
# Background Paper

# Offshore Education in the OECS

FINAL

Prepared for The World Bank
by Swedish Development Advisers AB

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Table of Content

Abbreviations

| | |
|---|---|
| AAMC | Association of American Medical Colleges |
| AMA | American Medical Association |
| COGME | Council on Graduate Medical Education |
| CACMS | Committee on Accreditation of Canadian Medical Schools |
| ECFMG | Educational Commission for Foreign Medical Graduates in the US |
| FAIMER | Foundation for Advancement of International Medical Education and Research |
| FSMB | Federation of State Medical Boards of the US |
| GDP | Gross Domestic Product |
| GMENAC | Graduate Medical Education National Advisory Committee |
| IMG | International Medical Graduates |
| LDC | Less Developed Countries |
| LCME | Liaison Committee on Medical Education |
| M.D. | Medical Doctor |
| MSc | Master of Science |
| NBME | National Board of Medical Examiners |
| NCFMEA | National Committee of Foreign Medical Education and Accreditation in the US |
| OECS | Organization of Eastern Caribbean States |
| PBL | Problem Based Learning |
| PhD | Doctor of Philosophy |
| WHO | World Health Organization |
| USMLE | United States Medical Licensing Examination |

## Summary and Conclusions

The offshore medical schools in the Caribbean are unique in that they cater primarily to foreign (North American) students, wishing to practice medicine in the US and Canada. The main characteristics of the offshore medical schools as compared to a US medical school are:

| | US and Canadian Medical Schools | Offshore Medical Schools |
|---|---|---|
| Educational offering | Offer several degrees and subjects over two terms per year. | Specialized in the Medical Doctor (M.D.) degree. |
| Flexibility and compressed academic calendar | Offer instruction during two semesters per year and it takes between six and seven years to complete an M.D. program. | Offer instruction during three semesters per year. The students can complete their M.D. degree and enter a residency program already after four to five years. |
| Accreditation | Medical programs must comply with standards established by LCME in the US or CACMS in Canada. | Accreditation rules and regulations in many Caribbean countries differ compared to the LCME standards an each school is accredited by the national accreditation agency. |
| Market Orientation | Offer a broad range of subjects and degrees to both primarily local state residents. | Focus on attracting mainly North American students wishing to practice medicine in North America. |
| Faculty | US and Canadian medical schools have a strong focus on research, for which they receive state funds. Research is also seen as a requisite for maintaining the competence of the faculty. The average student to teacher ratio of a US medical department is 3,4:1. | The student to teacher ratio ranges between 9:1 and 13, which is more at par with liberal arts subjects. This reflects the focus on teaching and the limited research that is done in offshore medical schools. |
| Fees | Fees at private US universities and for non-state residents are about USD 30,000 per year. The tuition cost of a six to seven year M.D. degree would be about USD 180,000 to 250,000 | Tuition fees at offshore medical schools range from USD 10,000 to 40,000 per year. The tuition cost of a five-year M.D. program would be USD 50,000 to 200,000. |

The recent increase in the number of offshore medical schools starting instruction in the Caribbean has been significant. The main reasons for starting an offshore medical school in the Caribbean are:

*Unsatisfied demand for graduate medical education in North America* – there is a vast number of applicants to US and Canadian medical schools that are not accepted despite high grade point averages. Statistics show that there are currently two applicants to each accepted student in US medical schools and more than three to Canadian first year positions. The offshore schools thus have a large pool of students to chose from, a situation that is likely to prevail in the medium-term.

*Availability of placements for M.D.s* – There are strong indications that there is an overall shortage of physicians in the US and in Canada. This shortage is significant in rural areas and metropolitan centers and in certain specialties. The students of the offshore medical schools are eligible to participate in residency matching programs, where there is an over-supply of residency positions, after which graduates can relatively easily gain positions as physicians.

*Different sets of educational standards* – in several of the OECS countries the regulations and standards surrounding the establishment of medical schools are less rigorous than in the US. Medical schools in the Caribbean are not required to do research. At the same time as basic and specialized research is a manner of maintaining and furthering the competence of teachers, it is a costly activity that increases overheads and the need to employ many faculty members. The standards regarding governance structure, educational monitoring systems and procedures and standard of facilities are also less demanding which means less initial investment by the schools.

*Profitability of Basic Science Teaching*
It is significantly less expensive and easier to establish an offshore medical school in the Caribbean. The low threshold for founding offshore schools is mainly due to the following:

- Lower standards for accreditation enforced by local accreditation agencies,
- Medical or basic research is not required for accreditation nor carried out voluntarily by the offshore schools, and
- Use of US and Canadian teaching hospitals for clinical training.

The offshore medical schools only carry out basic science instruction and rely on US and Canadian medical schools to provide clinical training and residency positions as well as research. The profitability of the offshore schools is likely to be high, about 30 percent profit margins, as they are not required to invest in research facilities or carry research staff.

*Encouragement of local governments* – The benefits to the local economy from the establishment of an offshore school catering mainly to foreign students from North America are potentially very large. The main benefit is the amount spent by students and faculty on the islands which could be up to eight percent of GDP. Local governments are therefore interested in assisting the schools in setting up by offering tax holidays, reduced import duties etc. However, the impact of increased taxes etc on the national budget are negligible compared to the sums spent by students and teachers on the island. Nor does taxes and import duties seem to have a significant impact on the offshore school's profitability.

***Recommendations***

The investment climate in all the OECS countries is relatively similar. It would appear that tax breaks and import duty exemptions are not defining factors when choosing where to establish an offshore medical school. The main issues for the offshore schools is how to

attract the North American students. Two of the most important factors determining an offshore school's attractiveness to students are:

1. If students of the offshore schools are allowed to participate in the US federal student loan program (FFEL), and
2. If the offshore school has been accredited by US state medical board.

The first factor depends on the accreditation regime of the country where the offshore school is located. If the national accreditation agency has been deemed to have comparable accreditation rules as in the US, students of accredited schools in that country are allowed to participate in the preferential student loan program.

The second factor depends on the offshore school itself, its teaching standards, governance, facilities and faculty. Accreditation by a US medical board is not necessary in order for students of an offshore school to participate in the US or Canadian residency matching program, but allows students to also compete for especially sought after residency positions in for example the state of New York.

The two largest offshore schools in the Caribbean, Ross University and St Georges University, are evidence that these two factors are important. They have the largest number of applicants each year, have student bodies of 1,000 and 2,100 students respectively and have been accredited by the local accreditation agencies in addition to the New York State Medical Board. They are also the oldest offshore medical schools with more than 20 years of graduates and have invested substantially in teaching quality over time.

The issue of teaching quality standards and accreditation is a deciding factor for the survival of an offshore school and is likely to become more important if and when the US and Canadian education departments decide to increase medical program positions at North American Universities. It is likely that with increased choices, North American medical students would choose recognized offshore medical schools that can offer benefits in how to finance their studies as well as in increased choices when entering the residency positions.

The national Caribbean governments should strive to establish accreditation rules that are comparable to those in the US and Canada, and to improve the competence of their accreditation agencies in order to enforce the educational standards. Each national government could establish their own accreditation agencies and educational standards. It could also be done the American way, by establishing an independent non-governmental organization that would be recognized by all the OECS countries' governments. This institution would be entrusted with the task of accrediting offshore medical schools in the OECS according to an agreed set of standards. If properly established, the second alternative would mean that less involvement of national governments in accreditation and increased transparency.

It is also recommended that the national governments jointly review their rules governing investments by offshore schools. Corporate income tax and the level of import duties are not deciding factors to investors considering investing in offshore schools. A common per student tax could be established that in turn could be used to finance the activities of a OECS accreditation agency.

# 1. Introduction

***Background***

The World Bank has, as part of a study on Growth and Competitiveness in the Eastern Caribbean States (OECS), commissioned Swedish Development Advisers AB (hereinafter called the Consultant) to carry out a study on offshore education in the Caribbean. The objective of the study is to "...prepare a case study on the offshore education sector in the Caribbean to review the potential for, and constraints to, the further development of this sector...".

The study should review the following areas:

- characteristics of the offshore education market in the Caribbean,
- economic impact of offshore education in the Caribbean,
- rational for establishing offshore schools and their future potential,
- governmental policies and enabling environment, and
- linkages to other sectors of the economy.

***Methodology***

A survey was carried in late June 2004 to gather information about the offshore schools. Out of a total of 13 offshore medical and veterinary schools in the OECS countries and 25 medical schools in the Caribbean, some eight offshore medical schools and one veterinary school were visited. The nine schools surveyed had some 5,000 students in total, which represents more than 90 percent of the estimated student body of offshore schools in the OECS countries. In addition, World Bank staff visited one offshore school in Belize.

A brief questionnaire was sent out prior to visits to the campuses or meetings with top management of the schools. During each interview an interview guide was used, which can be found in Appendix 1.

***This Report***

This report presents the findings from nine interviews in addition to statistical data on the medical students and professions in the United States (US) and macro economic data on the countries visited.

Section two of this report presents the characteristics of the offshore schools surveyed. The following section analyzes and estimates the economic impact these schools have in each of the countries where they are located, using a value added approach. The fourth section discusses the future of the schools and the determinants for growth.

2. Offshore education

## 2. Characteristics of Offshore Medical Schools in the Caribbean

### *Medical Schools in the Caribbean*

In the Caribbean there are some 37 medical schools offering programs leading to an M.D. degree.[1] A complete listing of all these medical schools is given in Appendix 2 and summarized in the table below.

| Country | Number of medical schools/departments | Estimated student body |
|---|---|---|
| Anguilla | | |
| Antigua and Barbuda | 2 | 240 |
| Dominica | 1 | 1,100 |
| Grenada | 1 | 2,135[2] |
| Montserrat | 1 | 0 |
| St Kitts and Nevis | 3 | 1,019 |
| St Lucia | 4 | 350 |
| St Vincent and the Grenadines | 1 | |
| **Total OECS** | **13** | **~5,300** |
| | | |
| Netherlands Antilles | 5 | 600-700 |
| Trinidad and Tobago | 1 | 1,000 |
| Jamaica | 1 | 200 |
| Guyana | 2 | 200 |
| Dominican Republic | 9 | 10,000-15,000 |
| Belize | 6 | 300-500 |
| **Total other Caribbean** | **24** | **12,300-17,600** |
| | | |
| *TOTAL* | **37** | **17,600-23,000** |

There are an estimated 17,000 to 23,000 medical students in the Caribbean. Of these, some 5,300 study in one of the OECS countries and the remainder in mainly the Dominican Republic.

The Dominican Republic has some nine universities with medical faculties. These universities offer education mainly in Spanish and some have instruction also in English. The majority of the medical students in the Dominican Republic are nationals of the country, less than 40 percent of the student body is composed of foreign students. The medical faculties offer programs with two or three semesters and fees are low USD 500 to 1,000 per semester for national students and slightly more for foreign students.

The Netherlands Antilles has five medical schools and an estimated 600 to 700 students. One of the largest offshore medical universities, American University of the Caribbean is located

[1] These institutions are registered with either the World Health Organization (WHO) or with the Foundation for Advancement of International Medical Education and Research (FAIMER) or both.. FAIMER is a non-profit foundation of the Educational Commission for Foreign Medical Graduates (ECFMG). The ECFMG assesses the readiness of international medical graduates (IMGs) to enter residency or fellowship programs in the US.

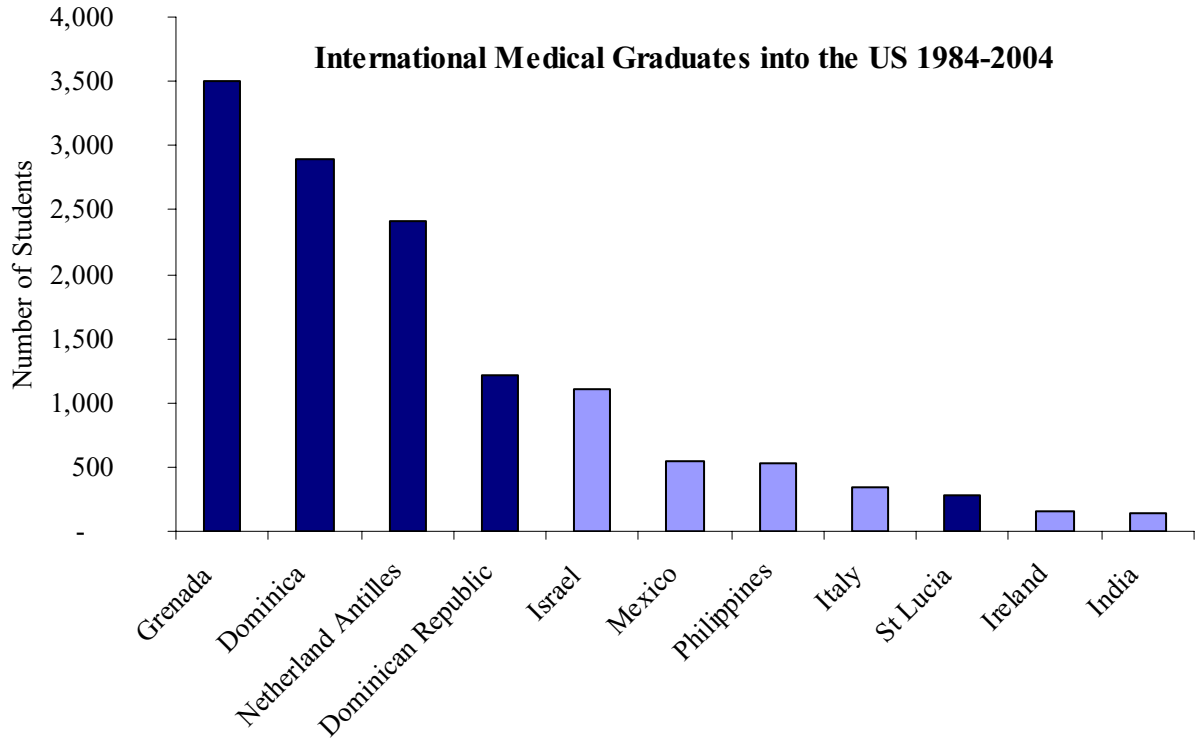
[2] St George's University on Grenada has a total of 2,646 students enrolled of which 2,135 are studying the M.D. program. The remainders are studying pre-medical (65), liberal arts bachelor programs (101) PhD or MSc programs (52), and veterinary programs (293).

there. Fees of schools in the Netherland Antilles range from USD 13,000 to 20,000 per semester and medical programs are taught in trimerster.

The University of the West Indies (UWI) has two campuses, one in Trinidad and Tobago and one on Jamaica. In Trinidad, the medical faculty has some 1,000 students enrolled and about 150 new students each year. Of the new enrolments 100 are from the island and some 50 are from other Caribbean states and abroad. Students come from North America, Asia and more recently from Botswana. The UWI has its own teaching hospital attached to the faculty of medicine as well as cooperation with two general hospitals on the islands. The students graduate with M.D. degrees that allows them to practice medicine in the Caribbean. The medical program at UWI is taught on a Problem Based Learning (PBL) basis over two semesters per year. Fees for a foreign student are about USD 18,000 per year. The medical faculty is self financing i.e. UWI received state funds for national students which is supplemented by the fees from international students.

The are five offshore medical schools in Belize, offering M.D. programs in English. The schools are small, the largest one has 200 students, others 10 and 18 students. The academic program for most of the schools is over three trimesters and fees range between USD 12,000 and 18,000 per year.

A majority of the international medical graduates entering the US have, since 1984, been from the Caribbean. St George's University on Grenada has had some 3,500 graduates entering residency programs in the US, closely followed by Ross University on Dominica. In total, some 10,296 of the 13,019 international medical graduates entering the US have come from the Caribbean medical schools and 9,078 have been graduates of offshore medical schools.



International medical graduates from other countries are all graduates from traditional universities such as Sackler School of Medicine with the Tel Aviv University in Israel, or Universita di Bologna in Italy.

***Surveyed Offshore Medical Schools***

The nine schools surveyed as part of this study varied in size and age.

| Country | School visited | Year instruction began | Degree on offer | Current # of students on campus |
|---|---|---|---|---|
| Antigua and Barbuda | American University of Antigua | 2004 | MD | 40 |
| | University of Health Sciences Antigua | 1983 | MD+ | 200 |
| Dominica | Ross University School of Medicine | 1979 | MD | 1,100 |
| Grenada | St George's University School of Medicine | 1977 | MD+ | 2,646 |
| St Kitts and Nevis | Medical University of the Americas | 1998 | MD | 240 |
| | Windsor University Medical School | 2000 | MD | 125 |
| | Ross University School of Veterinary Medicine | 1982 | vet | 500 |
| | International University of Health Sciences | 1998 | M.D. | 154* |
| St Lucia | Spartan Health Sciences University | 1980 | MD | 100 |
| **TOTAL** | | | | **5,105** |

* This school offers mainly on-line distance learning education and has only four full-time students on campus.

The oldest schools, St Georges University on Grenada and Ross University on Dominica, began instruction in 1977 and 1979 respectively and each of these two currently has a student body of more than 1,000 students. This can be compared with the US where the average size of a medical school is about 500 students[3]. These two schools are thus large also compared to their US competitors. St Georges University aims to become a comprehensive university. The school's main offering is the M.D. degree but it also offers programs leading to a bachelor degree, MSc and PhD programs and a veterinary program. Non-medical courses are mainly attended by Caribbean students. Ross University is owned by DeVry Inc., one of the largest publicly held, higher education companies in North America. Ross University has two separate campuses in different countries: the School of Medicine on Dominica and the School of Veterinary Medicine on St Kitts. Ross University focuses mainly on medical education.

The three schools that started during the 1980s currently have student bodies of about 200 to 500 students. These schools are strongly focused on medical education although the two medical schools offer some pre-med training to help non-science majors. The University of Health Sciences Antigua (UHSA) was started by local entrepreneurs and international physicians. It was set up to cater mainly to Caribbean students wishing to obtain an M.D. degree, however 65 percent of their current students are residents of the US or Canada. The UHSA offers a number of specialized M.D. degrees as well as dentistry and undergraduate degrees. The school's academic calendar includes two semesters per year with a summer break.

Spartan Health Sciences University on St Lucia began instruction in 1980. It has some 100 students studying for the M.D. degree. A majority of the students are second-generation American immigrants and about 25 percent already have a medical degree (nurse, physician assistant, paramedic) and wish to practice as a physician in the US.

[3] AAMC Data Book 2004.

Two of the visited schools began instruction in 1998. These are still relatively small in size with less than 250 students. The main focus of the International University of Health Sciences on St Kitts is internet based distance education. It has recently completed an IT system to allow its students to study from home (primarily in the US) although all students are required to spend a minimum of one month per year at the small, rented campus on St Kitts. The school is planning to take on a larger number of full-time students during 2004 and to build its own campus on the island. The Medical University of the Americas is located on its own campus on the island of Nevis. It currently has some 240 students on campus and focuses on teaching practical medical skills to its students.

Two of the visited schools started in 2000 and 2004. Windsor University is a small school with some 125 students. The campus consists of two rented buildings and students are housed nearby. The American University of Antigua began instruction in January 2004. It was started by a group of physicians and has employed a dean with extensive experience from managing an offshore medical school. The school currently has only 40 students but expects to have some 200 students by the end of the year.

***Offshore vs. Traditional Universities***

Offshore education, also called transnational education can be defined in a variety of ways. The World Trade Organization (WTO) uses several definitions:

- Consumption abroad – where the student moves to the country of the supplier to receive education
- Cross-border supply – or distance education where the educational service is provided across borders but without the movement internationally of either student or the provider
- Commercial presence – where the provider establishes a presence in the country in which the student resides. Examples are twinning programs, franchising or offshore campuses
- Presence of natural persons – where the educator moves to the country of residence of the students to provide the service.

Offshore education is an industry that is growing rapidly, both as students chose to study abroad or with the help of new technology that allows more effective ways for distance education. In 2000, the export of US education and training services totaled USD 14 billion and ranked among the country's top five service exports. This puts the US among the top three global education exporters, the UK and Australia being the other two.[4]

The main type of offshore education is mainly provided by an institution in a developed country to students in developing countries. Australian universities were among the first to offer offshore education program in Hong Kong and Singapore and have since expanded to other parts of Asia. Most of the transnational education is related to business subjects (MBA, information technology, computer science and languages. A majority of the courses are for continuing education qualification, and not first degree.

The main factors that determine demand for transnational education world-wide are:

[4] Stephen Adam, University of Westminster, Transnational Education Project Report and Recommendations, Confedeation of European Union Rectors' Conferences, March 2001.

- Cost of the education
- Brand name of the provider
- Value-added from the program e.g. better job opportunities, access to jobs abroad etc.
- Reputation, quality and perceptions of the program,
- Convenience and nature of delivery e.g. a local campus, distance learning via the internet etc
- The level of competition locally i.e. the dissatisfaction/failing of the local traditional education providers.

The determinants of supply of offshore education are

- the cost of production of educational programs that fall with increasing scale. For offshore courses taught abroad a franchise or licensing fee can be charged thus increasing the marginal profit without significantly increasing the cost of delivery.
- the need for universities to supplement their income. In the UK for example, foreign students pay more than double what the schools receive in state funding for each student.

**George Soros' Open Society Foundation in Romania**
In 1990, George Soros established the Soros Foundation for an Open Society with the purpose of developing programs that would help Romania in its transition from a closed to an open society.

One of the programs that the foundation operates is a scholarship program that allows Romanian students, scholars and professionals to study abroad. The purpose of the scholarship program is to train future scholars in social sciences and humanities and to help them study abroad in subjects unavailable or underrepresented in Romania. The scholarship program is supported by a number of national governments such as the British, the US, the French and the German governments. Each year some 1,000 students study in some 30 countries through this program

The offshore medical schools in the Caribbean are quite different in comparison to the definition of transnational education. The supply of Caribbean offshore education would appear to be determined mainly by profit and the demand on a situation of under-supply of medical education in the US and Canada. The Caribbean offshore schools were established to cater almost exclusively to foreign students and provide classroom-based (didactic) teaching in a country other than the students own.

Caribbean offshore schools differ from traditional medical schools in a number of ways:

- educational offering,
- flexibility of the academic calendar
- accreditation,
- market orientation,
- faculty, and
- fees.

**Offshore Education in New Zeeland**
New Zeeland has become an important provider of offshore education in Asia. In 2001, some 17 of a total of 36 public tertiary education providers were involved in the delivery of offshore programs. These higher education providers focused main on distance education and on campus-based education offshore.

New Zeeland's offshore education is focussed primarily on South-East Asia (Malaysia and Singapore being the main markets), China/Hong Kong and the Pacific (Australia).

The types of education offered varied about one third was post-graduate education, one third was under-graduate or bachelor programs and one third was post-secondary sub-degree certificates. The main fields of study were Business Administration, Computer Science, Management and marketing, and Specialized medicine.

In total some 1,500 students were enrolled in offshore education offered by New Zeeland tertiary education providers with about 35 students in each course.

**Educational Offering**

The offshore medical schools in the Caribbean provide one main educational product: an academic program that leads to a Medical Doctor (M.D.) degree. The curriculum is basically the same in all the surveyed schools: the degree is awarded upon the successful completion of the "Basic Science Curriculum" and "Clinical Rotations".

*Basic Science Curriculum*

The study of basic sciences for a medical student includes subjects such as

- Anatomy and cell biology
- Biochemistry
- Medial genetics
- Neuroscience
- Microbiology
- Behavioral science
- Pharmacology and
- Pathology.

These subjects are taught through lectures, group work and individual assignments. The students of the offshore schools are in most cases required to take these subjects on campus following a schedule of classes established by the school's academic management.

The students are required to complete between 60 and 112 weeks of basic sciences, depending on the academic calendar of each school. In two schools, the Problem Based Learning (PBL)[5] method was used as a complement to the traditional recall-based teaching method.

Upon completion of the basic science curriculum eight of the nine offshore schools require students to take an exam that is administered by the school itself. If and when students pass this test, they are allowed to go on to take the United States Medical Licensing Examination (USMLE) step 1 exam.

[5] Problem Based Learning was first developed and tested in order to help medical students improve their analytical skills and not only rely on recalling text book answers or by comprehension. It is a curriculum delivery system that helps develop problem-solving skills and is based on real world problems as opposed to case studies.

**USMLE**
The Unites States Medical Licensing Examination Secretariat issues and administers the testing of medical students in the US. It is sponsored by the Federation of State Medical Boards (FSMB) of the United States and the National Board of Medical Examiners (NBME). Results of the USMLE are reported to medical licensing authorities in the US for use in granting the initial license to practice medicine.

US and Canadian students of non-US accredited foreign medical schools are eligible to take USMLE steps 1 and 2 if the schools they have graduated from are listed with the Foundation for Advancement of International Medical Education and Research (FAIMER) or with the World Health Organization.

There are three steps of the USMLE which contribute to assessing a physician's ability to apply knowledge, concepts and principles and to demonstrate patient-cantered skills. Step 1 is taken after completion of the basic science curriculum and assesses understanding, knowledge and ability to apply concepts of basic science. It is a computer based multiple choice test. Step 2 of the USMLE comprises two parts; Clinical Knowledge were the student must be able to interpret tables, laboratory results etc. and Clinical Skills where the students are faced with a standardized patient and will demonstrate clinical skills. This includes taking relevant medical history, performing physical examination, forming a diagnosis etc. Step 2 is taken after two add ional years of clinical rotations where the medical students work with and observe practicing physicians in teaching or other hospitals

Step 3 of the USMLE can be taken only once the students have graduated, obtained the M.D. degree and have passed USMLE steps 1 and 2. This exam tests the student's ability to apply medical knowledge and understanding of biomedical and clinical science that is needed for unsupervised practice of medicine.

*Clinical Rotations*
When the students have passed the USMLE step 1 exam they can enter a clinical rotation program with an approved teaching hospital or with another hospital offering internship positions. During their internship, the students are apprentices and take classes as well as observe physicians at work. Courses taught include Pediatrics, Psychiatry, Obstetrics/Gynecology and Family Medicine. These are taught by teachers at the teaching hospital or by members of the offshore schools' faculty.

Seven of the nine interviewed schools had standing relationships and cooperation agreements with hospitals in the US, Canada and in some cases in the UK. These schools organized the clinical rotations, held classes and administered exams. The students paid tuition fees to the medical school which in turn pays a fee for each student to the hospital where the student carries out the internship.

The internship program takes an additional two years, equivalent to between 80 to 100 weeks of instruction. Once the students have completed their clinical rotations they take the USMLE Step 2 exam. Upon passing this exam, the students receive their M.D. degree.

**Medical Council of Canada Examinations**
The Medical Council of Canada (MCC) administers the Evaluating Examination and the two steps of the Qualifying Examination in Canada. The MCC establishes the qualification which is recognized by the 13 medical licensing authorities in Canada and is one of the requirements for the issuance of licenses to practice medicine in Canada.

All graduates from foreign medical schools (except schools that have been accredited by the Committee on Accreditation of Canadian Medical Schools or the Liaison Committee on Medical Education of the U.S.A. must take the Evaluating Exam. A pass in this exam is a requirement for entrance to the Qualifying Exams.

The Evaluating Exam is taken once the student has graduated and received the M.D. degree or are in their final clinical year of medical school and expected to graduate within nine months.

The Qualifying Exams are taken upon graduation from a Canadian or LCME accredited medical school and by international students who have passed the Evaluating Exam and graduated from an WHO or FAIMER listed medical school.

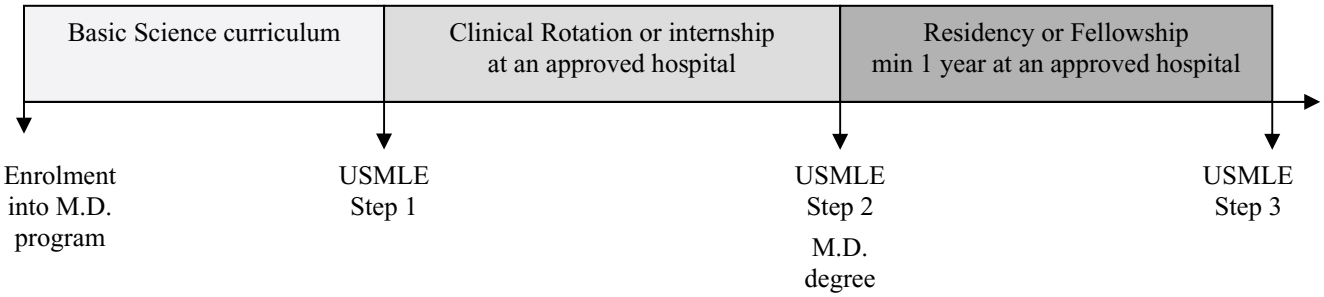
*Residency*
In order to practice medicine in the US, graduates of medical schools must also complete a residency program and the USMLE step 3 exam. During the residency program the graduates practice medicine under the supervision of more experienced physicians. If a medical graduate wishes to specialize, this is done by entering a specialty residency program.

The matching of medical graduates to residency positions is done once per year through the National Resident Matching Program in the US. In Canada, the Canadian Resident Matching Service matches medical students in two steps (called iterations) with national graduates offered residency positions in the first iteration and foreign graduated in the second.

Over the past three years, the number of residency positions on offer by US hospitals has been stable at around 20,000 positions per year. Of these, US medical school graduates fill some 13,500 positions, or 65 percent. Other non-US or non-Canadian graduates that take up residency positions on offer amount to about 2,300 students. In total only about 90 percent of all residency positions are filled each year.[6] In Canada, the number of residency positions on offer has ranged around 1,200 per year over the past four years. Of these less than three percent are left unfilled after two iterations[7].

[6] AAMA Data Book 2004.
[7] Canadian Resident Matching Service.

The steps needed in order to become a practicing physician in the US are simplified and illustrated below.




At a typical US or Canadian medical school, the time needed to be licensed to practice medicine is a minimum of seven years. US medical schools typically have two semesters of between 16 and 20 weeks each per year with a summer break in between. Clinical rotations in hospitals are managed by the US and Canadian hospitals but follow a structured curriculum and take two to three years to complete. The time spent in a residency position, depends on the requirements of the medical licensing authorities in each state. The minimum is one year.

The main measure of the offshore schools' performance is the USMLE pass rate. The interviewed offshore schools showed pass rates as follows:

| | Number of schools |
|---|---|
| Pass rate 90% or above | 3 |
| Pass rate above 80% | 2 |
| Pass rate below 80% | 1 |
| Information not provided | 3 |
| Total | 9 |

Three of the schools had a pass rate of more than 90 percent. The highest reported pass rate was 95 percent. One school was too new to have yet had any students taking the USMLE exam and for two schools the information on pass rates was not divulged. One school, offered special tuition and evening classes to students on USMLE in order to help them pass the tests. In many cases the students of offshore medical schools take one semester off in order to study for the USMLE exams.

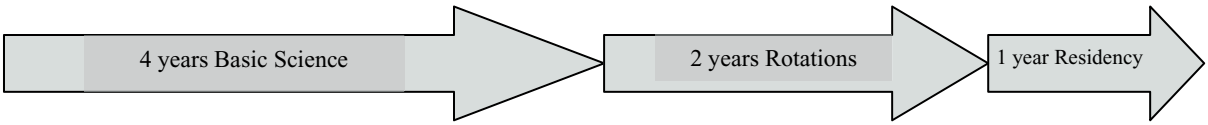
Some 95 percent of the students find employment upon graduation and passing the USMLE. They enter the residency matching program after which they, according to the offshore medical schools, have no problems finding employment.

**Flexibility of the Academic Calendar**

The academic calendar in most of the offshore schools starts in January, each year with enrolment of new students. They study for four months, when the second semester begins (usually in early May). At that time a new batch of first year students enter the school. The third semester, and when the third batch of students begin instruction, starts in September. The offshore schools thus have three intakes per year, instead of one in US medical schools and tuition all year around instead of allowing students to take a summer break. Students in the offshore medical schools can therefore shorten the time needed to study basic sciences and

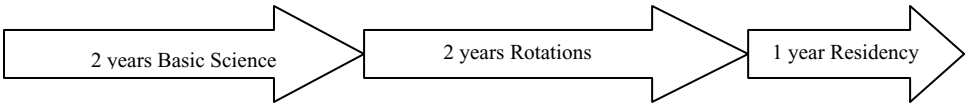
the M.D. degree program can be compressed into four or five years instead of the six to seven required in a US or Canadian medical school.

Time needed to become licensed as a US Medical School graduate




In the offshore schools the basic science curriculum is the same as in the US medical schools but due to the schools' trimester system the students can shorten the time needed for the basic science curriculum.

Time needed to become licensed as an offshore medical school graduate




**Accreditation**

There are two basic types of accreditation; institutional and programmatic. Institutional accreditation applies to an entire institution and indicates that each of an institution's parts contributes to achieving the institution's objectives. Programmatic accreditation applies to programs, departments or schools that are part of an institution.

In the US and Canada, there are no authorities that exercise national control over institutional accreditation. Each state (or province in Canada) supervises and sets standards for education and grants institutional accreditation. In New York for example, it is the New York State Medical Board that accredits medical schools. Students of schools accredited by the state medical board are allowed to enter the matching program and compete for residency positions in New York State.

In other states, passing the USMLE step 2 is enough to allow medical graduates to enter the residency matching program.

The Liaison Committee on Medical Education (LCME)[8], accredits medical education *programs* specifically. In Canada, the Committee on Accreditation of Canadian Medical Schools (CACMS) plays the same role as the LCME. The benefits of accreditation in the US and Canada are that most state boards of licensure (that license physicians) require that US and Canadian medical schools be accredited by the LCME or CACMS, as a condition for licensure of their graduates. Accredited schools' students are also eligible for participation in US federal student loan programs.

There is no central authority that accredits individual foreign medical schools or universities in the US or Canada. The role of the US National Committee of Foreign Medical Education and Accreditation (NCFMEA)[9] is to review standards used by foreign countries to accredit their respective medical schools, and determine whether those standards are comparable to those used to accredit US medical schools. The NCFMEA thus visits accrediting agencies in different countries to establish if the standards used are comparable. If the NCFMEA

[8] The LCME is a non-governmental organization that is recognized by the US Department of Education.
[9] The NCFMEA is a federal agency established through the Higher Education Amendments 1992.

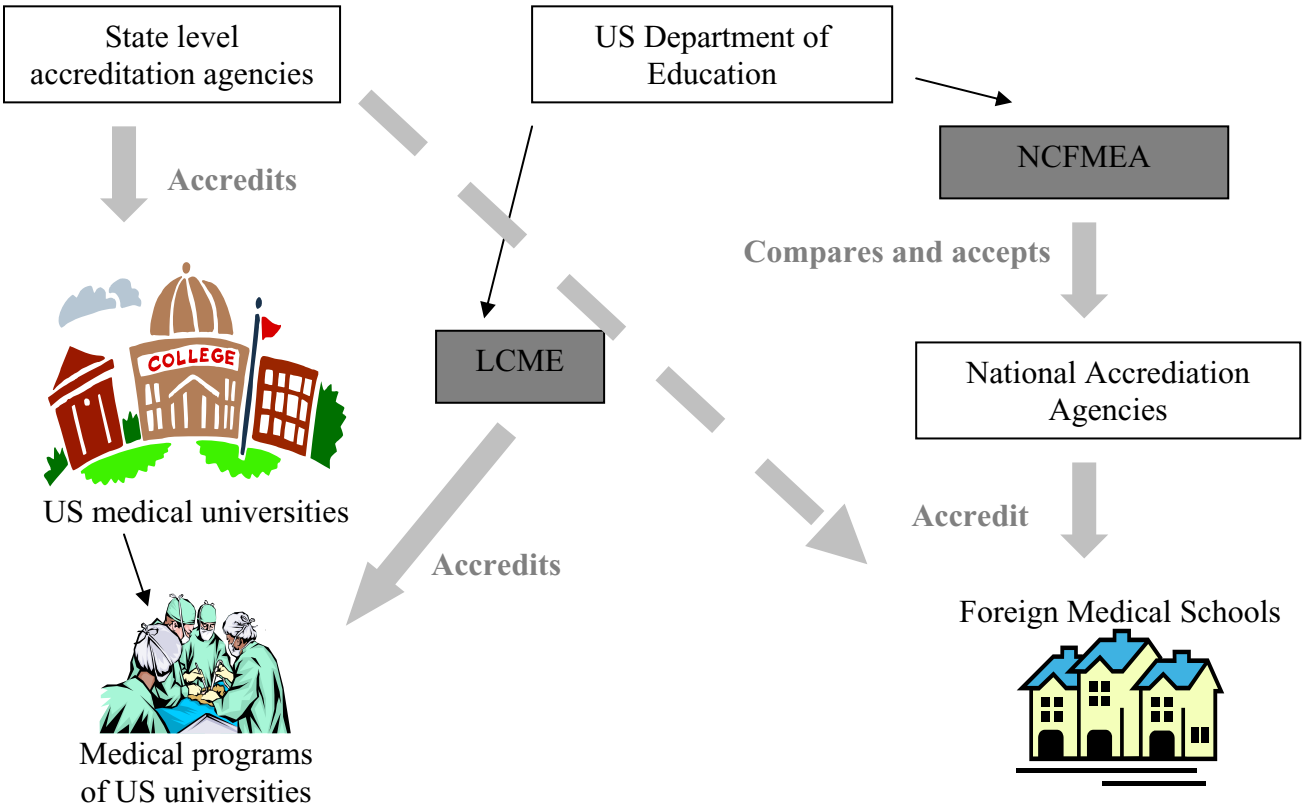
determines that a county's accreditation standards are comparable, then students of accredited medical schools in that country can apply for US federal loans. Only Canadian citizens are eligible to apply for the Canada Student Loans Program, a federal loan program.

**Accreditation by State Medical Boards**
New York and California are two of the states in the US that offer the largest number of residency positions each year. There is also tough competition among medical graduates to obtain positions here.

New York State and California State have established their own rules that govern who is allowed to seek a residency position in their states. The medical boards of these two states accredit medical schools in the US as well as abroad. Only students of schools that have been accredited by the medical boards in the respective state are allowed to seek residency positions. Not all states in the US carry out such accreditation of medical programs, instead many follow the recommendation of the NY and Californian Medical Boards, institutions that carry out their own accreditation.

Two of the offshore medical schools, St George's University and Ross University have been accredited by the NY medical board. These two schools regularly receive visits from the medical board and are required to comply with their regulations. This ensures that these schools maintain high teaching standards and also ensure that their students are allowed to compete for residency positions in this and other states in the US. To many offshore medical schools, this is seen as an important competitive advantage. Students of schools that have not been accredited by the NY or Californian medical boards can still enter the residency matching program, but would be allocated positions in other states.

The accreditation and acceptance rules are summarized below:



Currently the countries in the Caribbean that have been accepted by the NCFMEA as having comparable accreditation standards are:

- Cayman Islands,
- Dominica,
- Dominican Republic,
- Grenada,
- Monserrat,
- SABA,
- St Lucia and
- St Maarten.

The main difference between the offshore medical schools and US medical schools are the standards that the two types of schools need to reach. Local accreditation by Caribbean countries' accreditation agencies is, in many cases, not comparable to that of the LCME. Many of these countries' licensing institutions are recently established, have little experience from accrediting higher education let alone medical schools, and have limited basis for comparison, as there are only a few universities in the Caribbean.

The following summarizes the main standards required by the LCME and the typical situation in offshore medical schools.

| LCME Standards[10] | Offshore medical schools |
|---|---|
| Medical schools must be part of a university offering other graduate and professional degree programs. | The offshore medical schools are in many cases called universities but offer only one degree: M.D. |
| Medical schools should be part of a not-for-profit university. US medical schools receive their funding from various sources, federal and state funding, tuition fees, research grants and health services (through their teaching hospitals). The most important source of funds is that of health services.[11] | All surveyed offshore medical schools were for-profit organizations. They were organized as private companies with a for profit objective. All but one school was owned by private investors and individuals who had also contributed the initial capital needed to establish the school. Although the schools did not wish to divulge information about the initial capital invested, it is likely that this amount is relatively small as most schools started in small rented facilities and major investments were made only after a few years when the schools were able to use internally generated funds to buy land and build campuses. |
| The board responsible for oversight should be composed of persons with no personal or pecuniary interest in the operation of the school | The offshore medical schools surveyed were founded by individuals or by private companies who in seven out of nine schools remained on the board. The founders were either physicians and/or entrepreneurs. The day-to-day management of the schools was delegated to an executive dean (often a former physician having practiced in the US) hired by the board. |
| "Students should have the opportunity to participate in | None of the offshore schools surveyed had significant |

[10] Liaison Committee on Medical Education, September 2003, Standards for Accreditation of Medical Education Programs Leading to the M.D. Degree.

[11] In 2001, 50% of revenues for the US medical school programs came from medical services, 20% from federal research grants, 15 percent from other grants and gifts, 8% from state and local government budgets, 3% from tuition fees and 2% from other sources. AAMC Data Book 2004.

| LCME Standards[10] | Offshore medical schools |
|---|---|
| research …" | research facilities. Only one school had a small research facility and several schools emphasized the faculty's interest in teaching as opposed to research. |
| The M.D. degree program must include at least 130 weeks of instruction. | All the offshore medical schools had at least 60 weeks of Basic Science instruction and some additional 80-100 weeks of clinical rotations. |
| The LCME establishes what type of subject areas must be included in the Basic Science and Clinical Rotations curriculum. | The curriculum of the offshore medical schools appears to closely follow LCME standards. |
| A system for evaluating the students must be established. This system must measure knowledge, skills, behaviors and attitudes. | Evaluation systems in the offshore schools consist of final exams in eight of the nine schools. One school considered pass rates in the USMLE as sufficient to measure student performance and knowledge. Four of the schools analyzed had tutoring services for the students where they help students improve performance and study. |
| Medical schools must have a system to assist students in career choice and application to residency programs. | All but two schools helped organize clinical rotations. In two schools the students themselves organized their rotations. Only three schools had student placement services. |
| Medical schools must provide students with effective financial aid and debt management counseling. | Only three schools had this service available on campus to their students. In some cases the schools provided such advice and counseling on their web page. |
| The medical schools must provide health services and health insurance to the students and their dependants. | All but two of the schools had health clinics on campus, but health insurance is left to each individual student to arrange. |

The main differences between the US medical schools the and offshore medical schools are the for-profit focus and the emphasis on teaching as opposed to research.

**Market Orientation**

All the surveyed offshore medical schools focused primarily on attracting medical students from the US and Canada. On average, 84 percent of the students on campus were from North America, primarily the US. This sets the schools apart from other tertiary education institutions in the rest of the world. Tertiary education has traditionally been the responsibility of the public sector. Governments establish universities and support private tertiary education to encourage the population to study, to improve education levels, to support research activities etc.. Universities worldwide are therefore primarily focused on the national population while at the same time accepting and enrolling foreign students.

The offshore medical schools, however, have less than five percent of their students from the island and the remainder are mainly from North America. In all but one school the local students are on full scholarships, which are funded by the school. In two countries this is a requirement by the government that local students be fully sponsored. However, the scholarships only cover tuition and fees for the basic training, the cost of clinical rotations at a North American hospital should be covered by the students themselves.

The students of the offshore medical schools are also older than the average US medical school student. The average age is 27-30 years old as compared to 24 in US medical schools. This is due to the fact that about 50 percent of all the students in the offshore schools are on their second career. A majority of the second career students already have a medical degree or background as a nurse, paramedic, physician assistant etc. and have decided to go for an M.D. degree and practice medicine.

**Faculty**

Most of the teachers that are employed in offshore medical schools are foreign teachers, on average 97 percent of all teachers were foreigners and a majority had been educated in North America. All faculty members in all schools had at least an M.D. degree and many had PhD degrees.

The offshore schools depend primarily on full-time teachers and to a very limited extent on part-time teachers. In many cases the schools have visiting lecturers fly in to give a lecture on a specific subject each semester. Four of the schools depended solely on full-time staff for basic teaching. In the remaining five schools the full-time to part-time teacher ratio ranged between 2,3:1 to 5,4:1 part-time teachers.

The characteristics of the teachers as described by the schools are that they are often older, experienced physicians that have either practiced medicine in North America or M.D.s that have taught in North American medical schools and done research. The focus in the offshore schools is on teaching and there are no or very limited research opportunities for the faculty. The schools therefore employ those teachers that are content not to carry out research. The faculty also consists of younger physicians who for various reasons may feel the need to bring their families to live in the Caribbean for a period of time.

The surveyed offshore medical schools had a student to full-time teacher ratio of between 9:1 and 13 students per teacher. This is however, very high compared to US medical schools. The average student to teacher ratio is 3,4:1 in US medical schools[12]. This reflects the LCME requirement that teachers carry out research as well as teach.

Teacher compensation in offshore schools varies substantially between schools and depends on the teacher's academic qualifications as well as experience and specialty.

| | Average annual teacher salary at offshore schools (USD) | Total compensation of US teachers in basic sciences (USD)[13] |
|---|---|---|
| Antigua and Barbuda | 90,000 | |
| Dominica | 80,000 | |
| Grenada | 70,000 | 111,000-155,000 |
| St Kitts and Nevis | 36,000-50,000 | |
| St Lucia | 40,000 | |

Teacher remuneration varies between the offshore schools as well as between US medical schools and offshore schools. The older, well-established schools located on Dominica and Grenada recruited their teachers mainly from North America and the UK. The schools on St Kitts and St Lucia had a large number of Cuban and Asian teachers (from India and Pakistan).

[12] Association of American Medical Colleges: AAMC Data Book, January 2004.
[13] Data from 2003, AAMC Data Book 2004.

A majority of the faculty at the offshore schools have the position of associate professor or professor. However, the salaries paid to the teachers is substantially lower than those of an associate professor teaching basic sciences in the US despite the fact that a majority of the teaching staff in the offshore schools have an M.D. degrees or have worked as physicians in the US. Compared to an annual teaching salary of about USD 130,000 in the US, salaries in the offshore schools are between 27 and 70 percent lower. On of the reasons for lower salaries in the Caribbean, according to the schools, is that teachers do not pay personal income tax on their salaries. An offshore teacher's salary that is about 30 percent less than in the US would mean that the teacher would get approximately the same net compensation.

There also seems to be an abundance of physicians willing to live and teach in the Caribbean. Since the offshore medical schools focus on practical skills, they can recruit their teachers from a large group of practicing physicians in the US and Canada. None of the interviewed schools indicated that it was difficult to attract teaching staff and none had any full time local physicians on their teaching staff.

In terms of facilities the per student $m^2$ area of teaching buildings, labs and administrative areas ranged between 0.6 $m^2$ per student for the internet based distance learning school and 19 $m^2$ per student. Most schools had between 3.7 $m^2$ per student and 9 $m^2$ per student. This is also substantially lower than in US hospitals where research facilities, laboratories and teaching clinics and hospitals are needed which increase the area needed. Although there is no fixed requirement for the area per student in the LCME standards, the average for US and European universities is about 6-7 $m^2$ per student for all tertiary education[14].

**Tuition Fees**

For the academic year 2003/2004 the median annual tuition fee for first year medical students in the US was as follows:

| | Private not-for profit medical schools (USD) | Public medical schools (USD) | Offshore medical school (USD) |
|---|---|---|---|
| Residents of the state | 33,965 | 16,332 | |
| Non-residents | 34,550 | 32,662 | 19,500 |

This excludes boarding and or rented accommodation and living expenses that would amount to an additional USD 10,000 for one academic year in a US university.

The annual cost of tuition for students in offshore medical schools ranged between USD 10,650 to USD 40,464. The median annual tuition cost for a first year M.D. program student was USD 19,500. The three older, more established offshore schools charged USD 30,000 to USD 40,000 per year while the more recently established charged less than USD 19,500 per year.

The tuition cost of subsequent years is approximately the same as for the first years with a slight increase for clinical rotations. In addition to the tuition fees the students also pay book fees, administrative fees, management fees at an average of USD 1,000 per year.

[14] Ron Perkinson, IFC.

In all but two schools the majority of the students lived off campus, renting rooms with the local population. The annual cost of living expenses and rent ranged from USD 6,000 to USD 21,000 per year depending on the island. The more expensive islands were Antigua and Dominica.

The main difference in the cost of gaining an M.D. degree lies in the time needed to complete the program. In the US, basic sciences are taught over four years with two semesters per year and a summer break in between. Adding on the time needed to complete clinical rotations, an M.D. program in a US medical school would take between six to seven years. The offshore schools offer an M.D. program that can be completed in five years. The cost to the student of each alternative is shown below:

| | US medical school | Offshore medical school[15] |
|---|---|---|
| Time needed to obtain M.D. degree | 6-7 years | 5 years |
| Tuition fees (USD) | 200,000-230,000 | 100,000-125,000 |
| Rent and living expenses | 60,000-80,000 | 60,000-75,000 |
| Foregone earnings | 300,000-350,000 | 250,000 |
| Total | 560,000-660,000 | 410,000-450,000 |

About half of the students in the offshore schools are studying for their second degree. While studying they would not be able to earn an income. Many of the second-degree students already have a medical degree as a nurse, physician assistant, paramedic etc. Students of US medical schools would also forego earnings as it take these students longer time to reach the job market than students in offshore medical schools. It has, for the purpose of this comparison, been assumed that the medical students would earn the equivalent to a first year physician assistant or a nurse with a few years of experience i.e. USD 50,000 per year[16].

The cost of attending a US medical program could be 60 percent more expensive than attending an offshore school. This is significant for many students of the offshore schools who mainly finance their studies with their own funds or with private loans.

[15] Using the median tuition fee of USD 19,500 per year and an average cost of living of USD 15,000 per year.
[16] The average salary for a 1st year Physician Assistant in the US is USD 56,000 and the average salary for a nurse with at least three years experience is USD 47,000. Source: Allied Physicians. www.allied-physicians.com/salary_surveys

**Student Financing**
There are three manners in which students of higher education in the US finance their studies; their family pay fees and living expenses, they use their own savings or borrow from private banks or state loan programs (so called Stafford loans under the Federal Family Education Loan program, FFEL). In order for American students attending foreign medical schools to be eligible for a federal loan under the FFEL program, the foreign schools must be accredited in a country that has been accepted by the NCFMEA and where the accreditation standards have been found to be comparable to those in the US.

The FFEL program does not require creditworthiness, only that the student is not in default on any other federal student loan programs. Students can capitalize the interest during the study period. There is a grace period of six months after graduation during which time the students would have time to find a position. Current interest rates on such federal loans range from 2.17 to 4.17 percent. A similar type of student loan with a bank currently carries an interest rate of 5.72 percent.

The annual amount that an undergraduate or graduate student can borrow for tuition and board each year under the FFEL program is:

| | Dependent student* (USD) | Independent student (USD) |
|---|---|---|
| 1st year | 2,625 | 6,625 |
| Having completed the 1st year | 3,500 | 7,500 |
| Having completed 2 years | 5,500 | 10,500 |

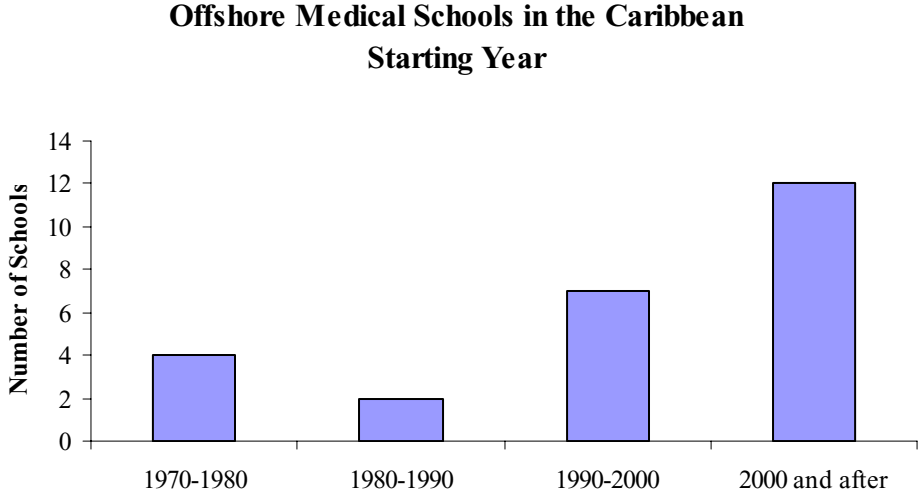
* Classified as dependent on parents.

The amounts as shown do not cover the cost of attendance at a medical university. Many students therefore complement the federal loan program with bank loans.

According to a number of the offshore schools one of the main competitive advantages of St George's University and Ross University is the fact that students attending these offshore schools can apply for the US federal students loans (the FFEL program). These schools are accredited by an accreditation agency that in turn has been found to have comparable accreditation standards as the US. According to other offshore schools, this is a significant advantage as these schools have more applicants each year, which is also evidenced by the substantial difference in size.

### *Investing in Offshore Education in the Caribbean*

Since 1990, some 19 offshore medical schools have started instruction in the Caribbean and over the past four years 12 such schools have been founded.



Recently there has thus been a significant increase in the number of offshore medical schools that have appeared in the Caribbean. There are several reasons for investing in offshore medical schools in the Caribbean as opposed to in the US or Canada:

It is significantly less expensive and easier to establish an offshore medical school in the Caribbean. The low threshold for founding offshore schools is both positive and negative as the initial cost is low, but that competition is high as more and more offshore schools open. The low threshold is mainly due to the following:

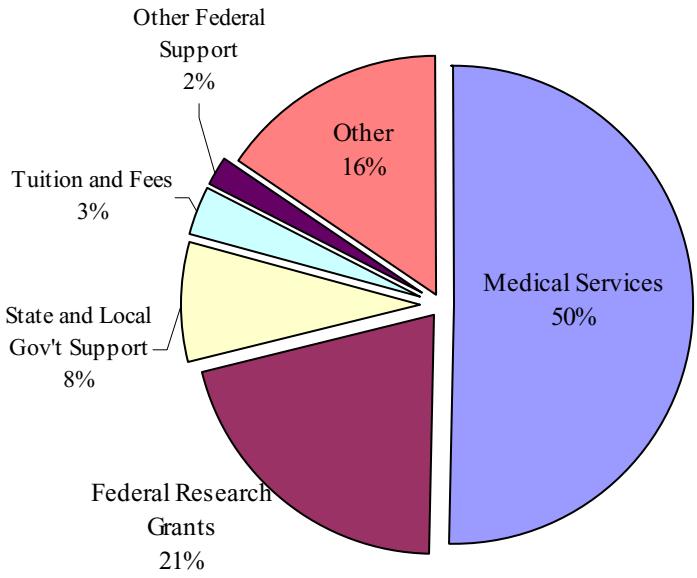
- Lower standards for accreditation enforced by local accreditation agencies,
- Medical or basic research is not required for accreditation nor carried out voluntarily by the offshore schools, and
- Use of US and Canadian teaching hospitals for clinical training.

The schools in the Caribbean are founded by physicians and entrepreneurs with a motive to eventually reap a profit from the schools. Although none of the offshore medical schools were willing to provide financial statements, it is likely that basic teaching is highly profitable.

These schools do not receive support from governments. The founders provided the initial capital and are the main shareholders.

As comparison, US or Canadian medical school are strictly speaking departments of private or public universities. These programs receive their funding from various sources:

**Revenue for US Medical Schools 2001/2002**




Most of the US and Canadian medical schools have a teaching hospital where clinical training is done. The US and Canadian universities thus offer a complete program where a medical student can finish the entire course at one campus. At the same time as the teaching hospitals require the university to make a significant investment in facilities, staff and equipment, teaching hospitals are the main source of income for the medical programs. The medical services account for 50 percent of total revenue of US medical programs. The second most

important source of income is federal support and research grants. Tuition fees account for only three percent of total revenue. Other revenue includes gifts and endowments, private grants etc.

None of the offshore schools had hospitals or clinics, nor did they have any research staff or facilities. They focus only on basic science education and have adequate teaching facilities i.e. classrooms, simple laboratories and members of faculty that teach full-time.

**Easy five step approach to creating your own medical school**

Step1 – engage a team of M.D.s as teachers and draft a curriculum
Step 2 – rent facilities (a hotel, a warehouse, a villa)
Step 3 – market the school: create a web page, register with the WHO,
Step 4 – wait for the students to come
Step 5 – pay the rent and teachers' salaries with tuition fees

After three months, start at step three again.

As a result, an offshore medical school's profitability is relatively easy to estimate. An example Profit and Loss statement for an offshore school with 100 students on campus has been calculated below.

| Example Profit and Loss Statement for an Offshore School with 100 students | Offshore medical school (USD) |
|---|---|
| **Revenue** | |
| Tuition revenue | 1,300,000 |
| Other revenue (application fees, book fees etc) | 100,000 |
| Gross Income | 1,400,000 |
| | |
| **Expenditure** | |
| Teacher salaries | 600,000 |
| Variable teaching costs | 140,000 |
| Administrative and other staff salaries | 100,000 |
| Rent/maintenance of facilities | 30,000 |
| Other administrative costs | 140,000 |
| **Total expenditure** | **1,010,000** |
| | |
| Net Income before taxes and financial charges | 390,000 |
| Net Income/Gross Income | 28% |

The annual tuition revenue is assumed to relate to students entering the school three times per year and paying on average USD 19,500 per year or USD 6,500 per semester. Other fees include application fees, book fees etc. and are on average USD 1,000 per year and student.

Gross income for 100 medical students in basic science would thus amount to USD 1,4 million for one year.

The offshore schools have, on average, some 10 students per teacher and teachers have been assumed to earn about USD 60,000 per year. Variable teaching costs are slightly higher for medical subjects as there is a need for laboratory samples etc in addition to other teaching material. It has been assumed to be about 10 percent of revenue.

A schools' fixed costs include administrative salaries, rent or maintenance of facilities, transport and marketing and recruitment expenses. The larger offshore schools have less than 10 students per administrative staff. The administrative staff salary has been assumed to be USD 8,000 per year. Rent or maintenance of an own campus has been arbitrarily assumed to be five percent of the value of a campus for 100 students. The two schools with 100 students had about 20,000 square feet covered area and at an average building cost in the Caribbean of USD 30 per square foot, the value of such a campus would be USD 600,000. The equivalent maintenance cost, would be about USD 30,000.

Other administrative costs have been assumed to be about 10 percent of total revenue. The resulting profit margin before taxes and financial charges is high, 28 percent.

Fixed costs amount to less than 30 percent of total costs. A contribution analysis shows that each student on average pays USD 14,000 per year and that variable teaching costs amount to about USD 7,400 per student.

| Contribution per student | USD |
|---|---|
| Average annual revenue per student | 14,000 |
| Average variable teaching cost per student | 7,400 |
| Contribution per student | 6,600 |
| Contribution margin | 47% |

Each student thus contributes USD 6,600 on average to fixed costs. In a US medical school the fixed costs are likely to be substantially higher than in an offshore school, in addition to the larger number of teachers and researchers. The cost of teachers would in a US medical school of the same size amount to about USD four million. In addition, the large facilities that a US medical school needs to have including a teaching hospital would increase the fixed costs substantially.

A break-even analysis shows that such a school need have to have some 40 students to cover fixed and variable costs. Each additional student increases profits by USD 6,600. It would thus appear that offshore medical education is very profitable and can exist with relatively small investments in facilities and equipment. A relatively small school with only 100 students can still be very profitable.

Other important reasons for starting offshore medical schools in the Caribbean in particular are:

- Language – the main language is English, which is important in order to attract North American students.
- Closeness to the US – the North American students do not need to spend large amounts of funds or time traveling and can bring family over.
- Culture – the culture is more similar to that of North America than in case of Latin America.
- The islands are safe, there is little crime and they have a relatively stable political climate, issues that may deter North American students.

- Tax and other incentives provided by the national governments. The offshore schools' investors are allowed to repatriate all profits, dividends and capital. Foreign investors are also allowed tax exemptions etc. which are explained in more detail overleaf.

## 3. Economic Impact

The following section attempts to measure the contribution to the national economy that each of the surveyed offshore medical schools have had. There are several methods that can be used to calculate the impact on Gross Domestic Product (GDP). In this case the Consultants have, due to the nature of the information gathered during the survey, used a method based on the Value Added that the offshore medical schools contribute to the national economy.

The countries in which the schools are registered in are small and dependant upon one or a few main industries or export products. The main industries are tourism and exports of staple goods such as bananas, sugar, tobacco and cocoa. In the countries visited as part of this survey, prior to the opening of the offshore medical schools, there were only limited opportunities for post-secondary education in the form of community colleges and technical skills training centres.

The existence of offshore medical schools could have a potentially large impact on the local economy. The effects of the offshore medical schools on the local economies can be divided into firstly, direct benefits i.e. measurable effects that impact directly on the national budgets, and secondly, the indirect benefits, those which may be more difficult to quantify and where the impact may become apparent only after several years.

The potential direct benefits on the national budgets comprise:

- Á Corporate taxes paid by the schools,
- Á Student taxes levied by the government on each student the schools enrol,
- Á Import duties on products, building material etc (in many cases reduced substantially as an incentive to attract foreign direct investment), and
- Á Personal income tax on salaries earned by faculty members.

Potential indirect benefits on the local economies include:

- Á Living expenses paid by teachers and students to local business and private persons (rent, food, transport, etc),
- Á Employment of local staff in administrative and support functions,
- Á Monetary, technical support to local health care facilities,
- Á Transfer of knowledge to local health care personnel, and
- Á Increased enrolment by local students in tertiary education.

### *Direct Benefits*

#### Corporate Taxes

The surveyed offshore medical schools are registered as for-profit educational institutions in each of the countries where they are located. In all cases the original investors were foreign nationals who provided initial capital in the form of equity. The investment regimes allow for the repatriation of profits, dividends and imported capital, tax holidays and rebates on import duties.

A number of countries in the OECS have very low corporate tax, between 25 and 45 percent on net profits. The investment incentives in these countries also provide for long tax holidays during which newly established companies pay no corporate income tax. The tax holidays

range from 10 to 25 years. In all but two of the countries, the schools enjoyed tax holidays, exempting them completely from corporate tax. Spartan in St Lucia, pays five percent corporate income tax on total revenue, which is a substantial reduction from the tax of 30 percent that applies to local companies. Ross university on Dominica has enjoyed a tax holiday but currently pays tax at a reduced rate.

The countries visited as part of this study do not levy VAT.

**Student Tax**

Instead of levying a tax on profits or on revenue, many countries require the offshore medical schools to pay an annual per student tax or fee. In some countries this is a fixed fee as well as a per student fee and in some cases only a fee per student. The following information on student taxes was gathered during the survey:

| Country | | Fixed annual tax/fee (USD) | Per student tax (USD) |
|---|---|---|---|
| Antigua and Barbuda | School 1 | | Pays a per student tax |
| | School 2 | Has not yet paid any taxes | |
| Dominica | School 1 | Pay a fixed annual fee[17] | |
| Grenada | School 1 | 150,000 | |
| St Kitts and Nevis | School 1 | 50,000 | 250 |
| | School 2 | | 250 |
| | School 3 | | 250 |
| | School 4 | | 250 |
| St Lucia | School 1 | Pays corporate tax on revenue (5%) | |

As different schools in the same country can pay tax at different rates, it would appear that the type of student tax and the amount to be paid depends on negotiations between the school and the local government.

**Import Duties**

Foreign Direct Investment is encouraged in the OECS countries with rebates on import duties. As most of the material needed for construction (cement, steel, equipment etc) is imported this rebate can be significant to the schools.

The governments of the countries with offshore medical schools also offer rebates on import duties on parts, raw material and equipment. Grenada, Antigua and St Kitts and Nevis offer exemption of import duties to the schools. On St Lucia, the interviewed school paid some five percent import duty (as compared to the 20 percent normally charged).

An estimate of the import duty paid to the government of St Lucia by the surveyed school would be about USD 30,000 to 35,000. The school has built a campus comprising 20,000 square feet. The average building cost in the Caribbean is approximately USD 30 per square foot. This assumes that the building cost comprises mainly imported raw material (as labour rates are around USD 12 per day). In addition, the school needs some simple laboratory equipment such as microscopes, large freezers and computers the total import duty would probably not exceed USD 50,000 for such a school.

[17] The fixed fee is negotiated every couple of years. The schools did not want to divulge the amount.

The actual measurable direct economic benefits to the national budget would thus appear to be very small. The total direct economic benefit to each government of the countries surveyed is estimated and summarized below.

| USD | Antigua and Barbuda | Dominica | Grenada | St Kitts and Nevis | St Lucia[18] |
|---|---|---|---|---|---|
| Corporate income tax | 0 | n.a. | 0 | 0 | 50,000 |
| Student tax | n.a. | n.a. | 150,000 | 300,000 | 0 |
| Import duties | 0 | 0 | 0 | 0 | 50,000 |
| Total | | | 150,000 | 300,000 | 100,000 |

***Indirect Benefits***

The indirect benefits to the local economy are substantially more important than the direct ones both in terms of total amount and how they affect the local population. In all but one school the students rented rooms and apartments from local house-owners, instead of boarding on the school campus. In many cases the government had that as a requirement of the schools. On Grenada, a majority of the students live on the campus in housing provided by the school.

**Spending by Foreign Medical Students and Faculty**

The main contribution by the students includes the following:

| Annual spending for a full year student in USD | Antigua and Barbuda | Domnica | Grenada | St Kitts and Nevis | St Lucia |
|---|---|---|---|---|---|
| Rent | 9,000 | 12,000 | - | 6,000 | 7,200 |
| Food and entertainment | 3,000 | 4,500 | 3,000 | 3,000 | 3,000 |
| Transport (car hire and petrol) | 2,000 | 3,000 | 2,000 | 2,000 | 500 |
| Flights to/from the Island (3 per year) | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 |
| Total spending per student | 15,500 | 21,000 | 6,500 | 12,500 | 12,200 |
| Estimated number of foreign students on the island per year | 240 | 1,100 | 2,500[19] | 1,019 | 130 |
| Total annual spending by students (USD) | 2.600,000 | 16.100,000 | 11.300,000 | 8.900,000 | 1.100,000 |

The total annual spending by students is calculated by assuming that 1/3 of the students enrol in January and thus live on the island for 11 months, 1/3 enrol in May, staying eight months and 1/3 enrol in September and stay for four months.

As shown above the estimated total amount paid by foreign students into the local economy is substantial. In smaller economies such as that of Dominica, and St Kitts and Nevis, the medical school students are substantial contributors.

A majority of the full time teachers at the offshore medical schools are foreign nationals. They do not pay personal income tax, and spend their salaries mainly on the island on housing, food, travel etc. Visiting lecturers are assumed to spend their earnings mainly in their places of residence. The contribution by the faculty members can be estimated as follows:

[18] There are three additional offshore medical schools registered on St Lucia according to FAIMER. One, International American University only started instruction in February of 2004 and currently have 11 students, one appears to have closed, and for one there is not data available. It is likely that the remaining schools are very small, with less than 50 students and are therefore likely not have a significant impact on the governmental budget. The calculation above therefore only takes into account the school surveyed as part of this study.

[19] St George has approximately 2,500 foreign students.

| | Antigua and Barbuda | Dominica | Grenada | St Kitts and Nevis | St Lucia |
|---|---|---|---|---|---|
| Average salary foreign teachers school 1 | 90,000 | 80,000 | 70,000 | 50,000 | 40,000 |
| Average salary foreign teachers school 2 | 40,000 | | | 50,000 | |
| Average salary foreign teachers school 3 | | | | 70,000 | |
| Average salary foreign teachers school 4 | | | | 36,000 | |
| Total number of full time teachers | 51 | 57 | 167 | 80 | 10 |
| Total annual spending by faculty members (USD) | 3.000,000 | 4.500,000 | 11.700,000 | 4.700,000 | 400,000 |

The total estimated contribution from both faculty members and students is summarised below.

| | Antigua and Barbuda | Dominica | Grenada | St Kitts and Nevis | St Lucia |
|---|---|---|---|---|---|
| Total annual spending by students (USD) | 2.600,000 | 16.100,000 | 11.300,000 | 8.900,000 | 1.100,000 |
| Total annual spending by faculty (USD) | 3.000,000 | 4.500,000 | 11.700,000 | 4.700,000 | 400,000 |
| Total annual spending by faculty and students (USD) | 5.600,000 | 20.600,000 | 23.000,000 | 13.600,000 | 1.500,000 |
| GDP (2002) million USD[20] | 721.0 | 247.6 | 414.1 | 356.3 | 659.8 |
| Total annual spending by students as % of GDP | 0.8% | 8.3% | 5.5% | 3.8% | 0.2% |

As shown above, the schools contribute substantially to the local economy. In Dominica, Ross University is estimated to contribute 8.3 percent of GDP which, according to the dean, makes it the largest single contributing organization. Also in the case of the other countries the offshore medical schools are big revenue sources for the local population. The estimate of total medical school contribution in for Antigua and St. Lucia is probably slightly understated as there are other offshore medical schools on the islands but those interviewed.

**Increased Local Employment**

Although the faculty of the schools is to 97 percent foreign, the schools also employ local staff in administration and support functions such as building, maintenance, transportation, cleaning and catering.

[20] World Development Indicators database, April 2004.

| Country | | Number of local staff | Number of students on campus/locally employed staff | Average local support staff salary |
|---|---|---|---|---|
| Antigua and Barbuda | School 1 | 3 | 13 | |
| | School 2 | 20 | 10 | |
| Dominica | School 1 | 160 | 7 | |
| Grenada | School 1 | 400 | 5 | |
| St Kitts and Nevis | School 1 | 4 | 1 | |
| | School 2 | 8 | 30 | 10,000 |
| | School 3 | 87 | 6 | 9,000 |
| | School 4 | 8 | 16 | |
| St Lucia | School 1 | 20 | 5 | 5,000-8,000 |
| Total/average | | 710 | 10 | |

The nine surveyed schools employed some 710 persons. The larger schools have a ratio of students per local staff of less than 10. The smaller schools typically have more persons employed in the US tasked with recruitment and enrolment, marketing and finance. As the schools increase in size it is likely that the number of locally employed persons increases and tasks carried out by North American staff are transferred to the islands. However, it is probable that the ratio of students to locally employed staff will be reduced to match that of the large schools.

Salaries for the schools' local staff are in some cases higher than the average national salary. On St Kitts for example, the average salary for support staff is about USD 9,000 to10,000 per year compared to that of shop keepers which is USD 3,000 per year[21]. Compared to the average gross national income per capita on St Kitts of USD 6,370[22], support staff salaries are higher at the offshore schools. At the school interviewed on St Lucia, the average support staff salary was USD 5,000 and the average salary for administrative staff was about USD 8,000 per year. This is substantially higher than the Gross National Income per capita which was USD 3,750 in 2002[23].

**Support to Local Health Care**

Another benefit to the islands where the schools are located is the support that some offshore schools provide to local health care institutions. In return the institutions can allow medical students to attend rounds in hospitals, to observe physicians in clinics and thereby get clinical experience from the start of their education.

Four of the schools surveyed supported the local health care institutions regularly in the following manner:

- Annual donations of USD 100,000 to 160,000 to the local hospitals,
- Annual donation of equipment to local clinics,
- Research on illnesses affecting the local population and
- Veterinary clinics for animals on the island.

The four schools providing such support are those that have been established for a long period of time. These schools also hold seminars and invite guest speakers to lecture on specific subjects. Such lectures are often open to local health care personnel.

[21] Ministry of Finance: Investment Guide St. Kitts.
[22] World Development Indicators database, April 2004.
[23] World Development Indicators database, April 2004.

**Effect on Local Educational System**

One hypothesis is that with more higher education opportunities on the islands, and with scholarship programs such as those offered by the offshore schools, the tertiary enrolment ratio would increase over time. There are several factors that influence the tertiary education enrolment ratio:

- Secondary school enrolment and graduation ratio – the number of students with the qualifications to enter into a university
- Fee levels of the universities and offshore medical schools
- Subject areas

Currently the tertiary enrolment ratio in the OECS states surveyed is very low.

| | Secondary school net enrolment ratio[24] | Tertiary education net enrolment ratio |
|---|---|---|
| Antigua and Barbuda | n.a. | 6% |
| Dominica | 73% | 3% |
| Grenada | 62% | 5% |
| St Kitts and Nevis | 90% | 2% |
| St Lucia | 76% | 1% |
| LDC | 89% | 22.6% |
| High Income Countries | 106% | 61.1% |

In the case of the OECS, the secondary school net enrolment ratio is lower than that of Less Developed Countries (LDCs). The enrolment ratio into tertiary education is also very low which in part may be due to the relatively low secondary school enrolment rate but also due to the low pass rate in the exams (called CXC exams) that secondary school students take when graduating[25].

The pass rates on the CXC exams have been poor in the past which impacts on students ability to enter higher education.

| | CXC pass rates for at least 5 subjects[26] |
|---|---|
| Antigua and Barbuda | n.a. |
| Dominica | 59.0% |
| Grenada | 12.3% |
| St Kitts and Nevis | 26.0% |
| St Lucia | 40.6% |

Low pass rates on the CXC exams reflects the educational system in each country and the resulting knowledge level of the secondary school students. Students from a number of countries apply to universities in the Caribbean and there is tough competition for positions. It

[24] Net enrolment is defined as the ratio of the number of children of official secondary school age enrolled in school to the number of children of official secondary school age in the population. Source: World Bank, Project Appraisal Document on a Propose loan to the government of Saint Vincent and the Grenadines for an OECS Education Development Project. 27 May 2004

[25] Exams set by the Caribbean Examination Council and called CXC.

[26] World Bank, Project Appraisal Document on a Propose loan to the government of Saint Vincent and the Grenadines for an OECS Education Development Project. 27 May 2004. Data provided is from 2002 in the case of St Lucia and the year 2000 for the other countries.

is therefore important to improve the knowledge level and pass rate of the students so that they could be accepted to universities and offshore medical schools in the future. The offshore medical schools can accept only students that have the qualifications necessary for them to be able to complete the program offered. Until now, the offshore medical schools have been able to enrol only one student from the island per year.

Admission criteria to the offshore medical schools include a bachelor's degree (or equivalent) in sciences i.e. the student should have studied biology, natural sciences, chemistry and mathematics. Some schools offer a pre-med course for students with a bachelor's degree in liberal arts or for those that have graduated from their first degree university or college several years ago and feel the need to brush up their knowledge.

The type of post-secondary education available on the islands is limited to community colleges, teaching colleges and technical skill training centres. The only university in the Caribbean, the University of the West Indies, has two campuses on respectively Jamaica and Trinidad and Tobago. Other options include universities in the US. All higher education students thus needed to move to another island with the increased expenses that would mean. The per capita Gross National Income in the countries concerned ranges from USD 3,000 to USD 9,000 per year, which means that only a very small number of local households can afford to enrol a student into higher education.[27] Offshore education is very expensive for Caribbean nationals and scholarships offered by offshore schools typically cover only the tuition fee for the basic sciences curriculum and not the clinical rotations which are done in the US.

The offshore medical schools are also very specialized. St George's University on Grenada is an exception as they are offering liberal arts and science degrees as well as post-graduate (PhD) and bachelor programs. These non-M.D. programs are mainly attended by Caribbean students. However, St George's main offering is still its medical program with 83 percent of the student body. Governments of the islands[28] are encouraging the offshore schools to branch out into other subjects as well.

**Scholarships to Local Students**

Each of the offshore schools offer full or partial scholarships to local medical students. The tuition for local students is fully covered by the school during the semesters when the students study on the island. The cost of clinical training at foreign teaching hospitals is, however, not covered. This is a limiting factor as few Caribbean students can afford nor the cost of living in North America or the tuition fees.

The annual value of the scholarships to local student is summarized below:

[27] Current annual tuition fees for basic science at the University of the West Indies' medical program are USD 17,000 at the campus in Jamaica and USD 13,200 at the campus in Trinidad and Tobago.
[28] St Kitts and Nevis and Grenada.

| | Antigua and Barbuda | Dominica | Grenada | St Kitts and Nevis | St Lucia |
|---|---|---|---|---|---|
| Number of local M.D. program students | 45 | 14 | 132 | 2 | 1 |
| Type of scholarship School 1 | Partial (85%) | Full | Full and partial | Full | Partial (75%) |
| Type of scholarship School 2 | Full | | | Full | |
| Estimated current annual amount covered by scholarships (USD) | 645,500 | 425,000 | 1.000,000 | 30,000 | 10,000 |

## 4. Growth Potential

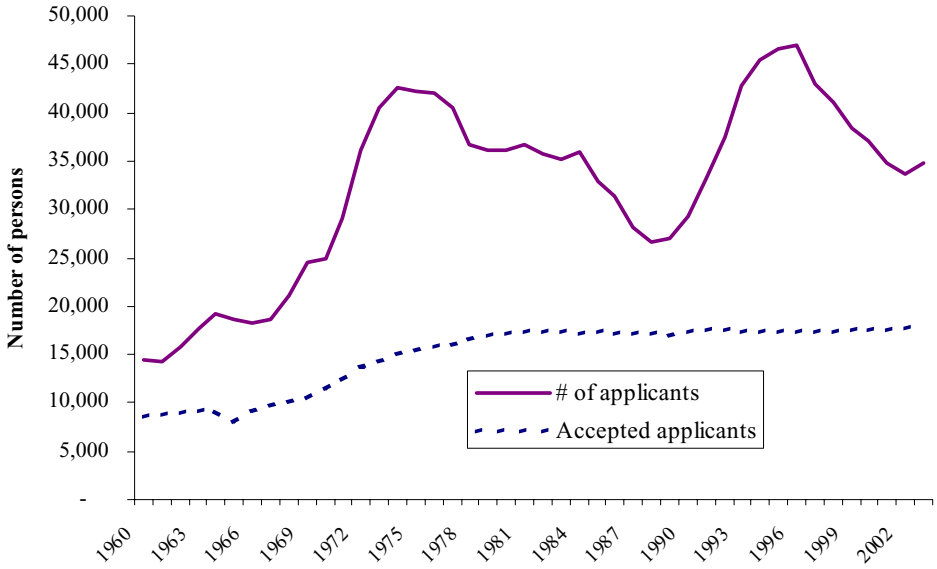
The offshore medical schools' main market is North America. They cater mainly to North American students wishing to practice medicine in their home country and to a lesser degree to students from other countries wanting to enter the US medical profession.

There is currently under-supply of both first year positions in North American medical schools and licensed physicians in the US and Canada. This shortage is what the offshore medical schools can help remedy and without which the offshore schools would not exist. The offshore medical schools are thus very dependent on how the US and Canadian graduate medical education market develops, on the policies of the US and Canadian governments regarding medical education and upon the development of the health care sector in North America. The following section discusses the current situation in the North American medical education market and possible future developments.

### *Medical Education in North America*

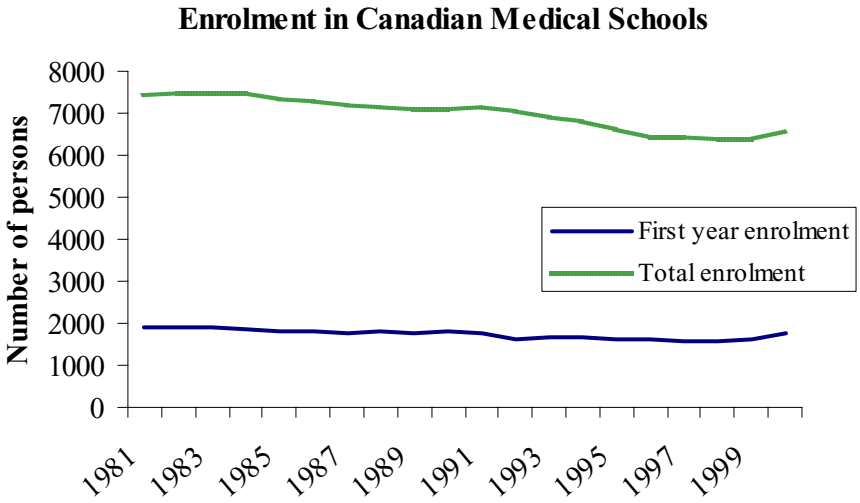
The number of medical departments of US universities (called US medical schools) has remained stable at around 126 over the past 20 years. The number of applicants to the medical schools has varied while the number of accepted applications has remained stable at around 17,500 per year over the past 10 years.

**Applicants and Accepted Applicants in US Medical Schools**

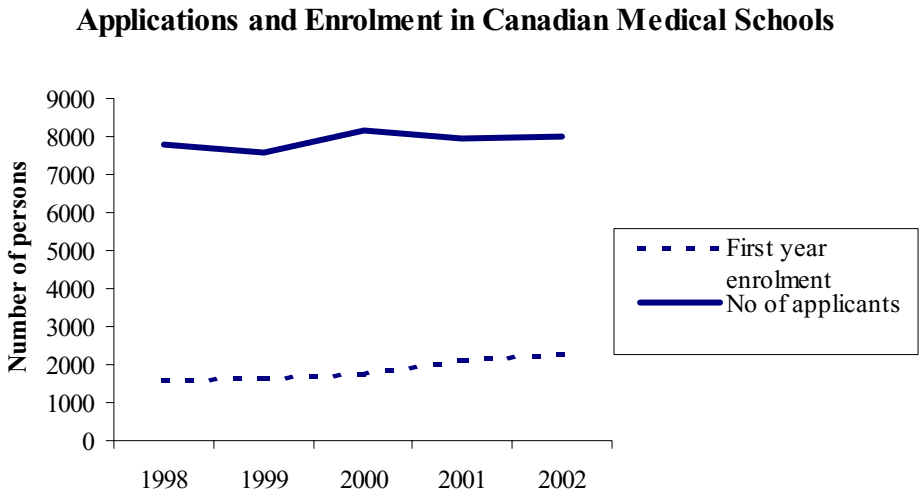



Canada has some 16 medical schools and about 6,500 medical students[29]. Since the early 1980s the first year enrolment has declined slightly and remains at a level of 1,700 students per year. The total student numbers has declined from 7,400 to 6,500. The market for medical education in Canada shows similar trends as the US medical education market.

[29]Canadian Medial Education Statistics. Association of Canadian Medical Colleges.




Applications to Canadian medical school have remained at a stable level over the past 20 years.




For each position in a Canadian medical school, there are about 3.5 applicants.

The number of applicants to the US medical schools shows an increasing trend. One of the major drops in applications occurred during the late 1980s to mid 1990s. In 1980 the first report from the Graduate Medical Education National Advisory Committee (GMENAC) came out. GMENAC projected that there would be a 29 percent over-supply of physicians in the US by the year 2000, a factor that has since then influenced US government policies vis-à-vis medical graduate education as well as applications to medical schools.

Since the early 1990s the first year enrolment number in US medical schools has remained at the same level of 17,500 students. The resulting number of US graduates each year has also been stable at about 15,500. However, it has recently become apparent that the expected over-supply of physicians has not emerged. Several recent reports on the supply of US and Canadian physicians state that there are imminent shortages in both primary care and some

specialties and that there is a lack of physicians in rural areas and metropolitan centers.[30] The shortage is also noticeable as the number of residency positions available, some 20,000 in 2003, were only filled to 64 percent by US medical graduates. There are several factors that have contributed to the shortage:

- Á Incorrect assumptions as to population growth. In 1980 the first GMENAC report assumed that by 2000 the US population would amount to about 270 million persons. However, the census showed that by the year 2000 the population was 285 million.
- Á More female physicians – currently about 24 percent of all US physicians are women who as a group work on average 20 percent less than male physicians[31]. This has meant that more physicians are needed to take care of the same number of patients.
- Á The elderly part of the US and Canadian population is growing.
- Á Since September 2001, it has become more difficult for foreign physicians to obtain visas to work in the US[32].
- Á Increasing level of indebtedness of the medical graduates in the US has meant that graduates have chosen specialties which offer higher pay. There is currently a large shortage of physicians in some specialties; particularly in generalist primary care, generalist internal medicine and general pediatrics.
- Á More law suits for malpractice against physicians means increased insurance premiums in some cases forcing private practitioners out of the profession.
- Á About 18 percent of all physicians in the US are over 65 and will be retiring soon.

There is an ongoing debate about what to do about the shortage. Should the medical schools be allowed to enroll more students[33] or should other medical professions such as nurses, midwives, physician assistants etc be allowed to take on some of the tasks currently carried out by physicians? It would appear that no decision has so far been made to increase US medical school enrolment.

***Impact on Offshore Medical Schools***

The shortage in US and Canadian medical school enrolment and subsequently in the number of graduates has allowed the offshore medical schools to play a "gap-filling" role. The offshore medical schools have been able to recruit students from the 17,000 US and 5,700 Canadian applicants rejected each year and have also been able to position their students in residency programs and eventually positions in a market where there is a shortage of physicians.

Since the 1970s the number of physicians active in patient care in the US has increased from 278,000 to 630,000 and the number of active physicians to 100,000 inhbitants from 136 to 228 which is considered adequate by Council on Graduate Medical Education (COGME).

[30] Council on Medical Education; Emmanuel G Cassimatis, CME Report 2-I-03.
[31] Kay Green, Now forecast is for shortage of physicians, Jan 21, 2002. amednews.com
[32] More than 1/3 of all international medical graduates are on exchange visitor visas, requiring them to return home for at least 2 years before applying to reenter the US.
[33] Implying that state funding of medical education should be increased.

| Statistics on the US medical profession | 1970 | 1980 | 1990 | 2000 |
|---|---|---|---|---|
| Total physicians | 334,028 | 467,679 | 615,421 | 813,770 |
| Active physicians in patient care | 278,535 | 376,540 | 403,870 | 630,463 |
| Active physicians to total physicians | 83% | 80% | 66% | 77% |
| Active physicians/100,000 population | 136 | 166 | 162 | 228 |
| | | | | |
| Women physicians | 25,401 | 54,284 | 104,194 | 195,537 |
| Women physicians as % of total physicians | 8% | 12% | 17% | 24% |
| | | | | |
| Physicians over 65 years old | 41,321 | 64,031 | 95,389 | 144,939 |
| Physicians over 65 as % of total physicians | 12% | 14% | 15% | 18% |
| | | | | |
| International medical graduates (IMGs) in the US | 57,217 | 97,726 | 131,764 | 196,961 |
| IMGs as % of total physicians | 17 | 21 | 21 | 24 |

Source: American Medical Association Physician masterfile, Dec 2000.

The number of M.D.s that work with patient care has decreased over the period. In 1970 some 83 percent of all US M.D.s chose to work with patients, in 2000 about 77 percent were actively working with patients. Although the number of medical graduates has remained stable over the period, the number of physicians has increased, with international medical graduates (IMGs) becoming more important. The number of physicians that are over 65 years of age has also increased. They currently represent 18 percent of all physicians compared to 12 percent in 1970.

The factors that would most likely influence demand for offshore medical education are:

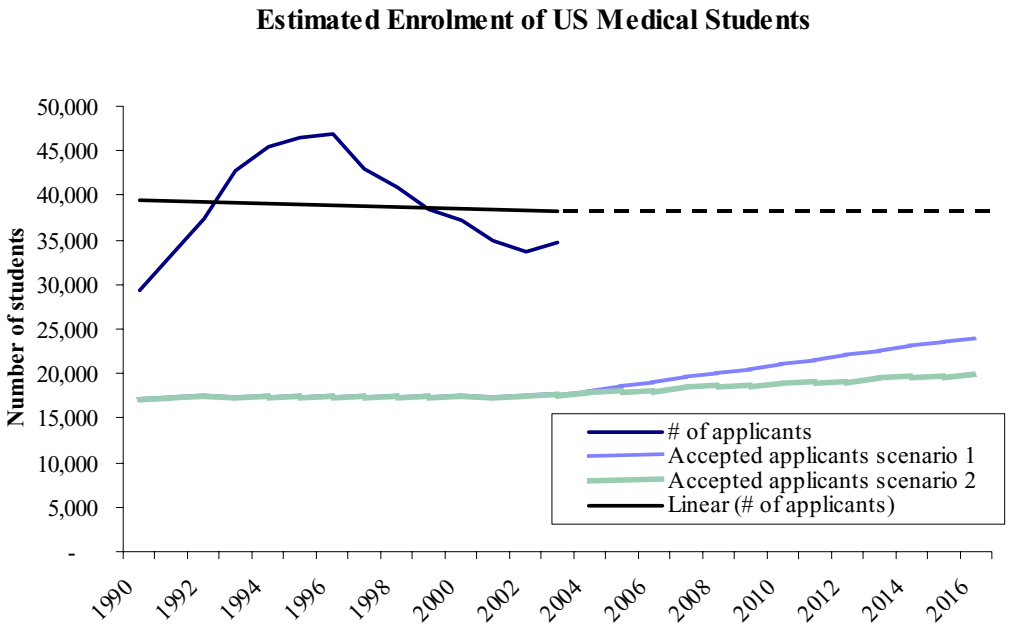
- The US and Canadian governments' decision to increase or decrease support to medical education which could mean increasing US and Canadian medical school enrolment and
- The current and future shortage of physicians in North America.

In 2003, there were 20,908 residency positions offered in the US and 1,231 in Canada. Of these, some 13,364 were filled by US medical school graduates.[34] In Canada, all but 30 positions were filled the same year[35]. Residency positions are offered by hospitals and clinics all over the US to the National Resident Matching Program. The Canadian Resident Matching Service matches Canadian medical graduates to resident positions. The positions o offer can be assumed to represent demand for medical graduates. However US residency positions are only filled to 64 percent by US medical school graduates. In order to fill the gap, the medical schools in the US would need to increase annual enrolment by some 7,500 students or by 43 percent. Federal, state and local governments currently support medical schools in the US with USD 17,056 million per year[36]. This represents USD 254,518 per enrolled student, of which there were approximately 67,013 in 2003. Assuming that the US government would spend an equal amount on all students, an increase in enrolment of 7,500 students would mean spending USD 190 million more each year on medical education alone.

It is likely that an increase of medical graduate program enrolment would be gradual. Since 1990, only one new medical school has been opened in the US and first year enrolment has

[34] AAMC Data Book 2004.
[35] Canadian Resident Matching Service
[36] AAMC Data Book 2004.

increase by only 300 students. During the same period, the number of applications has stagnated.




If it is assumed that one new medical school is opened in the US each year starting in 2005 (the average size of a medical school is assumed to be about 500 students), by 2015, first year enrolment would be about 24,000 students. Assuming also steady growth of demand for graduate medical education, the number of applicants would be about 33,300 which would mean 1,4 applicants to each accepted applicant. However, an increase in the number of medical schools and positions, would probably increase the number of applications, as it has done in the past, and the number of applicants is likely to be higher than 33,300.

The number of students that apply directly to foreign medical schools are not included in the statistics shown above. There are no estimates as to how many they are, but the offshore medical school estimate that about 20 percent of their students (mainly older students in their second career) apply directly.

That supply should increase by one new medical school each year appears unlikely. The universities must adhere to LCME's standards and must also find the appropriate staff and researchers. A more likely scenario is an increase of one new medical school (and 500 new first year positions) every three years (see scenario 2 in the chart above). With this scenario, the number of positions in US medical schools by the year 2015 would be about 20,000 and the application to acceptance ratio would be about 1,7:1.

There are currently about two applicants to each first year position in US medical schools. Competition for positions is strong and students need to have a bachelor degree and a grade point average of at least 3.6 in order to enter. The students in the offshore schools are typically those that have either had their applications rejected when applying to US medical schools or have decided to apply directly to the offshore schools. Students in these schools have a grade point average of between 2.8 to 3.4.

With increased enrolment in the US, the average grade point average of the applicants is likely to be reduced somewhat. In both scenarios, there would still be a large number of students that would not be accepted, some 9,300 in scenario 1 and some 14,000 in scenario 2. These students could still apply to offshore medical schools. The analysis above thus suggests that there would still be demand for offshore medical education in the medium-term.

In order to estimate the future number of physicians needed each year the following two main factors have been analyzed:

- Retirement ratio of older and active physicians
- Increasing number of female physicians

How factors such as visa requirements for IMGs and malpractice lawsuits affect demand are difficult to assess. Those factors are likely to have a relatively small impact in the medium to long term.

*Replacement of Physicians*
In order to a assess how many new M.D.s are needed each year one must calculate the replacement rate of active physicians. Assuming that a medical career last from around 30 years of age to about 65, i.e. 35 years. If 1/35 of all active physicians would be retired each year this would yield a replacement need of about 18,000 M.D.s per year. Currently some 13,364 M.D.s take up residency positions each year. These students are those that have passed the USMLS step 1 and 2 and that wish to actively practice medicine. There would thus be a deficit of about 35 percent or some 4,600 physicians.

As the M.D. workforce currently comprises an increasing number of older physicians, it is likely that future replacements will need to be higher. Assuming that the 630,463 active physicians represent the total current demand for physicians in the US, and that of these, 18 percent are over 65 and would thus be retiring in the next two to three years, some 113,483 positions would need to be filled during that period. The current number of graduates entering the residency matching program 13,400 (or 40,000 over three years) is thus quite insufficient.

*Female Physicians*
Currently, about 24 percent of all US physicians are female. However, of the medical students currently enrolled, 47.9 percent are women[37]. There will thus be more and more women physicians in the workforce. Women physicians as a group work on average 20 percent less than male physicians [38]. If the current active workforce was to be composed of 47.9 percent women i.e. 302,000 women instead of an estimated 150,000 women[39], the total workforce needed would probably be in the range of 400,000 to 650,000 physicians.

The analysis above shows that it is likely that there will continue to be high demand for physicians in the US over the medium term.

### *Competition among Offshore Schools*
Recently a large number offshore medical schools have been established in the Caribbean. This has meant that North American students and lobbying and accrediting agencies in the US and Canada have begun to take notice of the growing group of offshore schools.

[37] AAMC Data Book 2004.
[38] Kay Green, Now forecast is for shortage of physicians, Jan 21, 2002. amednews.com
[39] 24 percent of 630,463 current active physicians.

Websites have been created presenting and marketing the offshore schools to foreign students. This is one of the main marketing tools for newly started offshore medical schools and many schools therefore spend substantial amounts on their websites. It is, however, the more well-known and established schools that benefit from more students taking an interest in offshore education.

Increased attention from lobbying and accrediting institutions in the US is likely to bring with it requirements of compliance with standards and quality control regulations if the graduates are to be accepted into US teaching hospitals and residency positions.