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Overview of Complementary/Alternative Medicine in the Cuban Health System*

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Abstract

WHO/PAHO have acclaimed Cuba for achieving full access to primary care and developing pharmaceutical solutions from research into neglected diseases which plague developing nations. The Cuban health system currently incorporates a wide variety of TM therapies that are consistently integrated with conventional medical approaches to treat a broad range of afflictions

In Cuba, Traditional medicine is included in the curricula of health professionals to promote integration across the provinces. National policies define the role of traditional and complementary/alternative medicine (CAM) in health care programs: ensuring that the necessary regulatory and legal mechanisms are created for promoting and maintaining good practice; assuring authenticity, safety and efficacy of traditional and complementary/alternative therapies; and providing equitable access to health care resources and information about those resources.

This paper focuses on the integration of traditional medicine into a modern health care system, using the Cuban system experience as an example. The Cuban Pharmaceutical Services and its new trends toward to patient centered care practice including natural and traditional medicine use are analyzed to provide insights for developing recommendations for a CAM practice and integration policies appropriate for use in other healthcare settings.

Key words: Cuba, pharmacy, CAM, traditional medicine, primary care, epidemiological surveillance

Introduction

The World Health Organization/Pan-American Health Organization have acclaimed Cuba as a model for achieving full access to primary care and developing pharmaceutical solutions from research into neglected diseases which plague developing nations (Revista Panamericana de Salud, 2007). Cuba has made great strides toward integrating Western medicine and Traditional Medicine (TM) and Complementary and Alternative Medicines (CAM) in recent decades.

Lately, advances in clinical pharmacy indicate upgrades in community epidemiological surveillance. Clinical interventions can now be made to stem drug misadventuring in medication errors (Manasee, 1989) and investigations can also move forward to facilitate integration (Salmon, 1984). Cuba has a tradition of using natural remedies, which also can be tracked epidemiologically. Health professionals gain knowledge on various modalities in their curriculums to accept, understand, and practice integrated medicine.

According to the World Health Organization (WHO), traditional medicine is defined as health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illnesses and maintain well-being (WHO, 2001). However, worldwide recognition of the value of herbal medicines in maintaining health varies widely between nations (WHO, 1998).

Skepticism that has been commonplace among conventional medical therapists concerning traditional herbal treatments has been easing worldwide. These remedies are being investigated and understood to hold promise for both medicine and drug development (Mole, 2012). Isolating bioactive compounds is leading to taxonomic comparisons for the richness of ethno-botanical data and cross-cultural studies.

In Cuba, TM is included in the curricula of health professionals to promote integration across the provinces. National policies define the role of traditional and complementary/alternative medicine (CAM) in health care programs: ensuring that the necessary regulatory and legal mechanisms are created for promoting and maintaining good practice; assuring authenticity, safety and efficacy of traditional and complementary/alternative therapies; and providing equitable access to health care resources and information about those resources.

With the widespread use of TM and CAM and the tremendous expansion of international markets for herbal products (Liu & Salmon, 2010), it is all the more important to ensure that the health care provided by traditional and CAM is safe and reliable; that standards for the safety, efficacy, and quality control of herbal products and traditional and complementary/alternative therapies are established and upheld; that practitioners have the qualifications they profess; and that the claims made for products and practices are valid. These issues have become important concerns for both health authorities and the public. National policies are a key part of addressing these concerns in all nations (Salmon & Berliner, 1980).

Each year WHO receives increasing numbers of requests to provide standards, technical guidance, and informational support to Member States who are elaborating national policies on traditional and CAM. WHO encourages and supports Member States to integrate traditional and CAM into national health care systems and to ensure their rational use. Facilitating the exchange of information between Member States through regional meetings and the publication of documents, WHO assists countries in sharing and learning from one another's experiences in forming national policies on traditional and complementary/ alternative medicine and developing appropriate innovative approaches to integrated health care (WHO, 2000).

In her address to the Congress on Traditional Medicine WHO in November 2008, Dr. Margaret Chan, WHO Director General, advocated "better use of traditional medicine and its practitioners" arguing that "traditional medicine has much to offer, but cannot always supply the access to modern drugs and emergency measures that very effective to make the difference between life and death for many millions of people." (Sanso, 2008).

Not much is known among North Americans about the Cuban health care system, and less is understood so that we may learn from the Cuban experiences (Reed, 2000). WHO/PAHO have acclaimed Cuba for achieving full access to primary care and developing pharmaceutical solutions from research into neglected diseases which plague developing nations (PAHO, 2007; WHO, 2009).

The Cuban health system currently incorporates a wide variety of TM therapies that are consistently integrated with conventional medical approaches to treat a broad range of afflictions (Programa National de Medicina Traditional y Natural, 1999). These include acupuncture, aromatherapy, aromatherapy, flower essences, relaxation exercises, hypnosis, hydrotherapy, and magnets therapy.

This paper focuses on the rationale, strategies, and process of integrating traditional medicine into a modern health care system, using the Cuban system experience as an example. After describing the changing roles within the Cuban health system, the authors review the government policies and regulations on CAM. Research findings and government statistics on the demand and supply of CAM are included. The Cuban Pharmaceutical Services and its new trends toward to patient centered care practice including natural and traditional medicine use are analyzed to provide insights for developing recommendations for a CAM practice and integration policies appropriate for use in other healthcare settings.

The Cuban Health Care System

It is noteworthy that with the fall of Fulgencio Batista's regime in 1959, most of the Cuban physicians left the island, which presented great challenges in caring for the impoverished population. Previously, under Batista, Western physicians had mainly served only the wealthy classes.

The physicians who remained in Cuba were encouraged by Fidel Castro to reconstruct a totally new public healthcare system to better serve the whole population. Given this new challenge, Cuban physicians developed what has been acclaimed by the World Health Organization as one of the most effective public healthcare systems in the world. It can reasonably be argued that the community-oriented primary care that integrates CAM therapies and healthcare philosophies may be the key factors in the successes of Cuba's current health system (Dresang, 2005).

Infectious diseases were wiped out in Cuba, although Cuba's aging population (11% in 2010 faces greater numbers of chronic degenerative disease due to the increases in longevity in the population, as in all nations around the world. This has stimulated opportunities for pharmacists and the exploration of new aspects of integrated medicine. For instance, CAM and TM have much to offer the geriatric population because these modalities generally have fewer side effects and almost no fatalities. This in stark contrast with Western pharmaceuticals. It is a little publicized fact that conventional medicine is the third or fourth (according to differing calculations) cause of death in the world, due to fatal side effects of medications and medical errors. (Manasee, 1989; Makary, 2012).

Infant mortality rates in Cuba are 4.9 per 1000 births compared to 6 per 1000 live births in the United States (CIA, 2011). The Cuban infant mortality rate remains far better than all other developing nations and better as well than in some developed countries.

Cuba's population of 11 million (in 2010) has enjoyed remarkable gains in health status due to the effectiveness of its healthcare system. Cuba's political, social, and economic dimensions in health were prioritized almost a half century ago with equity in the allocation of health resources being established. PAHO reports: "By and large, infectious and parasitic diseases...decreased

sharply...[and] diseases for which there are no vaccines or whose transmission is difficult to interrupt" are covered by monitoring programs (PAHO, 1986). A high level of health achievement and consumer satisfaction have been achieved today with Cuban social policies, coupled with synergies from broader social interventions in the society. Cuba's population is well-educated, with free public education to the highest levels. Cuba has enjoyed very high literacy rates, compared to all the other Caribbean and South American countries.

The healthcare approaches applied in the Republic of Cuba have provided for many exchanges and collaborations within the PAHO/WHO. It is noteworthy that the public health aspect of Cuban society was developed and institutionalized within a formal primary care structure even though many times resources were scarce over its history. Traditional medicine and CAM are included in the curricula in the health professions education and integrated in clinical practice. International health professionals and diplomatic visitors have rendered varying interpretations of Cuban healthcare, yet international health assessments have always been favorable for its prenatal programs, childhood vaccination rates, accessible neighborhood clinics and pharmacies, and a life expectancy reaching 77 years (Kaiser Network, 2010).

Complementary/Alternative therapies in Cuban healthcare

As in most Latino cultures, folk remedies and the use of herbal medicines have been in wide use and very popular historically on the Island. Moreover, Cuban health professionals study TM and CAM in their curriculums, not just to understand and accept patients' preference for them, but to actually practice and integrate them in their practices (Applebaum, et al, 2008).

The Ministry of Health (MINSAP in Spanish) implements health policy through national, provincial, and municipal levels. The People's Power National Assembly and the provincial and municipal assemblies all have health committees for policy-making. The MINSAP presides over and coordination and control functions while municipal activity is centered in polyclinics in the health areas that are geographically designed to serve their respective populations. Inter-sectoral coordination ensures compliance with the regulation of research, technological integration, and quality control over pharmaceuticals, cosmetics, food chemicals potentially harmful to health, and medical devices. Sanitary inspection by the MINSAP comes under the Centers for Hygiene and Epidemiology unit. Pharmaceuticals are subject to quality control, supported by good manufacturing practices. The Drug Development Center is responsible for the evaluation, certification, registration, issuance of necessary rules and regulations, inspections, and certifies production laboratories. These centers also authorize clinical trials for new pharmaceuticals, and herbal medicines are tied into these various functions.

The 1983 Public Health Law laid out general activities to be carried out by the state to protect the health of the citizens. This law is continually adapted to new determinants in the public health environment that may be either internal or external. The scope of focus in public health ranges from new medical discoveries and technologies and innovations in the delivery system, to expanded roles of health professionals and advances in TM and CAM, always taking into account natural disasters, trade policies, and the overall economic well-being.

By the 1980s, Cuba's healthcare system began to be favorably recognized by the World Health Organization, UNICEF, and other international agencies that were seeking to identify viable models of health services delivery for the rest of the developing world (WHO, 2009). At that time, academic medical facilities and research received priority. Medical specialization expanded to 55 research fields and the national institutes established centers of excellence in programs for prenatal screening, organ transplants, and the installation of the first nuclear magnetic resonance machines in Latin America. By the end of the 1980s Cuba had expanded medical education to 21 medical schools

across the island. As mentioned above, education of medical and other health professions includes coursework in TM and CAM.

Export of medical personnel serves international audiences

The Cuban healthcare system has served its population very well, completely changing Cuba's 1950's social epidemiological patterns, as well as allowing for the production of medical personnel to serve as good will ambassadors to many poorer nations.

Cuba has one of the highest physician population ratios in the world (nearly twice that of the United States) (Millman, 2011). See Figure 1 (Anuario Estadístico de Cuba, 2010).

Figure 1. Medical staff from the Ministry of Public Health as of December 31, 2010 [a]

Human Resource	2005	2006	2007	2008	2009	2010
Total	**267 649**	**293 795**	**311 008**	**335.622**	**329.669**	**282.248**
Doctors	70 594	71 489	72 416	74 552	74.880	76.506
Family Physicians	33 769	33 221	32 548	32 289	34.261	36.478
Dentists	10 554	10 751	10 887	11 234	11.572	12.144
Pharmacists	2 753	2 891	2 939	2 962	2.993	2.956
Nurses, auxiliary nurses[b]	89 462	94 512	97 800	107 761	106.436	103.014
Technicians and Assistants[c]	94 286	114 152	126 966	139 113	133.788	87.628
Total	**267 649**	**293 795**	**311 008**	**335.622**	**329.669**	**282.248**

(a) Doctors and dentists correspond to the total of registered professionals. The rest of the staff include personnel working in the Ministry of public health.
(b) Including graduates in nursing .
(c) Including technicians in Stomatology, pharmacy, laboratory, x-ray, dental assistants and other technical means of the health

Cuban doctors are available for humanitarian aid during times of need in other countries. Hundreds of Cuban doctors are routinely deployed after natural disasters strike across Latin America. Fifteen thousand doctors and dentists are working for the Venezuelan government under Hugo Chavez. Another ally, Ecuador, has received significant medical assistance from Cuba. A Cuban medical delegation was deployed along with material assistance by several Arab nations for Pakistan's earthquake in 2005. Such medical diplomacy enhances Cuban clout abroad, but at the same time it may strain its pharmaceutical industry to find resources to sufficient produce drugs needed for its own population. (Salmon, 1996)

Since 1973, Cuba has also exported physicians to numerous other nations in need of modern medicine. Never accessing Western medicine under the apartheid regime, South Africans in its east get care from 300 Cuban health workers due to the friendship between Fidel Castro and Nobel laureate South African President Nelson Mandela (Salmon, 1998). Such has been the history of Cuba's international outreach with allies across the world. In forging new medical fronts across the Southern Hemisphere, Cuban health workers' knowledge, training, and acceptance of various TM and CAM therapies has been vital.

An estimated 37,041 Cuban physicians and other health workers have visited 77 countries in such medical brigades (Millman, 2011). When these health professionals work for national authorities abroad, they can earn needed foreign exchange revenues. Many medical exchanges served as this nation's development aid to poor, struggling nations.

The Latin American School of Medical Science in Havana is perhaps the world's largest medical school with about 10,000 students, all of whom are foreigners (Cuba: Dr. Diplomat, 2007). Most come from Latin American countries, but the enrollment today also includes 91 Americans who were unable to enter U.S. medical schools. In 2010 the Latin American School of Medicine in Havana, Cuba (ELAM, Spanish acronym) announced the graduation of 34 American students. Currently there is a total of 113 US graduates. This fact forced the institution to obtain accreditation of the Medical Board of California (Web reference, 2012) Such contributions also complement the work of the Cuban pharmaceutical industry, which has long been researching medicines for neglected endemic diseases across the developing world.

After the 2010 Haiti earthquake, Cuba pledged to reconstruct that island's healthcare system, based on its own model of public health/primary care. The model was to include 101 clinics and 30 community hospitals with the Haitian specialties hospital to be staffed by 80 Cuban physician specialists. Over 300 medical scholarships are being offered to Haitian students to study medicine in Cuba, which adds to a historical 11 years of Cuban assistance to its island neighbor (Archibold, 2011). This medical aid has been implemented "under a crippling economic blockade from its powerful [Northern] neighbor for nearly a half century" (Kirk and Girvan, 2010, p.2).

Cuba has also made contributions towards improving global health through research and international conferences. For example, a novel cancer vaccine composed of human-recombinant epidermal growth factor linked to a carrier protein was developed by the Cuban Center of Molecular Immunology. (González and Crombet et al. 1998). *The* Instituto de Medicina Tropical "Pedro Kourí" (IPK) developed a vaccine against a strain of cholera. (Jidy, Pérz, et al. 2010).

Labiofam 2012 International Congress was attended by 450 delegates from Cuba and other 35 countries, working on South-South Cooperation. Labiofam produces more than 98 percent of Cuba's veterinary medicines, and developed more than 54 technologies for the production of bio-fertilizers and bio-pesticides in agriculture.

Given the U.S. imposed embargo, Cuba's pharmaceutical production varies from year to year, particularly when hurricanes and other health calamities arise at home or when humanitarian aid may be required abroad through Cuba's medical missions (WHO, 2008). The Cuban development and implementations of effective pharmaceutical care models might also be usefully exported to the developing world. This could address the importation of powerful and dangerous pharmaceuticals being used among poor and sick populations across the globe. This could also advance research of the efficacy and safety of various herbals therapies and how they may interact with conventional pharmaceuticals.

Cuban Health System Advances

Cuba's biotechnology industry put Cuba at the forefront of global vaccine research and medicines for neglected diseases across the Southern Hemisphere (Kaiser, 2007). For instance, at the international conference, Labiofam reported that a vaccine has been tested in 56 patients in advanced stages of prostate cancer, in which they have not received radiation or chemotherapy. (Labiofam, 2012)

Additionally, the family doctor program in 1986 placed physician and nurse teams in nearly all patient communities (Reed, 2000). Thus, the system was built on a strong foundation in primary care, which focuses on public health activities in the community, including epidemiological surveillance.

Translating clinical efficacy into public health effectiveness remains a stumbling block for most nations, especially for certain disease such as HIV/AIDS (Ramakant, 2012). Over 95% of Cuban families received care in their own neighborhoods by the early 1990s (Anuario, 2009). Few developing nations are attempting such pharmacovigilance (Huff-Rousselle et al, 2007). The Cuban direction rests upon well-developed public policies over 50 years with inter-sectoral coordination aimed at improved health for all (Pagliccia & Perez, 2012).

With a qualified health work force of 329,669 personnel (2009), there are a total of 74,880 doctors with 34,261 family physicians. Additionally, 11,572 dentists, 2993 pharmacists, and nursing and auxiliary personnel make up another 106,433. A complement of 133,778 technicians and health assistants serve its healthcare system too. Training programs are geared to what each territory and the country in general needs, with the state guaranteeing employment for all graduates to meet the health services demand (Anuario, 2010).

The population receives free preventative, curative, and rehabilitation services from routine medical attention and dentistry through hospital care with highly sophisticated medical technologies financed out of the state budget. All necessary diagnostic testing and drugs are provided free of charge to pregnant women and to persons receiving outpatient care in certain programs. Family out-of-pocket expenditures may include drugs prescribed for outpatient treatments, hearing aids, dental and orthopedic apparatuses, wheelchairs, crutches, and other similar articles, along with eyeglasses. Prices for these items remain low, also being subsidized by the state at a cost of 4,230,938,600 pesos (376.44 pesos per capita) in 2008 (Informe Sobre, 2010).

Of course, Cuban doctors and other health professional earn much less than their counterparts up north. This is a significant contribution to containing the costs of health care. The cost per diem in a U.S hospital is nearly $2000, versus an average inpatient day in Cuba that is $5.49 (Investor's Business Day, 2012).

Cuba spends 9.9% of its gross domestic product on its healthcare system, comparable to France (8.7%), Germany (8%), and 18% for the US, but higher than Latin American countries (Bolivia 3.4%, Ecuador 2.3%, Jamaica 2.4%). Cuban health expenditures (2005) were $193 per capita, which makes Cuba one of the lowest in the Western hemisphere (Dresang, 2005). The population growth rate has ranged from 0.3% to 1% annum, while its life expectancy for a while has remained close to many developing countries (Health Expenditure, 2007).

Life expectancy in Cuba is 75.1 for men and 79.2 for women, which contrasts to 62 years of age longevity in Haiti – a longevity which is, sadly, fast declining due to the earthquake and ensuing cholera epidemic.

Innovative Cuban pharmaceutical services

Contributing to Cuba's effectiveness in primary care is its provision of pharmacy services in the community. National drug policy seeks to ensure equitable availability and affordability to essential drugs in addition to promoting therapeutically sound use and efficient drug utilization. The latter is up to pharmacists who are now undergoing an upgrading toward new standards for pharmaceutical care

and a clinical role to work in healthcare teams. There are 2117 pharmacies with net general average of 18.34 pharmacies per 100,000 inhabitants.

There is thus a relatively low availability in some provinces of Cuba, but Ciego de Avila and Guantanamo have indices of 22.17 and 21.05 pharmacies per inhabitants, a range similar to that of the United Kingdom (20.64) (Fernandez and Fernandez, 2005).

In 1994, the National Drugs Program was reformulated to require a medical prescription for most drugs; it also regulates prescriptions written by doctors according to their medical specialty; assigns patients to drug distribution units in their area of residence; strengthens the work of the local pharmacotherapeutic committees; and maintains regulations on the distribution of consumer products intended for long-term use. Revisions of the essential drug list (which WHO recommends every nation adopt) reduced the number of private active principles to 343, distributed among 29 drug classes, with 439 dosage forms. Traditional and natural medicinal products used by the populace are also included within this list.

Regulations help to ensure that products meet international quality standards, and in 1996 a national health system-wide pharmacoepidemiology strategy was created as a national network for evaluating and controlling rational drug use in each territory. This unique pharmacoepidemiology includes use of TM and CAM entities among the populace also. Studies on the use of medicinal plants by the Haitian population in Cuba inform professional knowledge in a variety of ways (Volpato et al, 2009). In other countries, researchers also find the use of traditional natural medicines offer economic benefits to developing nations (Harvard, 2012).

Substantial state investment in biotechnology propelled Cuba into the inter-global markets (Everson, 2007). Ernst and Young puts exports of biotechnology products at US$300 million in 2005, which includes several innovative vaccines for neglected diseases that are prevalent across the Southern Hemisphere. Cuban scientists cooperate on biotech projects with the Chinese to unveil secrets from TM therapies (Cuba and China, 2011; Biotechnology, 2012).

Genetic engineering is also progressing. Over 100 Cuban pharmaceutical patents have been registered. Collaborations have been established with Canadian and British companies, and also among a number of emerging economies and developing nations.

> Cuban research also prioritizes developing affordable vaccines for diseases affecting poor populations, including typhoid fever and cholera, a fundamentally needs-driven rather than market-driven approach. Cuba also produces generic drug including HIV/AIDS anti-retrovirals, selling them to developing countries at a fraction of the price sold by the transnationals (Everson, 2003).

The MINSAP has been upgrading the whole system of distribution and sales of drugs to achieve optimal supply to meet patients' needs (Ministerio de Salud Publica de Cuba, 2005), with newer regulations to expand the direct patient care roles of pharmacists through participation in healthcare teams. This broadening of the scope of pharmaceutical activities with clinical pharmacy services, drug information, pharmacovigilance, and pharmacoepidemiology is a major step forward awaited even in advanced economies. Pharmacy services which encompass the entire supply of medicines and medical devices, plus participation in planning and delivering a more coordinated care process has the potential to ensure improved patient care outcomes, with enhanced equity, efficiency, effectiveness, and cost control. Measurable cost containment and an overall improvement in health and quality of life are anticipated.

Cuba's international economic challenges impact healthcare

Pharmaceutical services contribute to the population's health maintenance through optimal management of economic resources, a necessity for any developing nation. Cuba faces an imperative of improving its whole system of drug distribution and sales of medicines to achieve optimal supply to patients. Its pharmaceutical industry is constrained by the US embargo, which makes it difficult to obtain active pharmaceutical ingredients from the rest of the world to replenish their annual drug supply, since European Union firms are restrained from trade with Cuba if they maintain a presence in the United States. Similar restrictions are enforced by the US on food imports to Cuba (USDA, 2008). The US Trade Sanctions Reform and Export Enhancement Act (TSRA) of 2000 now allows some US food and agricultural products to be sold in Cuba., but only on a prepaid cash basis.

In effect, the United States seriously limits enhancements in the nutritional status of the Cuban people and in their medical services by these restrictions on the international purchases of food and medicines.

For the past twenty years the American media (even the business press) indicates a changing view within US policy circles about the imposed embargo against Cuba. European and Canadian firms benefit from their investment and trade with Cuba, whereas US corporate interests in the pharmaceutical, mining, tourism, and agribusiness are constrained from engaging in a potentially profitable trade with Cuba. The Papal tours and visits by former President Jimmy Carter and then Governor George Ryan (R-Illinois) with a Midwestern agribusiness contingent have visited Cuba to help sway the American policy mood that has lasted well beyond the end of the Cold War. President George Bush had begun easing trade and travel, preceded by the earlier changes of Clinton. Nevertheless these were minor steps and President Obama has yet to change policy much, being politically constrained by the Miami-based Cuban exile community, which holds a strong anti-Castro government line.

Beyond US business interests, the humanitarian point should be clear: The US embargo denies Cuban families vital food and medicines, and it has failed as a policy for changing the political landscape of Cuba for over fifty years. The rest of the world seems to think it is a failed policy. Travel and greater educational and cultural exchanges by Americans to Cuba would certainly promote invaluable benefits for both sides of the Florida Keys. Collaborations for improving healthcare in both nations' healthcare systems could emerge, and scientific exchanges hold promise for benefits to the respective pharmaceutical industries.

Innovative changes in the roles of pharmacists

Within the health team, the pharmacist's clinical role is to advise on aspects of pharmacotherapy, including drug information for patients and health team members. Given this new role, scientific rigor is necessary by the professional pharmacy staff, including direct supervision of drug therapies in patients; pharmacovigilance; drug information service; drug delivery systems; programs of advice, guidance and education for staff and patients; and promoting rational drug use (Martinez Sanchez & Salmon, 2012**).** Quality assurance must be provided. This is defined as the totality of characteristics of a product, process, or organization that affects the satisfying of the needs of a person or group in the community (Manual de Normas y Procedimientos en Farmacia Comunitaria, 2005).

The pharmacist's current role in Cuban communities currently includes advising on aspects of pharmacotherapy, such as establishing dosing regimens; detecting and preventing drug-related

problems; and advising patients, families, and health team members in both hospital and community settings. The pharmacy must be run by a pharmacy graduate with professional qualifications, or if unavailable, a medium pharmacy technician with appropriate experience in pharmacy management.

Based on the incidence of adverse health events caused by inappropriate drug prescriptions, and patient non-compliance with drug therapies, supervision of drug treatment for patients through 'pharmaceutical care' practice takes into account: Drug-Related Problems; Drug Interactions; Adverse Drug Reactions; Contraindications; Treatment Guidelines; Clinical Laboratory Testing; Diet Advice; and Lifestyle Modifications. Self-care, herbal medicine, and TM/CAM use come into play here also.

Pharmacy professional leaders the world over now realize that arousing the bulk of practitioners to new models and standards of Pharmaceutical Care takes time and must be accomplished in stages. Attention must be given to professional commitment, with organizational support in various clinical settings to achieve an ideal practice implementation.

A main patient "Pharmacotherapy Profile" provides the pharmacist with a record that includes personal information; fundamental patient history; responses to medications (allergies, sensitivities, reactions, and effects); a full history of prescribed medications; and compliance data. The Pharmacotherapy Profiles may vary depending on each individual Clinical Pharmacy Service. Watchful documentation of the integration of TM and natural medicines is paramount.

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According to Cuban economic and social reality, the mission of the pharmacy profession is two-fold: to provide medicines to the people with growing health needs, and to help people obtain the best medication outcomes, thus improving public health. Pharmacy education is to achieve a balance between the enabling sciences, applied pharmaceutical sciences, social sciences, and clinical education (Sanchez, 2010). Similar trends have been described in pharmaceutical education in the USA, Cuba also includes the development of leadership attributes, critical thinking skills, societal responsibility, and social and emotional intelligence into the pharmacy curriculum. Extracurricular or co-curricular activities focus on serving surrounding communities.

Government initiatives to encourage pharmacists to apply this new professional direction began with the Cuban Pharmacy Legislation in 2005. As to curricular changes, several pharmaceutical care courses have students discussing this new model and indentifying differences from previous practice models. Pharmacy educators instill in their students a high level of motivation, commitment, and the self-confidence in order for them to assume responsibility for *improvement of drug therapy outcomes in patient populations.* Similar curricular changes developing pharmaceutical care have taken place in other countries (Martinez-Sanchez, 2010). Increased emphasis on competency-based teaching and assessment is being given to ensure that Cuban graduates learn sufficient clinical skills to deliver new cognitive services (Martinez-Sanchez, 2011).

These considerations led to the incorporation of Social Pharmacy in the curriculum. Social Pharmacy is interdisciplinary, with the goal of enabling pharmacists to take responsibility for drug matters at a

societal level. This initiative provides students with exercises to improve communication competence, critical thinking, problem solving, and analytical and ethical reasoning. The Social Pharmacy discipline represents only 2% of total curriculum hours, yet its introduction was the first academic approach to teaching pharmaceutical care in Cuba (Martínez-Sánchez, 2011).

Despite efforts so far in generalizing the Cuban practice of pharmaceutical care, it is far from standardized and not embraced by the majority of practicing pharmacists today. The pharmacist's role continues to be devoted mainly to activities not directly related to patient care, while clinical roles in the practice of pharmaceutical care remain limited and experimental (Lores, 2009).

In the United States and in Commonwealth nations, clinical work by pharmacists has advanced through similar, partial stages of development, hardly ever reaching the stated ideals. All developing nations face a multitude of barriers to working toward pharmaceutical care. Each nation and its profession must adapt to make the model fit its unique circumstances under available resources that can be committed over time.

Traditional and Natural Medicine in the health care system

The integration of TM/CAM with conventional medical care also passes through developmental stages. Both areas of Cuban health care are proceeding toward greater integration. The Program for the Development and Generalization of Natural and Traditional Medicine in Cuba seeks to provide the technical basis for the development of traditional and natural medicine throughout the country. This is raising the quality of care and popular satisfaction with health services received. It also is a working tool with a systemic approach--inclusive, dynamic and open--with a feedback mechanism for the development of a true sub-care system aimed at ensuring the introduction and spread upward from this practice throughout the country. Currently Cuba has 395 physicians who include traditional and natural medicine in their practices and 138 specialized in this area. Similarly, 29.018 372 cases have been historically treated with Natural and Traditional Medicine at the primary care level (Anuario Estadístico del Ministerio de Salud Pública, 2011).

The services of Natural and Traditional Medicine are organized by levels of care and medical institutions, with the following minimum requirements (MINSAP, 1999).

a) **Primary Care**

Family Medical Clinics provide decentralized primary care in each respective community. The first level of care includes the following techniques: acupuncture, acupressure, and natural products. The practice requires that the physician has passed a basic course in these matters and needs regular updates with at least the following resources: three modules of acupuncture, natural formulations, and literature information.

Prepared in TM, this doctor becomes in fact a promoter of the development of Traditional and Natural Medicine, having a responsibility to help train the rest of the health professionals in the Popular Health Council unit, as well as to monitor the progress of the program in its territory. This practice unit also requires a nurse who has received the basic nursing courses

Polyclinics: are group practices that represent the second level of care in TM/CAM. They include services with the following techniques (which are performed in specialized] clinics: relaxation techniques, hypnosis, homeopathy and flower essence therapy, physical medicine and rehabilitation, dental acupuncture analgesia, and other natural therapies in dentistry, peloidoterapia (mud therapy), magnetism and electromagnetism.

These clinics require their doctors and nurses to be qualified graduates of the basic course and have staff with general medicine specialists, psychologists, Licensees in Physical Education and Physical Medicine, Dentists and other technicians. They need the following resources: module acupuncture, natural formulations peloids (mud), and physiotherapy with bibliography and information services regularly.

Dental clinics use the following techniques: natural products, acupressure, acupuncture, acupuncture analgesia, suggestion and hypnosis and homeopathy. Both resources and health personnel requirements are the same as in the polyclinic.

b) **Secondary Care**

- ***Center for Integrated Development of Natural and Traditional Medicine in the Mountains***. This center can be located inside and outside of healthcare institutions (clinics or hospitals) depending on the conditions of each territory. The techniques used are the same as in previous levels, including also magnets, suction cups, physical medicine, surgical acupuncture analgesia, Tai-Chi-Chuan and Yoga Therapy, all in consultation with medical specialists in integrated treatment. The center requires staff to be graduates of the basic course.

- ***Municipal Center to the development of TM***: This center will employ all the techniques of previous levels and Catgut implantation, analgesic block and therapeutic clinics, smoking and alcoholism treatments, and other therapies.

Doctors at these centers require a physician Master Degree in Traditional and Natural Medicine and nurses must be graduated from the basic course in its entirety. Also included are a psychologist, a licensed physical culture and physiotherapy technician.

c) **Tertiary care**

- ***Provincial Centre for the Development of Natural and Traditional Medicine***. This center can be located in separate buildings, provincial teaching hospitals, or surgical centers for medical education. Each Center has all the resources listed at other levels, including ozone therapy equipment, beds in the Emergency Department for 24 hours. It employs at least the following therapies: all previously mentioned levels of services, including surgical acupuncture analgesia, ozone therapy, laser-puncture, general and specialized physiotherapy, homeopathy remedies production laboratory, and local and emergency beds for 24 hours with consultations leading to referrals to integrated treatment by the available specialists. Each have all the resources listed at other levels including ozone therapy equipment, beds and instrumental to the Emergency Department 24 hours, and living.

  This program is an expression of the reasons for basic principles in the development of traditional medicine for the doctor-patient relationship, the enrichment of the therapeutic resources, decreased adverse reactions and lower cost of health, all of which allow the generalization of this TM/CAM practice in the country (Bosch, 1999).

Opportunities and challenges of natural and traditional medicine in Cuba

Cuba has strongly developed TM to provide affordable health care that is universally and freely available This, together with the principles of integrative practice, teaching and research, sets a fertile ground for scientific research of integrative care. A great strength of this system is the enormous

cooperation practiced between the different scientific institutions and the MINSAP whenever needed. Any proposed therapy having greater scientific support does not automatically invalidate other therapies devoid of such support (Fernández Sacasas, 2012), and practitioners are beginning to evaluate others more rigorously. There are huge opportunities for Cuban medicine to explore the scientific practice of TM approaches. For example, in herbal medicine the mechanisms of action, indications, contraindications, and appropriate dosages can be rigorously established (Ginori, 2012).

Health professionals should prioritize the unprejudiced study of the best available knowledge, taking into account evidence derived from systematic reviews. The design and implementation of reliable scientific research offers results to promote development. Otherwise, the risk of perpetuating infective practices in teaching may interfere with the development of reasoning by medical and other professionals for scientific work (Munoz, 2012).

Today Cubans recognize that much remains to be done in these transformational processes. The developmental strategy for the Municipal Home Pharmacy Network (MHPN), (Ministerio de Salud Pública de Cuba) with 175 multidisciplinary professional units for the evaluation and control of the rational use of drugs in each territory offers tremendous promise for the future. The Network integrates the national pharmaco-epidemiology and drug administration for drugs produced elsewhere, plus drugs produced in Cuba. The MHPN also supervises the prescription of natural and homeopathic remedies, and the provision of traditional medicine techniques.

The Municipal Home Pharmacy Network (MHPN) (Martinez Sanchez & Salmon, 2012) seeks to develop specialists in the discipline of pharmacoepidemiology to ensure assessments of the quality of prescription drug use, and to target more rational use of drugs in the health care system. It also holds the potential to improve the Pharmacy service provided by the community pharmacy networks, contributing to upgrading the population's health care and satisfaction. A national network for pharmacoepidemiology will coordinate through the provinces with the Center for the Development of Pharmacoepidemiology (CDF), which reports to the First Deputy Minister of Public Health.

Evaluation entails visits to the Provinces to establish regulations in the main municipal drug stores and then to assess their development in practice. The construction of such a surveillance system to monitor Western pharmaceutical usage and TM/CAM entities present a challenge that is currently being pursued. While surveillance outcomes will depend upon widespread use of advanced hardware and sophisticated software to promote analytics for investigations, the overall endeavor holds the potential to advance the Cuban health system, and with its assistive support of other developing nations, possibilities to stem several critical health problems across the globe.

Conclusion

Traditional and natural medicine has become a medical specialty in Cuba, with a holistic approach toward care of patients (PAHO, 200). Given Cuba's community-oriented primary care structure and universal coverage, the systems approach applied in the implementation of this practice promotes widespread at all levels of the health system (Cooper, 2006), transcending all the elements of structure, process and outcome through implementation of systems approaches in the prevention, diagnosis, treatment and rehabilitation of patients. Political will (Pagliccia & Perez, 2012) ensures the necessary resources for this development. In turn, dedicated healthcare professionals work for the welfare of patients, raising standards for quality health care over the entire system.

The program for the integration of pharmacists into the healthcare team is an important Cuban innovation. As yet, few studies have been published about the impact of pharmaceutical care in Cuba,

and fewer yet related to its integration with the work of doctors and nurses. The impacts of the material and political support necessary for these changes also deserve study. A future research agenda would include: the redesign of pharmacies, salary incentives, local IT system needs, and so on.

Although there is an approach as described in the Manual de Normas y Procedimientos en Farmacia Comunitaria. Dirección Nacional de Farmacia y Óptica cited above, operationalizing the practice of pharmaceutical care remains limited because pharmacists largely perform administrative and management functions, as well as those related to drug supply. The concepts, implementation and benefits of Clinical Pharmacy are still in exploratory stages, not sufficiently recognized by many health authorities, and, in some cases, even by the health teams. This lag necessitates continued work to reap greater benefit from the pharmacoepidemiological surveillance, along with the full integration of the best practices from TM/CAM into regular medical care. The experience of Great Britain suggests that integrated care can only succeed with integrated information technology for enhancing clinical outcomes(NHS, 2012).

Pharmaco-epidemiological surveillance across Cuba can become a unique national process that may hold great benefit for modeling by other developing nations. Kindig and Stoddart (2003) define population health for measuring health outcomes and the distribution of such outcomes in a population; identifying the determinants that influence the distribution; and implementing policies and interventions at the individual and population levels that ease the determinants. So to be clear: ecological, social and political context matters most.

Addressing new social epidemics, neglected diseases, and rising chronic degenerative disease patterns abroad will necessitate the use of a variety of newly introduced, powerful and dangerous drugs into a developing nation' population (Salmon, 2009); upgraded practitioners will have to become clinically familiar with this wave of pharmacotherapies, and mechanisms for monitoring them must be established to prevent drug mishaps. Systems for monitoring drug safety need to be at the cutting edge; these systems may also provide tools for understanding provider and diverse consumer behaviors in drug usage (Katzfey, 1995). This includes the integration of TM/CAM therapies to ascertain their efficacy among which patients and with what conditions, as well as to detect inherent ADRs and their untoward effects from mixing with Western pharmaceuticals. Pharmacoepidemiology thus represents a higher humanistic approach to controlling cost escalation by improving the quality of medical care in any health care system with an ecological approach (Forget & Lebel, 2001).

Pharmacoepidemiology and surveillance of drug outcomes in any given society will require sophisticated software and hardware systems, plus professionals trained in analytics who focus both on conducting scientific studies of drug efficacy and on changes in healthcare policies and delivery system interventions. Advancing such a framework with a national information system (WHO Commission, 2007; WHO Commission 2008) poses a real challenge for the Cubans over this decade because of the inherent challenges in developing any healthcare system and because of limited financial resources.

The structure, functions and mission of the Cuban health system provide a fertile arena for advancing the Pharmacy profession, recognizing and enhancing the contribution of the community pharmacist in improving human health and healthcare services. The responsibility of the Pharmacy profession in the continuous improvement of their activities through ongoing training, research, and a patient-centered pharmacy practice is the policy direction. The future standardization of the practice of pharmaceutical care structured into the health care system, as well as validation of the results of this practice in humanistic, economic and professional terms, will be a challenge for the Cuban system.

Pharmacy education must continue toward a pharmacist capable of fulfilling this mission, with a concomitant social commitment.

Ongoing reforms in the Cuban polity toward a mixed economy (private buying and selling of cars and houses, etc.) (Burnett, 2011) and the shifting focus of Cuban leaders towards stressing new productivity gains for economic advancement, portend a rebalancing of the past "commitment to history" with a new modernization (Chase, 2011). Cuban health workers have historically been able to meet challenges and to ably advance the health status of their population. The historical openness to changes and successful healthcare achievements suggest that the new directions being implemented in the pharmacy profession and in integrated medical care may promise additional health care achievements.

References

Albro W. (1993). How to communicate with physicians. *American Pharmacist, 3*(4), 59-61.

Alvarez, S.L., Salmon, J.W., & Swartzman, D. (2011). The Colombian health insurance system and its effect on access to health care. 355-370. *International Journal of Health Services, 41*(2), 355-370.

(Source: Anuario Estadístico de Cuba 2010. Oficina Nacional de Estadística de la República de Cuba. Available at: http://www.one.cu/aec2010/esp/19_tabla_cuadro.htm)

Anuario Estadístico (2011). Ministerio de Salud Pública. Dirección Nacional de Registros Médicos y Estadísticas de Salud. La Habana, 2012. Retrieved from http://files.sld.cu/dne/files/2012/04/anuario-2011-e.p

Anuario estadístico de salud. (2009). República de Cuba. Retrieved from http://files.sld.cu/dne/files/2010/04/anuario-2009e3.pdf

Anuario Estadístico Cuba. (2010). Recursos. Cuadro 115. Ejecución del Presupuesto y Gastos Porhabitante.1959,1960,1965,1970–2008. Retrieved from http://bvs.sld.cu/cgibin/wxis/anuario/?IsisScript=anuario/iah.xis&tag8000=2008&tag8001=Recursos&tag6000=I&tag5009=STANDARD&tag5008=10&tag5007=Y&tag5001=search1&tag5003=anuario&tag5021=e&tag5013=GUEST&tag5022=2008.

Appelbaum, D., Kligler, B/, Barrett, B., Frenkel, M., Guerrera, M.P., & Kondwani, K. A. (2006). Natural and traditional medicine in Cuba: Lessons for U.S. medical education. *Academic Medicine, 81*(12) 1098-1103.

Archibold, R. (2011, November 7). Cuba Takes Lead Role in Haiti's Cholera Fight, New York Times, Retrieved from http://www.nytimes.com/2011/11/08/world/americas/in-haitis- cholera-fight- cuba-takes-lead-role.html?pagewanted=all&_moc.semityn.www

Artiles, L. (2012). Incorporating a gender perspective into Cuba's health system: Realities and challenges. *MEDICC Review*, *14*(2), 39-42.

Asante, A., Negin, J., Hall, J., Dewdney, J., & Zwi, A. (2012). Analysis of policy implications and challenges of the Cuban health assistance program related to human resources for health in the Pacific. *Human Resources for Health*, *10*(10). doi:10.1186/1478-4491-10-10

Bergado J. Medicina sin apellidos. Retrieved from http://www.juventudtecnica.cu/Juventud%20T/2011/la%20opinion/paginas/sin%20apellidos.html

Bosch, F. La medicina tradicional y natural en Cuba. *Resume 1999,12*(1), 6.

Barrueco, J. M (2011, November 28). Cuba and China sign deals to boost biotechnology cooperation, *The Pharma Letter*. Retrieved from http://thepharmaletter.com/file/109166/cuba-and-china-sign-deal-to-boost-biotechnology-cooperation.html

Central Intelligence Agency (2011). World Fact Book, Washington, DC: U.S. Government Printing Office.

Chase, M. (2011, November 7). Cuba rethinks the Revolution. The Nation, 21-26.

Coville, P. (1994).Pharmacy practice around the world. *International Journal of Pharmacy Practice, 3*(1), 4-5.

Cuba: Dr Diplomat, (2007, January 27), *Economist*, 35

Carpio Muñoz, E., Médico. El auge de la Medicina Natural y Tradicional y la formación de los profesionales de la salud. Retrieved from http://www.juventudtecnica.cu/Juventud%20T/2012/la%20opinion/paginas/el%20auge.html

Cuba relaunches Servimed medical tourism service. (2011, December 16). *International Medical Travel Journal.* Retrieved from http://www.imtj.com/news/?EntryId82=329322

De Vos, P., De Ceukelaire, W., & Van der Stuyft, P. (2006). Colombia and Cuba, contrasting models in Latin America's health sector reform. *Tropical Medicine & International Health*, *11*(10), 1604-1612.

De Vos, P., García-Fariñas, A., Álvarez-Pérez, A., Rodríguez-Salvá, A., Bonet-Gorbea, M., & Van der Stuyft, P. (2012). Public health services, an essential determinant of health during crisis. Lessons from Cuba, 1989–2000*. Tropical Medicine & International Health*, *17*, 469–479.

Dresang, L.T., Brebrick, L., Murray, D., Shallue, A., & Sullivan-Vedder, L. (2005), Family medicine in Cuba: Community-oriented primary care and complementary and alternative medicine. *Journal of the American Board of Family Practice, 18,* 297-303.

Dunlop A., & Shaw P. (2002). Community pharmacists' perspectives on pharmaceutical care implementation in New Zealand. *Pharmacy World & Science, 24*(6), 224-230.

Everson, D. (2003, March). Dept. of Foreign Affairs and International Trade, Canada. *The Market Brief: The Biotechnology Market in Cuba.* Market Resource Center. Ottawa, CA, p. 3.

Everson, D. (2007,Fall). Cuba's biotechnology revolution, *MEDICC 9*(1), 8-10.

Feinberg, R. (2011, November 18). Come on – Cuba needs help, not hindrance to progress. *Financial Times*, p. 9.

Fernandez E., & Fernandez S.A., et al. (2005). Exploring the availability of the Cuban community pharmaceutical services. Rev. De la OFIL. 15; 1: 21-27. Retrieved at http://www.revistadelaofil.org/PDFs/OFILn151.pdf

Fernández Sacasas, J.A. Comentarios sobre el debate en torno a la Medicina Alternativa. Retrieved from http://www.juventudtecnica.cu/Juventud%20T/2012/la%20opinion/paginas/sobre%20el%20debate.html

Galindo, B., Concepcion, D., Galindo M., Perez, A., & Saiz, J. (2012). Vaccine-related adverse events in Cuban children, 1999-2008. *MEDICC Review*, *14*(1), 38-43.

Gastelurrutia, M.A., & Fernández Llimós, F. (2007) Barriers for the implementation of cognitive services in Spanish community pharmacies. *Aten Primaria, 39*(9), 465-72. Retrieved from http://www.gastelurrutia.com/pdf/barreras.pdf

Gouveia, W.A, Shane,R. (1997). The three dimensions of managed care pharmacy practice. *American Journal of Managed Care, 3*(2), 231-9.

Getting to the root of the matter. *MEDICC Review, 14*(1), 3.

Gonzalez, I. (2012, June 18). Finetuning the fight against AIDS in Cuba. *Inter Press Service.* Retrieved from http://www.ipsnews.net/2012/06/finetuning-the-fight-against-aids-in-cuba/

González Arias, A. Contrarréplica a los comentarios del Dr. Mastellari. Retrieved from http://www.juventudtecnica.cu/Juventud%20T/2012/la%20opinion/paginas/contrarreplica%20de%20arnaldo.html

González G, Crombet T, et al. A novel cancer vaccine composed of human-recombinant epidermal growth factor linked to a carrier protein: Report of a pilot clinical trial. *Ann Oncol (1998) 9 (4): 431-435.*

Gorry, C. (2012). Over the hills & far away: Rural health in Cuba. *MEDICC Review, 41*(1), 6-10.

Guererra, A. Programa en Cuba para el Desarrollo y Generalización de la Medicina Tradicional y

Natural. Retried from http://southsouthforum.org/pdf/Aleida%20Gueva Traditional%20Medicine-spanish.pdf

Health expenditure (2007). Health services - Health - World Development Indicators. Country Comparison Graph. Retrieved from http://www.nationsencyclopedia.com/WorldStats/WDI-expenditure-public-gdp.html

Huff-Rousselle, M., Simooya, O., Kabwe, V., Hollander, I., Handema, R., Mwango, A., & Mwape, E. (2007). Pharmacovigilance and new essential drugs in Africa: Zambia draws lessons from its own experiences and beyond. *Global Public Health, 2*(2), 184-203.

Informe sobre Desarrollo Humano (2010). Edición del Vigésimo Aniversario. La verdadera riqueza de las naciones: Caminos al desarrollo humano. Retrieved from http://hdr.undp.org/en/media/HDR_ES_Complete.pdf

Jack, A. (2012, April 30). Concern at Cuba's malaria offensive. *Financial Times*.

Jidy M, Pérz A, et al. Challenge clinical trial for evaluation of a vaccine candidate strain against cholera. *Rev Cubana Med Trop* 2010;62(3):194-9)

KaiserNetwork.org (2007, July23). In the quest for Global Health, What puts Cuba on the Map? Rockefeller Foundation and Atlantic Philanthropies.

Kirk, E.J. & Girvan, N. (2010, April 22). Cuba In Haiti: Selective commendation, selective indignation, 478. Retrieved from pambazuka.org/en/category/features/63886

Katzfey, R.P. (1995, September). Building a national medication error data base. *Medical Safety News,* Premier Health Alliance, Inc.

Kindig, D., & Stoddart, G. (2003). What is population health? *American Journal of Public Health, 93*(3)*,* 380-383.

Lina, Y. (2012, June 24). Cuba says hepatitis B eliminated among minors under 15. *Xinhua*. Retrieved from http://news.xinhuanet.com/english/health/2012-06/24/c_131672498.htm

Liu, F. & Salmon, J.W. (2010). Comparison of herbal medicines regulation between China, Germany, and the United States. *Integrative Medicine: A Clinician's Journal, 9*(6), 42-49.

Lorenzo Ginori, J.V. Por una medicina natural y tradicional científica y revolucionaria. Retrieved from http://www.juventudtecnica.cu/Juventud%20T/2012/la%20opinion/paginas/medicina%20revolucionaria.html

Makary, M. (2012). How to stop hospitals from killing us. *Wall Street Journal* September 22, p. C1.

Manasse, H.R. (1989). Medication use in an imperfect world: Drug misadventuring as an issue of public policy, part 1. *American Journal of Healthcare System Pharmacists* 46, May, pp. 929-944.

Manual de Normas y Procedimientos en Farmacia Comunitaria (2005). Dirección Nacional de Farmacia y Óptica; Ministerio de Salud Pública de Cuba.

Martinez-Sanchez, A.M. (2010). Pharmacy education in Cuba. *Pharmacy World & Science, 32*(6): 696 – 700. doi: 11007/s11096-010-9434-5.

Martinez-Sanchez, A.M. (2011). Teaching patient-centered care to pharmacy students. *International Journal of Clinical Pharmacy, 33*(1): 55-57. Doi: 10.1007 / s1109 6 -010-9 456-z.

Martinez Sanchez, A. (2011). Bachelor of pharmacy degree in Cuba: New educational challenges. *American Journal of Pharmaceutical Education*, *75(*1), 13d.

Mateu, L., González San Miguel HM, Sedeño C. (2005). Observatorio farmacéutico: conocer y transformar. Rev OFIL 15 (4): 33-38. Retrieved from http://revistadelaofil.org/Articulo.asp?Id=54

Millman, J. (2011, January 15). New prize in cold war: Cuban doctors, *Wall Street Journal*, p.1

Ministerio de Salud Pública (2000). Área Medico-Farmacéutica. Centro para el Desarrollo de la Farmacoepidemiología. Estrategia de la farmacoepidemiología y de la farmacia principal municipal (FPM).

Ministerio de Salud Pública de Cuba (2005). Manual de Normas y Procedimientos en Farmacia Comunitaria. Dirección Nacional de Farmacia y Óptica. Havana, Cuba. http://www.sld.cu/galerias/pdf/sitios/revfarmacia/manual_normas_y_procedimientos._farmacia_comunitaria._2005.pdf.

McNeil, D. (2012, May 8). A regime's tight grip on AIDS. *New York Times*, D1, D4.
Mole, B.M. (2012, September 10). Rethinking herbal medicine: A physologenetic study of traditional plant remedies could aid drug development, *The Scientist. R*etrieved from http://the-scientist.com/2012/09/10/rethinking-herbal-medicine/
Nicas, J. (2011, October 24). Airlines rev up for flights to Cuba. *Wall Street Journal*, p. B1.
Noel, J. (2012, February 12). Getting to Cuba. *Chicago Tribune*, Travel Section, p. 8.
Padron L. Country presentation. Presented at the WHO workshop on traditional and indigenous medicine in the Americas, Guatemala City, Guatemala, 18–23 March 2001.
Pagliccia, N., & Alvarez Perez, A. (2012). The Cuban experience in public health: Does political will have a role? *International Journal of Health Services, 42*(1), 77-94.
Pan American Health Organization. (1986). *Health conditions in the Americans, 1981-1984* (scientific publication No. 500). Word Health Organization, Washington, DC.
Pan American Health Organization. (2007). Revista Panamericana de Salud Publica/Pan American Journal of Public Health "Special Issue on Primary Health Care in the Americas" (OP-E-177).
Quintana Carlos, A., Breve reflexión acerca de las seudomedicinas. Retrieved from http://www.juventudtecnica.cu/Juventud%20T/2012/la%20opinion/paginas/brev e%20reflexion.html
Reed, G. (2000). Challenges for Cuba's family doctor-and-nurse program. *MEDICC Review* 2(3). Retrieved from http://www.medicc.org/publications/medicc review/II/primary/sloframe.html
Researcher finds the use of traditional, natural medicines offers economic benefits. (2012, July 31). Retrieved from http://www.medicalnewstoday.com/releases/248441.php
Ramakant, B. (2012). Sea-aids Spotlight: Translating clinical efficacy into public health. Retrieved from http:// http://www.citizen-news.org/2012/08/looking-beyond-phase-iii-trials-in-hiv.html
Roemer, M. (1993). Primary health care and hospitalization: California and Cuba. *American Journal of Public Health*, 83(3), 317-318.
Salmon, J.W.(1996, December 8). Personal communication, Ministry of Pharmaceutical Industry, Havana, Cuba
Sanchez, A.M. (2010). Pharmacy education in Cuba, *Pharmacy Word Science, 32*(6), 696-700. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/20842528
Sakthong P. (2007). Comparative analysis of pharmaceutical care and traditional dispensing role of pharmacy. *Thailand Journal of Pharmacy Science, 31*, 100-104.
Sansó, F. Prestar la máxima atención al desarrollo de la medicina natural y tradicional. Retrieved from http://lcsilva.sbhac.net/Otros/Debate%20MNT/32.Prestar_la_maxima_atencion_al_des arrollo_de_la_MNTl---%20Ms.%20Sc.Felix_Sanso_Sobertas.pdf
Sweig, J. (2009). *Cuba: What everyone needs to know*. New York, NY: Oxford University Press.
The Healthy Home Economist (2012, January 11). Homeopathy halts Cuban epidemic better than vaccines. [Blog post]. Retrieved from http://www.thehealthyhomeeconomist.com/homeopathy-halts-cuban-epidemic-better-than-vaccines/
University of Illinois at Chicago, (1996, January). The Health Care System of Cuba: Report of a Delegation, Chicago, IL.
United States Department of Agriculture, Office of Global Analysis. (2008). *Cuba's Food & Agricultural Situation Report.* Washington, D.C. Retrieved from http://www.fas.usda.gov/itp/cuba/cubasituation0308.pdf
Volpato, G., Dodinez, D., Beyra, A., & Barreto, A. (2009). Uses of medicinal plants by Haitian immigrants and their decendents in the Province of Camaguey, Cuba. *Journal of Ethnobiology and Ethnomedicine*, *5,* 16, doi: 10.1186/1746-4269-5-16
(Web reference: Matrícula de la Escuela Latinoamericana de Medicina en Cuba llega a los 10 000 estudiantes. http://www.cubadebate.cu/noticias/2010/03/16/matricula-de-la-escuela-latinoamericana-de-medicina-en-cuba-llega-a-los-10-000-estudiantes (Accessed 09 October 2012).

World Health Organization. (2008). Cuba's primary health care revolution: 30 years on. *Bulletin of the World Health Organization*, (86)5. Retrieve from http://www.who.int/bulletin/volumes/86/5/08-030508/en/index.html
World Health Organization. (2012).Biotechnology unveils secrets of Chinese medicine. *Bulletin of the World Health Organization.* Retrieved from http://www.scidev.net/en/health/traditional-medicine/features/biotechnology-unveils-secrets-of-chinese-medicine--1.html
World Health Organization. (2001). Legal status of traditional medicine and complementary/alternative medicine: A world wide review. Retrieved from www.who.int/medicinedocs/en/d/Jh2943e/
World Health Organization (2007). Country Cooperation. Strategy. At a glance. Retrieved from http://whqlibdoc.who.int/hq/2009/WHO_DGR_CCO_09.03_Cuba_eng.pdf
World Health Organization. (1975). Cuba's health care system. In V. Djukanovic & E.P. Mach (Eds.). *Alternative approaches to meeting basic health needs in developing countries, a joint UNICEF/WHO study* (pp. 50-57). Geneva: Author.
World Health Organization (2000). *General guidelines for methodologies on research and evaluation of traditional medicine*. Geneva: Author. Retrieved from http://whqlibdoc.who.int/hq/2000/WHO_EDM_TRM_2000.1.pdf
WHO Commission on Social Determinants of Health (2007). The social determinants of health: Developing an evidence base for political action. Final Report of the Measurement and Evidence Knowledge Network. Geneva.
WHO Commission on Social Determinants of Health (2008). Closing the Gap in a Generation: Health equity through action on the social determinants of health, Final Report. Geneva.
www.professionalsabroad.org. For further information on APHA health study tours of Cuba.
Yu Fang, Shimin Yang. (2011). Pharmacists' perception of pharmaceutical care in community pharmacy: a questionnaire survey in Northwest China. *Health & Social Care in the Community 19*(2): 189–197 doi: 10.1111/j.1365-2524.2010.00959.x.

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