>542 Ecuadorian students (average 60 per year)</td>
<td>60 masters students in 2 cohorts</td>
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<td></td>
<td>5000 total graduates by August 2007</td>
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<tr>
<td>Programme duration</td>
<td>6 years (not including pre-medicine)</td>
<td>2 years (including modular and thesis phase)</td>
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<tr>
<td>Pedagogy</td>
<td>Strong focus on community-based determinants of health.</td>
<td>Understanding and integration of different types of knowledge, including integration of different disciplines (health, social sciences, environmental and ecological sciences); community, specialized and strategic knowledge</td>
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<tr>
<td></td>
<td>Disease prevention strategies, community knowledge building and coping with poor resources in rural areas</td>
<td>Includes understanding of different dimensions of scholarship, including integration, application and engagement</td>
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<tr>
<td>Knowledge</td>
<td>Developing knowledge plans for Germany's future</td>
<td>Qualitative and quantitative research methods</td>
</tr>
<tr>
<td></td>
<td>Knowledge plans for Germany's future</td>
<td>Problem solving (problem-based learning)</td>
</tr>
<tr>
<td>Skills and techniques</td>
<td>Core clinical skills (including knowledge of practising alternative and green medicine)</td>
<td>Collaboration and teamwork – especially through interdisciplinary group work for modules and in focus of research in defined communities of impact</td>
</tr>
<tr>
<td></td>
<td>Community health management and public engagement for health promotion</td>
<td>Qualitative and quantitative research methods</td>
</tr>
<tr>
<td>Attitudes and values</td>
<td>Approaching medicine as a public good rather than as a commodity</td>
<td>Ethical research and practice: respect, reciprocity, relevance, responsibility</td>
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<td></td>
<td>Student evaluation designed to emphasize knowledge, skills and attitudes, including reflective journals on learning process</td>
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<tr>
<td>Links to local level community capacity</td>
<td>Focus on marginalized populations and service equity: Selecting students from underserved communities</td>
<td>High involvement in: universities (14/30 students), government and NGOs (14/30), communities (11/30) with 5 students who are indigenous leaders</td>
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<tr>
<td></td>
<td>Over 100 ethnic groups represented and &gt; 50% women</td>
<td>Interdisciplinary scope: health disciplines (medicine, nursing, veterinary medicine), other professions (engineering, law, planning, disaster preparedness), sciences (chemistry, biology)</td>
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<tr>
<td></td>
<td>588 Ecuadorian ELAM trainees in 2005 represented 17 provinces, &gt; 10 ethnic groups, &gt; 50% women</td>
<td>50% women</td>
</tr>
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<td></td>
<td>Each teaching module includes community field experience</td>
<td>Thesis projects must define a community of impact and community involvement. These have already resulted in a range of community workshops, educational and planning activities</td>
</tr>
<tr>
<td>Community orientation</td>
<td>Curriculum strongly focused on community-oriented primary care</td>
<td>Thesis projects must define a community of impact and community involvement. These have already resulted in a range of community workshops, educational and planning activities</td>
</tr>
<tr>
<td></td>
<td>Some students complete 6th year working with Cuban medical brigades in home country</td>
<td>Each teaching module includes community field experience</td>
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<tr>
<td>Links with national level capacity</td>
<td>One year rural practice (año rural) funded by Ecuadorian Ministry of Health</td>
<td>3 provincial universities (Bolivar, Cuenca and Machala) and 1 regional university (Universidad Andina Simon Bolivar)</td>
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<tr>
<td>Partners in Ecuador</td>
<td>Many alumni and support networks exist for graduates and current students</td>
<td>1 national NGO (Centro Estudios y Asesoría en Salud/Health Research Advisory Centre)</td>
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<tr>
<td></td>
<td>No formal links with Cuban Embassy after graduation</td>
<td>Creation and support of an Ecuadorian network of laboratories for environmental health research</td>
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<td></td>
<td>Consolidated experience in Ecuador informs national and international initiatives (including Canadian community of practice in ecosystem approaches to health)</td>
<td>Consolidated experience in Ecuador informs national and international initiatives (including Canadian community of practice in ecosystem approaches to health)</td>
</tr>
<tr>
<td>Links with international level capacity</td>
<td>Cuban Ministry of Health</td>
<td>Canadian International Development Agency (University Partnerships in Cooperation &amp; Development) with in-kind support from University of British Columbia and partners</td>
</tr>
<tr>
<td>International funding</td>
<td>Cuba</td>
<td>Canada, Cuba, Ecuador and Mexico</td>
</tr>
<tr>
<td>Partner countries</td>
<td>29 countries from Africa, North America and South America</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Countries of students</td>
<td></td>
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</table>

ELAM, Escuela Latinoamericana de Medicina (Latin American School of Medicine) in Cuba; MEAH, Masters in Ecosystem Approaches to Health; NGO, nongovernmental organization.
approach to capacity building, we focus here on the first cohort of 30 students completing the MEAH programme as a “train the trainer” cornerstone of the project. To build competencies for designing, conducting and evaluating community-based environmental health interventions, the programme is explicitly community-oriented, with an interactive problem-based curriculum, community-based fieldwork in each training module, evaluation strategies focused on the values and skills of collaborative learning, and student theses designed and developed with targeted communities. The programme’s modules are team-taught, drawing on Canadian and Ecuadorian professors alongside Cuban and Mexican partners. In addition to traditional environmental health content, modules focus on issues of particular relevance to disadvantaged and vulnerable communities, including heavy metals in mining communities, agro-industry and pesticides, ancestral knowledge, food nutrition and sustainable agriculture, and disaster preparedness.

These two training initiatives offer insights into how international programmes can contribute to crossing disciplinary, professional, sectoral and national barriers to address health determinants and meet the needs of marginalized populations. We have identified specific aspects at local, national and international scales that may influence the impact and sustainability of these programmes.

**Attracting and selecting students**

There is evidence that Canadian doctors rarely practice in rural or marginalized communities for the long term if they do not come from those communities. This applies equally to Ecuador. The acceptance and retention of students from marginalized (e.g. rural, indigenous, immigrant) populations into health professions is typically low and demands increased attention to ensure better representation of these students among those training as health workers.

A notable feature of both programmes is the explicit selection of students who are oriented to the needs of disadvantaged communities. ELAM seeks candidates who would not otherwise have the opportunity to study medicine in their home countries either because of minimal resources or institutional discrimination. Students from marginalized communities are thus given special consideration, reflected by the high representation from rural or under-resourced communities (including more than 100 ethnic groups) in the first graduating class of 49% women.

The demographic profile of the initial cohort of 30 students in the MEAH programme similarly reflects specific criteria. Academic disciplinary aptitudes were weighed alongside capacity for undertaking community-based interventions, knowledge translation and cultural diversity. Four of the initial cohort are indigenous leaders of their local communities or organizations. Sustainability was also factored into selection with five students from each university centre already holding university positions with the promise of continuation after completion of their programme. The intention is that these students lead subsequent iterations of the programme and extend beyond teaching to consider accountability and research ethics inherent in the scholarship of integration, application and engagement. Progress towards these ends has already been indicated by positive feedback (evaluation of and by the students) through surveys, student reflective journals and activity logs at the end of each module.

A related feature is the explicit intention to build communities of practice for future work within local communities, building bridges between the provincial, university, community and local government representatives within the student body, as well as with community partners established through the research process. Early outcomes from this approach include workshops initiated as part of community-oriented thesis development – with themes ranging from sustainable drinking-water management for an island community in the south-east of Ecuador to options to commercialize pesticide-free products in the Ecuadorian ranges. By May 2008, eight workshops had been initiated involving 336 community leaders in educational and planning activities.

**Orienting to existing national capacities**

A point of contrast between the two programmes is the extent to which they address national capacity. For ELAM graduates returning to Ecuador — where no special integration strategy exists — the process of reintegration can be harsh. ELAM graduates join other Ecuadorian medical graduates in the *año rural*, where they work in poorly resourced clinics. After conducting interviews with 80% of ELAM graduates working in four regions of Ecuador, Huish found that they demonstrated outstanding competency and confidence working in their clinical settings as well as sound knowledge of social and environmental factors contributing to poor health in their communities.

Limitations in their ability to practice disease prevention and health promotion – the cornerstones of Cuban medical education — largely reflected limited support at the community level.

After the *año rural*, like most young Ecuadorian doctors, ELAM graduates struggle to find residency spaces. The ELAM graduates are not necessarily in a better position than locally trained counterparts to address the broader infrastructure needs to improve health care for the marginalized. Without a substantial long-term reintegration strategy or a clearly defined career trajectory that effectively uses the skill set and enthusiasm of the ELAM graduates, the potential for expanding health care to marginalized communities is not being fully realized. Many ELAM graduates are returning to Cuba for specialization or to join Cuban-funded health brigades in other countries, where infrastructure and like-minded colleagues are more readily found. Ironically, the dilemma faced by ELAM graduates may not be too different from other graduates returning from study “abroad” to a home country whose health systems do not reflect the orientation of the training country.

In this regard, strategies adopted by the MEAH programme offer potential direction. The community and province-level interactions of the initial cohort of students are being complemented by national-level interactions – with coordinators from each of the three universities building relationships with a national team that includes an academic director and senior tutors with complementary skills in ecosystem approaches to health, community development, agro-ecology and laboratory science as well as strong ties with the Latin American Social Medicine movement. Since programme inception, the National (Ecuadorian) Steering Committee has consolidated a national
network as a platform for future iterations of the Masters programme. This network bodes well for the integration, consolidation and sustainability of efforts, although it is arguably more resource-intensive and ambitious than disaggregated programmes at each of the three universities. An indication of the deepening of national capacity is the participation of members of the emerging Ecuadorian team in the research programme of the Canadian community of practice in ecosystem approaches to health. Here Ecuadorians can offer valuable insights to international colleagues seeking to consolidate and refine strategies for teaching and research in ecosystem approaches to health. Yet while explicit attention to a supportive and stimulating national network may offer a counter to the pressures of out-migration, programme graduates will not be immune to the factors driving migration of health workers.

**Roles and responsibilities**

Training programmes must anticipate and respond not only to the complex health determinants in disadvantaged communities but also factors determining the ability of the health workforce to fulfill the potential of training with this orientation. Specific features of the two programmes are summarized by the five categories of health promotion action defined by the Ottawa Charter (Table 3). Here we see that these themes are as relevant for the trainees and their training environment as they are to the communities themselves. The interplay between personal, local, national and international scales is also consistent with the opportunities and challenges identified by the Bangkok Charter for Health Promotion in a Globalized World. The Bangkok Charter’s call for critical attention to the involvement of civil society, governments and politicians at all levels, the private sector, international organizations and the public health community, highlights the imperative of training health workers capable of engaging with complex, multi-stakeholder and collaborative processes to address the determinants of health. Designers and funders of international training programmes are therefore faced with growing responsibilities – not only to equip students to respond to the protective and destructive factors influencing health in disadvantaged populations but also to anticipate and respond to the complex, conflicting pressures (ranging from out-migration to institutional inertia) that could determine whether graduates are able to fulfill their potential to serve these populations.

**Conclusion**

Both ELAM and MEAH are doing well in preparing health professionals with the necessary skills to work within, and lead, their communities. The selection process, the curriculum and the aim of placement in marginalized communities all bode well for empowering communities to take control of their health determinants. However, little guarantee exists with either programme that graduates will return to or develop long-term sustainable solutions in their communities. In fact, our analysis suggests a need to identify the specific vulnerabilities faced by these graduates and to proactively plan to address the structural and

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**Table 3. Specific features of the two programmes categorized by the five categories of health promotion action as defined by the Ottawa Charter**

<table>
<thead>
<tr>
<th>Health promotion action</th>
<th>ELAM</th>
<th>MEAH</th>
</tr>
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<tbody>
<tr>
<td>Build public policy for health</td>
<td>Builds on success of Cuban models but little direct influence on national policy (I)</td>
<td>Strategic partners with precedents for engagement at national and international level e.g., Centros Estudios y Asesoría en Salud and, more recently Universidad Andina Simón Bolívar (N, I)</td>
</tr>
<tr>
<td>Create supportive environments</td>
<td>More difficult as an individual practitioner but possible with cross-sectoral support. Depends on graduate commitment and opportunities for links (P, N)</td>
<td>Aiming for a culture shift towards community-university engagement in each university as well as building a national network of universities (P, L, N)</td>
</tr>
<tr>
<td>Strengthen community action</td>
<td>Precedents of Cuban system but may be difficult to translate in isolation from the political economy (N, I)</td>
<td>Masters research thesis projects are required to engage community partners and demonstrate community impact (P, L, N)</td>
</tr>
<tr>
<td>Develop personal skills</td>
<td>Sound knowledge and confidence in core clinical competency; heightened knowledge of social and environmental determinants; knowledge of building disease prevention and health promotion frameworks at the community level (P, L, I)</td>
<td>Skills for collaboration and intersectorality are emphasized but cross-disciplinary research can be difficult to operationalize (P, L, N)</td>
</tr>
<tr>
<td>Reorient health services</td>
<td>Cuban model is based on a culture of “health-in-the-community” and community service (P, L)</td>
<td>Potential for innovations based on community-university-policy alliances (L, N)</td>
</tr>
</tbody>
</table>

**Notes:**
- ELAM, Escuela Latinoamericana de Medicina (Latin American School of Medicine) in Cuba; I, international capacities and scale; MEAH, Masters in Ecosystem Approaches to Health; L, local capacities and scale; N, national capacities and scale; P, personal (individual) capacities of health worker.
institutional obstacles and opportunities at local and national levels in conjunction with any international training of future health workers. We would be well served to ensure that, both during and after training, health workers are able to cultivate the principles of responsibility, respect, relevance and reciprocity that are critical in responding to health issues in marginalized communities.26 The value of these considerations have not only been reinforced by the experience in Ecuador, but are now being reflected back to inform efforts to build capacity for ecosystem approaches to health in Canada and internationally.27

A starting point for this paper was the concern that the design and provision of international training assistance requires critical attention to meet the specific health needs of marginalized communities in LMICs.2 We have highlighted a new range of responsibilities which we overlook at our peril. Without a firm understanding of how and with whom health workers can reintegrate to impact their communities, graduates of capacity-building programmes, such as the two examined here, may be “lost” to broader social and economic forces. Beyond building capacities of individual trainees, we have also identified the importance of communities of practice, as well as supportive local, national and international networks. International programmes and partnerships thus have an ongoing role in developing such strategies and focusing attention to the multiple levels required to ensure that capacity building of individual trainees is not lost. ■

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