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HEALTH CARE FINANCING

A Preliminary Financial Study of the  
Health Care System on Dominica

February 1982

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## INTRODUCTION

The countries of the Eastern Caribbean are committed to the goal of health for all by the year 2,000, to the resolutions of the World Health Organization on primary health care and to the global targets contained in these resolutions. The individual countries are now in the process of formulating policies and plans with which to meet this commitment.

Implementation of policies and plans require financial and other resources. Financial resources are limited in all countries and there are always competing claims. Should governments invest more money in agricultural development, education or health? There are many alternative investments which would have a beneficial impact on the well-being of the population. It is, therefore, important that policies and plans be adopted that are: first, financially possible; and second, make maximum possible use of the financial resources available.

Among the resolutions tabled at the Health Ministries' conference 1981 is one requesting the Secretary General of CARICOM to seek the cooperation of interested agencies in helping member states meet their commitment to health for all through a primary health care strategy. In this context, USAID/Barbados plans to develop a primary health care project for funding in FY 1983. This one objective of this preliminary financial study is to provide those who will eventually be responsible for the design of that project, with a general description of health care financing in several of the member states. This study should also prove useful to policy makers and planners when they consider the financial implications of alternative policies and plans.

USAID/Barbados sought answers to several categories of financial questions. First, what are the current expenditure breakdowns between preventive and curative services, between in-patient and outpatient care, and between the public and private sectors, and among personal emoluments, commodities and capital costs? They also wanted an identification of current primary health care expenditures and an analysis of expenditure trends. Second, what are the sources of the revenues from which the expenditures are financed and what are the current trends in these sources? Sufficient information was found to answer most of these questions with considerable specificity.

Third, USAID posed several questions dealing with the consistency between current and future health policies and plans and current financial allocations. Answers to these questions tend to be general, not specific in nature, because new health policies and plans are now being formulated. A financial assessment of these policies and plans will require, first, further specification of implementation details and second, a more in-depth analysis of the financial implications implicit in these details.

USAID's fourth and final category of questions dealt with the feasibility of alternative financing mechanisms. The method by which a country finances its health care system is a political and historical question more than a financial one. One indicator of the degree to which people are willing to personally contribute towards the cost of quality health services is the size of the private sector where they pay directly for goods and services. The size and composition of the private sector was investigated in considerable detail. In addition, one alternative financing mechanism, a self-financing revolving fund for drugs, was investigated in considerable detail in a country where both the financial and political variables suggested that it might be a feasible alternative. This investigation could serve as a model for the analysis of other alternative financing mechanisms in other countries.

Preliminary financial studies of health care systems were carried out in three countries, St. Vincent and the Grenadines, St. Kitts/Nevis, and Dominica. In addition, a preliminary investigation was made into the feasibility of establishing a self-financing mechanism for drug distribution on Dominica.

It should be stressed again that these studies are preliminary in nature. The questions of finance are central to all health care systems and deserving of much more time. In particular, further financial analysis and planning should be done as each country develops five-year plans for the health sector. The recurring costs of the increased and improved services implicit in these plans needs to be estimated carefully, and where necessary, alternative financing mechanisms investigated in accordance with country-specific priorities. Similarly, the recurring cost implications of the new USAID project should be carefully estimated and compared to resource availability.

In brief, this series of studies goes quite a long way towards defining current financial resource availability and makes some projections about future availability. The next, and equally important step, is to carefully estimate future financial resource needs in the light of policies, plans and projects which are now being formulated. It may turn out that alternative financing mechanisms will be needed in those cases where the projected needs exceed projected availability.

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## Acknowledgments

This preliminary financial study of the health care system on Dominica was made possible and actively supported by the Honorable Charles Maynard, the Minister of Health, Education, Youth and Sports. He made a special request that Dominica be included in this initial round of studies, effectively arguing that Dominica's current economic condition was forcing the Government to take policy decisions on financial matters, which this study might help to clarify. During the six days in which the study was undertaken, Mr. Maynard actively directed the study towards priority issues, in particular, a preliminary analysis of the feasibility of establishing a revolving fund for drugs, and reviewed and discussed the draft proposal in detail.

Mr. Maynard was assisted by two very capable and hardworking people. Dr. MacIntyre, surgeon, Health Services Coordinator and an enthusiastic and knowledgeable supporter of the primary health care strategy. Mr. Ozie Symes, the Permanent Secretary of Health, has the unenviable responsibility of keeping the Ministry of Health running on a financial shoestring, while attempting to develop management and financial systems which will be required in a health system that delivers quality health care to all by the year 2000. Indeed, the understanding of the management and financial issues displayed by these three people, and their willingness to direct their time and energy to formulating policies that address these issues, is the best possible indicator of a bright future, despite the relative scarcity of financial resources. It is hoped that the information and ideas presented in this report will be of some assistance in addressing the problems of implementation. These problems will be persistent, but they can be overcome.

This study is somewhat different from those prepared on St. Kitts/Nevis and St. Vincent and the Grenadines. Service statistics are currently less available on Dominica, although an annual report was in process of preparation. As a result, there is little analysis of unit costs. Second, priority financial issues had already been explicitly identified. As a result, much of the effort involved in this study was addressed towards one of those issues: the problem posed by high drug costs in a severely limited Ministry budget. The outcome of this effort appears as Appendix B: "Proposal for a Revolving Fund to Finance Drug Procurement."

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**CONFIDENTIAL**I. RECURRENT GOVERNMENT REVENUES**NOT FOR PUBLIC RELEASE  
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The Government is the source of about 1/2 of the health care financing on Dominica. Government health services are mainly provided free of charge to the population, while the remaining health services are provided on a fee basis through the private sector which is discussed in some detail in Section VII. Government-provided health services are financed from general revenues, the largest share of which (49%) comes from import and consumption taxes. Individual income tax constitutes a growing share (23%) of revenues. Table 1 shows how government recurrent revenues have grown during the last 6 years:

TABLE 1: RECURRENT GOVERNMENT REVENUES(2)

YEAR	CURRENT \$ (\$000 EC)		PRICE(1) INDEX	PURCHASING POWER (\$000 EC)		% OVER OR UNDER
	ESTIMATE	ACTUAL		ESTIMATE	ACTUAL	
1981/82	58,354		607.6	58,354		
1980/81	61,214	56,698	562.1	66,169	61,288	-7
1979/80		43,395	463.0		56,948	
1978/79	26,041	34,391	345.2	45,836	60,533	+32
1977/78		31,368	315.8		60,352	
1976/77	17,364	25,573	291.0	36,256	53,396	+47
1975/76	17,013	20,170	269.0	38,428	45,559	+19
AVE: % (3)	22.8	23.0	14.5	7.2	6.1	+12

(1) The retail price index was provided by the Government Statistical Office. April 1964=100. Figures used are those for Sec. of the indicated fiscal year.

(2) See Table A1 in Appendix A for information on the sources of data. Blanks indicate missing information.

(3) Indicates the annual rate of growth required to attain the top figure in the column, using the bottom figures in the same column as a base. The entry in the right-hand column is a weighted average computed using the data in the "Current \$" columns.

Since 1975/76, government revenues have grown about 23% per year. Most of this growth, however, is attributable to inflation which averaged 14.5% per year during the same period. Real growth has averaged six to seven per cent. Furthermore, almost all the real growth took place during the first 2 years of this period. The purchasing power of actual revenues has remained nearly constant since 1977/78.

Revenue in the health sector has increased rapidly since 1978/79. All of this increase, however, is derived from fees paid by the foreign medical school. Revenue from other sources has dropped from \$90,000 E.C. in 1976/77 to \$86,000 E.C. in 1980/81. Hospital fees and specialist and other medical fees have been dropped. Table A2 in Appendix A provides more detailed information on government revenues generated in the health sector.

The fact that government revenues appear to be nearly constant suggests that they are an unlikely source of financing for any additional financial requirements in the Government's health sector. In fact, the Ministry of Health is aware of this situation and has initiated investigations of alternative financing mechanisms, including the possible imposition of user fees for certain types of services.

Once the Dominican economy improves, government revenues may start to increase again. This does not necessarily mean that government-provided health services will receive increased financial support, however, as there will be many legitimate competing claims on this money. Airports and roads are being built and will have to be maintained. Both the agricultural and industrial sectors need government investment to improve productivity and to attract foreign investment. As discussed in the next section, the government health sector already receives a large share of the recurrent budget.

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**CONFIDENTIAL****II. GOVERNMENT HEALTH SECTOR ALLOCATIONS****NOT FOR PUBLIC RELEASE  
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The Government of Dominica demonstrates its commitment to health by allocating 12% of its recurrent budget to health services. This proportion is large compared to many other countries; allocations of seven to eight per cent being much more common.

During the six years 1975/76 through 1980/81, the health sector overspent its budget every year. In 1979/80, possibly because of the devastation caused by Hurricane David, the health sector budget was overspent by 43%. On average, the Government spent 16% more than it budgeted for health. As a result, health's share in actual government expenditures has averaged about 14%. Table 2 provides detailed information on the Government's allocations to health during the last 7 years.

**TABLE 2: GOVERNMENT'S ALLOCATIONS TO THE HEALTH SECTOR (\$000E.C.)**

YEAR	GOVERNMENT TOTAL(2)			HEALTH SECTOR			HEALTH SHARE (%)	
	(1) ESTIMATE	(2) ACTUAL	OVER/ UNDER	(3) ESTIMATE	(3) ACTUAL	OVER/ UNDER	ESTIMATE	ACTUAL
1981/82	63,660			7,976			13	
1980/81	61,214	58,082	-5	7,303	7,351	+1	12	13
1979/80		45,759		4,406	6,230	+43	-	14
1978/79	31,839	32,784	+3	3,810	4,723	+24	12	14
1977/78	28,611	26,000	-9	3,911	4,092	+5	14	16
1976/77	23,590			2,996	3,790	+27	13	-
1975/76	20,392	20,557	+1	2,420	2,599	+7	12	13
AVE. % (4)	20.9	23.1	-3	22.0	23.1	+16	12	14

- (1) The figures in this column are taken from the summary table immediately preceding the section in the estimates which gives a detailed background of anticipated expenditures within each budgetary head.
- (2) The figures in this column were taken from the same table as the estimate figures, but for the third preceding year. Thus the figure for 1978/79 was found in the 1981/82 estimates. For 1979/80 the "provisional" figure was used from the 1981/82 Estimates. For 1980/81 the "revised estimate" was used from the 1981/82 Estimates.

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- (3) Similar to the figures for the "Government Total" except that the data comes from the summary table presented at the start of the Health section in the Estimates. In years where it was included in the Estimates, the estimate and actuals for "Policy Formulation and Administration" were added to the "Health and Medical Care" totals.

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It should be noted that different tables sometime present inconsistent information. The sources used here were chosen because they appeared to be consistent with each other.

- (4) Figures in this row are the annual rating increase implicit in the top and bottom figures in each column. Figures in columns that contain percentages are weighted averages.

While the Government is relatively generous in terms of the per cent of its recurrent budget allocated to health, the purchasing power of the 1981/82 allocation was only 6 per cent greater than the 1977/78 allocation. Similarly, the purchasing power of 1980/81 expenditures was virtually the same as the purchasing power of 1976/77 expenditures. After inflation is taken into account, Government health expenditures have experienced only minor fluctuations above and below \$8,000,000 E.C. since 1976/77. Table 3 provides a detailed description of the changes in the purchasing power of the recurrent health sector allocations since 1975/76.

TABLE 3: RECURRENT HEALTH SECTOR ALLOCATIONS (1)

YEAR	CURRENT \$ (\$000 E.C.)		PRICE INDEX	PURCHASING POWER \$000 E.C.)		Z OVER/ UNDER
	ESTIMATE	ACTUAL		ESTIMATE	ACTUAL	
1981/82	7,976		607.6	7,976		
1980/81	7,303	7,351	562.1	7,894	7,946	+1
1979/80	4,406	6,230	463.0	5,782	8,176	+43
1978/79	3,810	4,723	345.2	6,706	8,313	+24
1977/78	3,911	4,092	315.8	7,525	7,873	+5
1976/77	2,996	3,790	291.0	6,256	7,913	+27
1975/76	2,420	2,599	269.0	5,466	5,870	+7
AVE. % <sup>(2)</sup>	22.0	23.1	14.5	6.5	6.2	+16

- (1) Budget and expenditure figures from Table 2, above. The price index is the same one used in Table 1.

- (2) Indicates the annual rate of growth required to attain the top figure in the column, using the bottom figure in the same column as a base. The entry in the right-hand column is a weighted average computed using the data in the "Current \$" columns.

Constant real expenditures would not be a problem, if the Government was trying to maintain a constant quantity and quality of service. The Government is, however, trying to increase both quantity and quality. It has hired more staff to do this. The financial and material resources with which those staff have to carry out their responsibilities have diminished. This problem will be discussed further in Section V, below.

The draft primary health care policy paper, currently under development, clearly suggests significantly increased expenditures for primary health care. There are relatively few alternative sources of funding available to finance these expenditures. Some possibilities are listed below.

1. The Government could decide to allocate a greater proportion of its resources to health care. This depends on national policy, but as mentioned above, the proportion going to health is already high.
2. Within the government health sector, the proportion allocated to primary health care could be increased. This depends on health policy, but is likely to be difficult to implement within the constraint of a constant, in purchasing power, budget. The Princess Margaret Hospital, which utilizes, directly or indirectly, more than 1/2 the Government's health budget, is currently experiencing real financial difficulties. Money reallocated from Princess Margaret Hospital to primary health care would almost certainly result in a reduction in some hospital services.
3. Within the primary health care subsector, improved organization might lead to greater cost effectiveness. Current primary health care policy, however, seems admirably designed to deliver cost-effective service, particularly with respect to the range and responsibilities of the paramedical personal included in the system. It is hard to see where further savings could be made.
4. Community participation could be developed. Community contributions could be in kind, perhaps as volunteer assistants to the community health nurses. The community could also make financial contributions; perhaps regularly in the form of an insurance payment, (A very rough calculation suggests that the direct costs of the primary health care system would be about \$3.60 per person per month. See Table A3 in Appendix A.) or perhaps by paying a user fee for certain goods and services; for example, by paying the cost of required drugs or the cost of hospital meals. (See the "Proposal for a Revolving Fund to Finance Drug Procurement" included as Appendix B, below.)

Increasing community participation appears to be the most feasible of the alternatives listed above. The community is willing to contribute as evidenced by the large private sector (See Section VII below.) and by the spontaneous contributions now made by individuals towards the construction of rural facilities and for furnishings at Princess Margaret Hospital.

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### III. SERVICE BREAKDOWN OF RECURRENT GOVERNMENT HEALTH EXPENDITURES

The Government's health expenditures support a wide range of services from water supply to specialized hospital care. They also support a training program for nurses, community health nurses and others, as well as a health ministry that oversees the operation and manages the further development of the health system. Table 4 provides a preliminary classification of the Government's health expenditures by the type of service they support.

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**CONFIDENTIAL****NOT FOR PUBLIC RELEASE****WITHOUT M. S. H. APPROVAL****TABLE 4: CLASSIFICATION OF THE 1981/82 GOVERNMENT HEALTH BUDGET  
BY TYPE OF SERVICE**

	Preventive Services		Curative Services		Sub total Health Services		Training Support		Administrative Support		Sub total Support Services		Total
	\$000 E.C.	%	\$000 E.C.	%	\$000 E.C.	%	\$000 E.C.	%	\$000 E.C.	%	\$000 E.C.	%	\$000 E.C.
Community based	1,404	20	1,425	21	2,829	41	274	41	189	41	463	41	3,292
Inpatient			4,024	59	4,024	59	389	59	270	59	659	59	4,683
Sub Total Health Services	1,404	20	5,449	80	6,853	86							
Training	136	20	527	80			663	59					
Administration	94	20	365	80					459	41			
Sub total Support Services	230	20	892	80							1,122	14	
Total	1,634	20	6,341	80									7,975

**NOTE:**

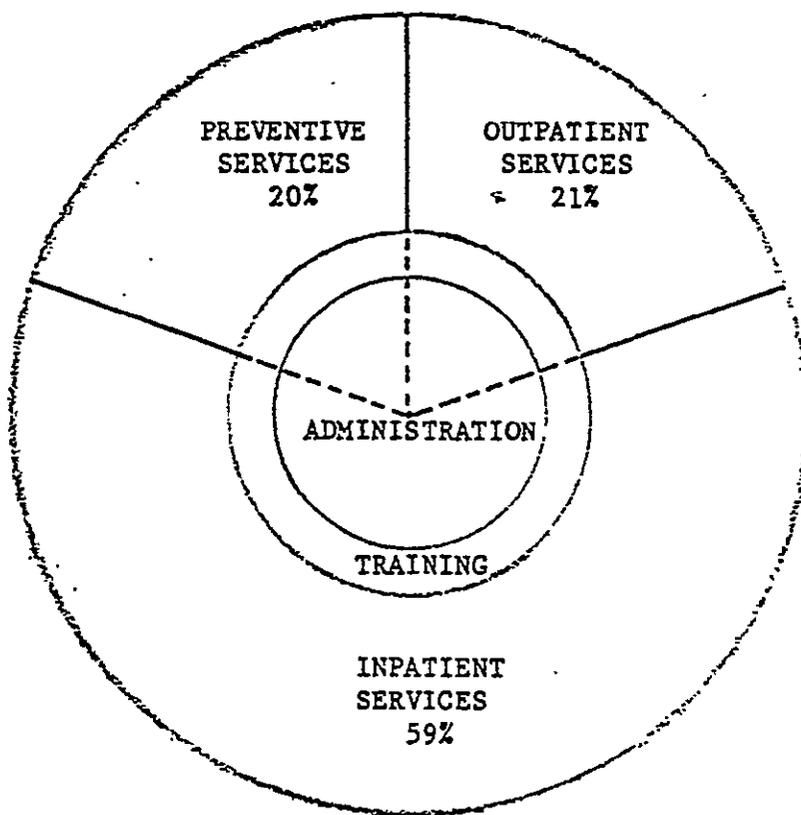
This breakdown is approximate. The dividing line between preventive and curative services is not clear. For example, early case detection and treatment of infant diarrhea is a curative service, in that sick children are identified and treated. It is also, however, a preventive service, since a major purpose is to prevent dehydration which frequently results from diarrhea.

Tables A4 in Appendix A provides detailed information on how each of the above figures was derived from the 1981/82 "Estimates." Major assumptions included the allocation of 20% of Princess Margaret Hospital and Laboratory Service expenditures to outpatient services, and the remainder to inpatient services. Administration includes \$128,000 in grants to external institutions, mostly to PAHO.

The entries in the upper left-hand corner of Table 4 show the amounts the government directly allocates to the delivery of three types of services; community-based preventive services, community-based curative (outpatient) services and inpatient services. Roughly 86% of the Government's budget is spent on the direct costs associated with these services. Of this 86%, roughly one fifth is spent on community-based preventive services and another fifth on community-based curative services. It is these services that are generally referred to as primary health care. The remaining three fifths of direct costs are incurred for inpatient services.

Administration and training expenditures are support, or indirect costs. They account for the remaining 14% of the Government's health expenditures. Three fifths of these expenditures are incurred for training activities while the remainder is spent on the administration. Administration includes, in addition to administrative expenditures, about \$128,000 in grants to external institutions. Both administration and training expenditures support, indirectly, the delivery of the three categories of health services mentioned above. They have, therefore, been attributed to these services in the same proportion as these services incurred direct costs. This methodology is perhaps best illustrated graphically, as in Figure 1, below.

FIGURE 1: 1981/82 Health Budget Allocations by Type of Service<sup>(1)</sup>



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(1) Based on the data presented in Table 4.

There are no standard or correct proportions. It seems likely, however, that as the Ministry of Health starts to implement its primary health care policy, preventive and outpatient services will command a greater share of the budget. This depends, of course, on the method chosen to finance primary health care. If patients pay directly for their drugs, or for some of the services they receive, the way the budget gets split up may change in ways that can not be anticipated now.

The share of the budget allocated to administration appears to be very low. Removing "Grants to External Institutions," the total amount allocated to central administrative services is only \$331,000 E.C. or 4.2% of the total budget. While there are administrative costs included in the budgets of each of the health programs and institutions, this allocation seems very low. Although more analysis is certainly needed, it may mean that medical and paramedical personnel, with advanced training and relatively high salaries, have to do routine administrative tasks which could be done by a person who has less training and a lower salary, thereby permitting medical personnel to focus on the tasks for which they were trained. The low allocations to administration may also mean that administrative services, for example health statistics reports, needed by medical personnel, are simply not produced.

In the future, increased quality and quantity of health services might be most cost-effectively obtained by increasing the personnel resources allocated to administration.

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#### IV. COST OF SERVICES DELIVERED

Considering the relatively low level of economic development and the havoc wrought by Hurricane David in August 1979, the health status of the population of Dominica appears surprisingly good. As on the other islands, birth and death registration is reported to be virtually complete. Yet on Dominica the infant mortality rate is only about 20 per 100 live births. The current system must be providing a relatively high standard of care to newborns and infants.

Unfortunately, the first annual health statistics report in several years was still in the process of being completed at the time of this analysis. As a result, unit costs of various types of primary care services can not be calculated. (When the annual report becomes available, however, it will be a relatively easy matter to apply the methodology used in the reports for St. Vincent and the Grenadines and St. Kitts/Nevis to the budget data presented in Table A4 in Appendix A and the service statistics in the new annual report.

At the present time, even the precise occupancy rate at Princess Margaret Hospital is not known. The Hospital Administrator reported that the two medical records clerks could barely keep up with the task of pulling and filing patient records. They had no time available to aggregate any information on hospital services, such as the number of patient days, the occupancy rate or even the number of admissions. The Hospital Administrator estimated, however, that the average number of patients in the 224 bed hospital was 185 which yields an occupancy rate of 82.6%.

Applying an average occupancy of 185 to 80% of the 1981/82 estimated operating cost yields an estimated cost of \$48.68 per patient day at Princess Margaret Hospital. This figure appears reasonable but may, in fact, be somewhat of an underestimate. The main source of likely underestimation is that expenditures may exceed the budget. As of 11 February, \$594,000 had been spent on materials and supplies. This is equivalent to an annual rate of about \$960,000, well above the budgeted \$750,000. In addition, the \$594,000 did not include any expenditures for drugs and medical supplies received from Medical Stores. It is possible that total expenditures for supplies and materials, including drugs and medical supplies, will approach \$1,500,000 in 1981/82, double the amount budgeted. If this proves to be the case, the average cost per patient day will be \$57.57.

In an appendix to their April 1981 report on Princess Margaret Hospital, Dr. P.J. Key and Mr. J. McBride state that the estimated number of out-patient and casualty consultations is 200 per day. Assuming a 6 day week, and assuming that 20% of the hospital's operating costs are attributable to outpatients, the unit cost of an outpatient consultation is \$13.17. This figure also seems to be reasonable, but may be an underestimate for the same reason that inpatient unit costs may have been underestimated.

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The Hospital Administrator estimated that approximately two thirds of his expenditures for supplies and materials was for patient food. If true, this suggests that the hospital is spending \$9.47 per day per patient for food, assuming that the staff consumption is negligible. (It may not be.) This figure seems quite high, and may be partly due to the fact that the Ministry of Health is in debt to local suppliers. (It is still trying to pay them for food received 6 to 8 months ago.) This places the Ministry at a disadvantage when it tries to negotiate discounted prices on food for the hospital. Table 5 summarizes these estimates of unit operating costs at Princess Margaret Hospital.

TABLE 5: 1981/82 Estimated Unit Operating Costs at Princess Margaret Hospital

UNIT OF SERVICE	(\$E.C.) COST
Inpatient services per patient day	48.68
Inpatient food per patient day	9.47
Outpatient services per consultation	13.17

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## V. USES OF FUNDS

The Government of Dominica breaks its health budget down into 133 expenditure categories. The detailed breakdown for the 1981/82 budget is provided in Table A4 in Appendix A.

Just over 75 per cent of the 1981/82 budget was allocated to personal involvements. This proportion appears to be very high. Only thirteen and one half per cent was allocated to supplies and materials, with another two per cent for office and general expenses. The share of the budget allocated to supplies and materials is very low. Actual expenditures, which could not be accurately ascertained at the time, may be considerably higher, since it is not clear from which budget items drugs and medical supplies are being financed. Drugs and medical supplies, like hospital food, have been purchased on credit in the past, and the Ministry is now several hundred thousand dollars in arrears.

The Ministry is aware that its budget for supplies and materials is not sufficient, and is actively considering ways to increase financing for supplies and materials. The Proposal for a Revolving Fund to Finance Drug Procurement is one possibility under consideration. This proposal has been included in this report as Appendix B. Recognizing, that the Government can not afford to provide all the drugs the population desires free of charge, and that most people are frequently willing to pay for drugs as indicated by increasing sales in the private sector, the Ministry believes the people of Dominica would be willing to pay for drugs distributed through the Government's health institutions, if the Government can procure them at competitive prices and make them consistently available. Naturally, safeguards are needed so that drugs are accessible to indigents as well.

It is possible that a similar mechanism could be designed to finance other items in the Ministry's budget. The most prominent of these items is food for hospital patients and staff. At least certain categories of patients and staff could contribute towards the cost of the food they eat. For many, even if they reimbursed the hospital for all the food they ate, they would still be spending less than if they were at home.

At the very least, this analysis suggests what the Ministry already realizes; that is, the financial resources available for supplies and materials are not commensurate with the number of staff nor with the task. For a cost-effective primary health care system, more financial resources must be found whether from general government revenues or from some alternative financing scheme.

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VI. CAPITAL EXPENDITURES**CONFIDENTIAL****NOT FOR PUBLIC RELEASE  
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Capital expenditures are not very significant if the government health sector Dominica. The highest annual capital expenditure in health was achieved in 1978/79 when \$135,000 was spent, less than 3 per cent of recurrent expenditures.

As Table A6 in Appendix A indicates, however, the very low level of capital expenditures is not indicative of small capital budgets. In 1978/79 the capital budget for health was actually 17% larger than the recurrent budget for health. While only three per cent of the capital budget was spent, the recurrent budget was overspent by 24%. Over the five-year period from 1975/76 through 1979/80, only 3% of the the health capital budgets were spent.

The high rate of underexpenditure is attributed to the inclusion in the capital budget of projects budgets, the funding source for which have not been identified. The capital budget does not indicate that funds are available. Rather, it indicates what the Ministry of Health would like to spend, if money can be found. This, in fact, explains the 86% drop from the "Estimate" to the "Revised Estimate" made a year later. In two of the five years for which data was available, however, there were also large discrepancies between the Revised Estimates and Actual Expenditures. These discrepancies suggest that, although a funding source had been identified, difficulties were encountered in obtaining and utilizing the funds.

The Government as a whole appears to have the same type of difficulty, although not with the same degree of severity. On average, the Government manages to spend 21% of its original estimate and 61% of its revised estimate. Thus while health accounts for about 0% (the figure varies between 4% and 21%) of the Government's capital budget, it accounts for only 1% (the figure varies between 0% and 4%) of the Government's capital expenditures.

The current level of spending does not have significant implications for future recurring budgets of the Ministry of Health. If, however, capital spending began to approach the budgeted level which now stands at a little more than 75% of the recurrent budget, the recurring cost implications could be very important.

Given the current financial difficulties of the Ministry, and the remoteness of the possibility that in the near future it will receive significantly greater allocations from general government revenues, all capital expenditures should be carefully analyzed for their operating cost implications. This is generally a three step process.

1. Estimate the total operating cost of the completed project.
2. Estimate the current operating cost of any activities that will be displaced by the completed project; for example, the operating cost of a Type I Health Center that is being replaced by a Type II facility; and subtract this amount from the total estimated operating cost of the project.

3. Identify the likely source of funding for all increased operating costs; for example, "general government tax revenues."

This process should be followed for all new projects, whether capital spending is involved or not. The financial implications of the draft primary health care policy should be studied in this way.

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## VII. PRIVATE SECTOR EXPENDITURES

Private sector expenditures were a little more difficult to estimate on Dominica than on the other islands where similar studies were done. A different methodology is used here.

As on St. Kitts/Nevis and St. Vincent and the Grenadines, information was readily available on the total value of drugs imported. Table 6 presents this information.

TABLE 6: Drug Imports on Dominica<sup>(1)</sup>

YEAR	AMOUNT (\$E.C.)
1982	2,301,000
1981	1,966,000
1980	1,679,482
1979	1,027,381
1978	1,851,917
1977	1,047,472
AVE. %	17.0

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- (1) Figures for 1977 through 1980 are actual figures provided by the Government Statistical Office which maintains information on foreign trade. Figures for 1981 and 1982 are estimates made by projecting the rate of growth experienced between 1977 and 1980. The decrease registered by drug imports from 1978 to 1979 was probably due to the economic and social dislocation caused by Hurricane David in August 1979.

Unfortunately, the amount actually spent on drugs by the Ministry of Health was not readily available. The 1981/82 budget stated in a parenthetical note that the Central Medical Stores would purchase \$1,000,000 worth of drugs. However, the total supplies and materials allocation for the same year for the whole Ministry came to only 1,077,000 of which \$594,000 has already been spent by Princess Margaret Hospital. This, and the current financial difficulties of the Ministry suggest that actual Government purchase of medical supplies are more likely to be around \$500,000 during 1981/82.

Private sector imports for 1982 are, therefore, likely to be about \$1,800,000. Estimated private retail sales will reflect an average import tax of about 10% and a mark-up of about 75% for a total of \$3,465,000.

On St. Kitts/Nevis fees paid to doctors at their private practices were estimated to be about 71% of private sector drug sales. On St. Vincent and the Grenadines the equivalent figure was estimated to be 62%. Using 65% of private sector drug sales yields an estimate of \$2,252,000 paid to doctors on consultation and service fees.

The total amount of money being spent by the population for drugs and doctors' fees, therefore, appears to be in the neighborhood of \$5.7 million or about 70% of the Government's estimated expenditure for 1981/82.

In addition to the direct costs incurred for drugs and consultations with a doctor, patients also pay for transportation. They incur this expense whether they seek goods and services in the private sector or in the government sector. On Dominica, which has a relatively large land area, this expense is likely to be relatively high. Total direct and indirect private sector health expenditures are, thus, estimated to be close to the same amount as is spent by the Government.

If this estimate is approximately correct, it is good news for the financially pressed Ministry of Health, because it is an indicator of the populations' interest in obtaining health services and their willingness to pay a considerable expense in order to do so. If the Ministry can provide a similar or improved quality of service, the people should be willing to contribute substantially towards its cost.

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### VIII. SUMMARY AND RECOMMENDATIONS

This report has presented a preliminary analysis of financing in the health sector of Dominica. Current spending in both the government and private sectors appears to be about \$100 per capita. Not much is known about the trend in the private sector. In the government sector, however, spending appears to be roughly constant after inflation is taken into account.

The current availability of service statistics is not sufficient to develop a very broad range of unit costs for various health services. The development of these statistics is, however, currently receiving priority attention and the first annual health statistics report in several years is expected to be available soon.

Of perhaps most interest is the relatively advanced stage reached in the planning for primary health care. The Ministry of Health on Dominica has concisely defined what primary health care means on Dominica and has identified a strategy for delivering the specified services. It has recognized the need for administrative reorganization and is in the process of implementing the required changes. In brief an exciting start has been made by some very knowledgeable and competent people.

The next phase in the development of the primary health care plan should be a study of the financial implications of the chosen strategy. The technology selected appears to be appropriate, but it will require additional resources from the Ministry of Health which is already in serious financial difficulties. An estimate of the additional resources required is needed as soon as possible, so that a strategy for obtaining those resources can be developed.

Several specific recommendations follow below.

1. Analyze the financial implications of the primary health care policy and develop a plan for assuring that adequate financial resources will be available when they are needed.
2. A similar analysis should be carried out for all capital projects before they are initiated. (See Section VI.)
3. Currently, spending for administration and for supplies and materials seems to be disproportionately low. This may be having a negative impact on the effectiveness of expenditures for personal emoluments. If this is true, these two areas should receive priority attention when future budgetary increases are allocated within the Ministry.
4. If the technical and financial resources are available, financial analysis similar to this one, but more in depth, should be undertaken, once a draft of the five year plan is near completion. The purpose of this analysis would be to develop a financial plan to support the service delivery plan.

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APPENDIX A: SUPPORTING TABLES

TABLE A1: Recurrent Government Revenues By Source (\$000 E.C.)

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Year	Individual Income Tax		Import Duties		Consumption Tax		All Other Taxes		Budgetary Aid		All Other Revenue		Total	
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.
1981/82	(1) 13,250		(1) 7,500		(1) 21,000		(2) 7,040		(1) 3,600		(3) 5,964		(1) 58,354	
1980/81	(4) 8,400	(1) 11,200	(4) 3,900	(1) 6,150	(4) 11,500	(1) 17,400	(3) 3,640	(2) 4,150	(4) 11,000	(1) 12,188	(3,12) 22,774	(3) 5,610	(4) 61,214	(1) 56,698
1979/80		(1) 6,886		(1) 3,897		(1) 10,429		(2) 5,529		(1) 11,947		(3) 4,707		(1) 43,395
1978/79	(6) 3,800	(1) 4,296	(6) 3,900	(1) 4,056	(6) 5,700	(1) 6,525	(7) 7,975	(3) 7,159	(6) 0	(1) 8,781	(3) 4,666	(3) 3,574	(6) 26,041	(1) 34,391
1977/78		(4) 5,460		(4) 4,151		(4) 6,129		(5) 5,568		(4) 7,166		(3) 2,894		(4) 31,368
1976/77	(8) 2,900	(6) 3,960	(8) 3,500	(6) 3,487	(8) 5,180	(6) 5,564	(9) 3,715	(7) 4,710	(8) 0	(6) 4,055	(3) 2,069	(3) 3,797	(8) 17,364	(6) 25,573
1975/76	(10) 2,650	(6) 3,114	(10) 3,500	(6) 2,855	(10) 4,700	(6) 3,936	(11) 3,745	(7) 2,998	(10) 0	(6) 3,926	(3) 2,418	(3) 3,341	(10) 17,013	(6) 20,170
(13) AVE. %	30.8	29.2	13.5	16.5	28.3	34.6	11.1	6.7	--	25.4	16.2	10.9	22.8	23.0

- (1) Taken from pages 7-14 in 1981/82 Recurrent Estimates of the Commonwealth of Dominica.
- (2) Derived from other columns in this table and total Tax Revenue figures on page 7 of the 1981/82 Recurrent Estimates of the Commonwealth of Dominica.
- (3) Derived from other columns on this table.
- (4) Taken from pages 7-14 in 1980/81 Estimates of the Commonwealth of Dominica.
- (5) Derived from other columns in this table and total Tax Revenue figure on page 9 of the 1980/81 Estimates of the Commonwealth of Dominica.
- (6) Taken from pages 9-16 in 1978/79 Estimates of Dominica.
- (7) Derived from other figures in this table and the total Tax Revenue figure on page 9 of the 1978/79 Estimates of Dominica.
- (8) Taken from pages 5-11 in 1976/77 Estimates of Dominica.

TABLE A1: Recurrent Government Revenues By Source (\$000 E.C.)  
(continued)

- (9) Derived from other columns in this table and the total Tax revenue figure on page 5 of the 1976/77 Estimates of Dominica.
- (10) Taken from pages 5-11 in the 1975/76 Estimates of Dominica.
- (11) Derived from other columns in this table and the total tax revenue figure on page 5 of the 1975/76 Estimates of Dominica.
- (12) Apparently, primarily a large anticipated loan which was not approved.
- (13) Figures in this row are annual rates of growth required to achieve the top figure in each column, using the bottom figure in the same column as a base.

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TABLE A2: Revenues Generated in the Government Health Sector (\$000 E.C.)

Revenue Head	(1)	1980/81		1979/80		1978/79		1977/78		1976/77	
	81/82	(2)	(1)	(1)	(1)	(3)	(1)	(2)	(4)	(3)	
	Est.	Est.	R.Est.	Est.	P.A.	Est.	A.	Est.	A.	Est.	A.
Hospital Fees	0	10	0		5	30	17		16	30	34
Specialist and other Medical Fees	0	5	0		--	10	5		8	15	10
X-Ray Fees	15	8	12		10	10	9		11	8	5
Nurses Contribution for Room & Board	50	30	28		29	30	29		1	36	22
Laboratory Fees	20	10	16		14	20	16		15	10	19
Miscellaneous	20	20	30		--	0	0		16	0	0
Medical School	300	350	250		81	0	0		0	0	0
<b>Total</b>	<b>405</b>	<b>433</b>	<b>336</b>		<b>139</b>	<b>100</b>	<b>76</b>		<b>67</b>	<b>99</b>	<b>90</b>

- (1) From page 11 of 1981/82 Recurrent Estimates of the Commonwealth of Dominica.
- (2) From page 11 of 1980/81 Estimates of the Commonwealth of Dominica.
- (3) From page 13 of 1978/79 Estimates of Dominica, approved.
- (4) From page 9 of 1976/77 Estimates of Dominica, approved.

Abbreviations: Est.= Estimate; R.Est.= Revised Estimate; P.A.= Preliminary Actual; and A.= Actual.

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TABLE A3: Notional Operating Cost of Fully Staffed Primary Health Care System

Type of Facility	Budget Items	Unit Cost	# Units	Total Cost
Type I Health Centers	Salary of 1 CHN	\$ 10,000	40	\$ 432,000
	Other Costs: 80% of Salaries	6,000		
		4,800		
Type II Health Centers	Salaries of 2 CHNs	97,000	5	485,000
	Salary of 1 Nurse-Midwife	12,000		
	Salary of 1 Health Visitor	11,000		
	Salary of 1 Environmental H.O.	12,000		
	Other Costs: 100% of Salaries	13,500		
Type III Health Centers	Salary of 1 Doctor	333,900	7	2,337,300
	Salary of 1 Family Nurse Practitioner	20,000		
	Salary of 1 Health Visitor	12,000		
	Salary of 1 Nurse-Midwife	12,000		
	Salary of 1 Environmental H.O.	11,000		
	Salary of 3 CHNs	13,500		
	Salary of 1 Dispenser	18,000		
	Salary of 1 Dental Auxiliary	12,000		
	Salary of 1 Lab. Tech.	10,000		
	Salary of 1 Driver	9,000		
	Salary of 1 Administrator	7,000		
	Salary of 1 Bookkeeper	14,000		
	Salary of 4 Staff Nurses	9,000		
	Other Costs: 80% of Salaries	38,000		
		148,400		
<b>Total</b>				<b>\$3,254,300</b>

Note: These costs are purely speculative. The staffing pattern at Type III Health Center may be inflated, but some of these facilities have as many as 30 beds. These costs are not additional to current expenditures, which amount to approximately \$1,449,000 at the 3 rural hospitals and existing dispensaries.

Table A3 suggests "other costs" of \$1,473,300 and salary costs of \$1,781,000, a ratio of 83%. Currently at the 3 rural hospitals and dispensaries, other costs are only \$238,000 while salaries are \$1,211,000 a ration of only 20%. The current mix of salaries and other costs is likely to lead to severe under-utilization of staff who are not provided with the material and financial resources they need to properly discharge their responsibilities. Table A4 suggests that implementation of the primary health care policy will involve a 47% increase in salaries. If other expenditures are increased to a level that will make optimum use of personnel, they will increase by 519%.

Assuming a population of 75,000, the primary health care cost per person per month is \$3.62 E.C.

TABLE A4: Breakdown of 1981/82 Estimates by Program and Object Classifications (\$000 E.C.)

Division No.	Programme	Personal Emoluments	Travel & Subsistence Allowance	Supplies & Materials	Casual Labor	Furniture, Tools & Equipment	Office & General Expenses	Electric Current	Rental of Property	Operating & Maintenance Services	Grants & Contributions to Local Inst.	Rewards & Compensation	Public Assistance & Casual Relief	Grants & Contributions to International Orgs.	Total	%
		01	02	03	04	05	06	07	09	14	15	17	27	29		
3350	Policy Formualtion & Administraiton	190	7				2			6					206	2.6
3351	Health Administration	--	50				2		13						65	0.8
3352	Operation of Medical Stores	60		--											60	0.8
3353	Medical Care	88	45		30					20					183	2.3
3354	Environmental Health	235	16	30	69	5	3			10					370	4.6
3355	Maternal and Child Health	275	17	3			7								302	3.8
3356	Dental Services	105		80		3	2			4					199	2.5
3361	Princess Margaret Hospital	2,536	5	750		30	75	50		90					3,531	44.3
3362	Marigot Hospital	183		37		1	5	1		9					236	3.0
3363	Portsmouth Hospital	302		45		2	8	3		11					371	4.7
3364	Grand Bay Hospital	103		3			1	1		2					110	1.4
3365	St. Lukes Hospital	340	40	28			11	1		4			2		426	5.3
3366	Tarreau Home	31		10			1	1		--					43	0.5
3367	Dispensaries	623		31	26	3	23	4	10	12					732	9.2
3368	Laboratory Service	276	9	60		3		2							350	4.4
3371	Training of Nurses & Others	634				5	18				6				663	8.3
3391	Grants to External													128	128	1.6
	Total	5,981	191	1,077	125	52	158	63	23	168	6	--	2	128	7,975	100.1
	%	75.1	2.4	13.5	1.6	0.7	2.0	0.8	0.3	2.1	0.1	--	--	1.6	100.2	

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TABLE A4: Breakdown of 1981/82 Estimates by Program and Object Classifications  
(\$000 E.C.)  
(continued)

Preventive Services= 100% of 3354, 3355 and 3367.

Outpatient Services= 100% of 3356 plus 50% of 3353, 3362, 3363 and 3364 plus 20%  
of 3361 and 3368.

Inpatient Services = 50% 3353, 3362, 3363 and 3364 plus 80% of 3361 and 3368 plus  
100% of 3365 and 3366.

Training = 100% of 3371.

Administration = 100% of 3350, 3351, 3352 and 3391.

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TABLE A5: Estimated 1981/82 Operating Cost of Princess Margaret Hospital

Item	Amount SE.C.
Direct Costs	
Personal Emoluments	2,536,000
Supplies and Materials	750,000
Other Direct Costs	245,000
Indirect Costs	
Training (51.5% of all Training Costs)	341,610
Administration (51.5% of all Administration Costs)	236,499
Total	4,109,109

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TABLE A6: Comparison of Total Government and Health Capital Budgets

Year	Government Total						Health Sector						Health Share %		
	A) (\$000E.C.) Estimate	B) (\$000E.C.) R.Estimate	C) % Over Under	D) (\$000E.C.) Actual	E) % O/U R.E.	F) % O/U Est.	G) (\$000E.C.) Estimate	H) (\$000E.C.) R.Estimate	I) % O/U	J) (\$000E.C.) Actual	K) % O/U R.E.	L) % O/U Est.	M) Est.	N) R.E.	O) A.
1) 1981/82	85,930						6,179						7		
2) 1980/81	72,312	29,044	-60				4,925	574	-88				7	2	
3) 1979/80	27,126	22,362	-18	11,526	-48	-58	5,580	48	-99	48	0	-99	21	-	-
4) 1978/79	29,820	4,348	-85	3,264	-25	-89	4,440	149	-97	135	-9	-97	15	3	4
5) 1977/78	35,190	6,328	-82	3,490	-45	-90	2,414	1,409	-42	71	-95	-97	7	22	2
6) 1976/77	15,732	5,407	-66	5,073	-6	-68	587	91	-84	97	+7	-83	4	2	2
7) 1975/76	13,739	3,838	-72	2,312	-40	-83	555	387	-30	27	-93	-95	4	10	1
8) Ave. %	35.7	49.9	-63	49.4	-39	-79	49.4	8.2	-86	15.5	-82	-97	9	4	1

Columns denominated in \$000E.C. have annual rates of growth in the bottom row. Columns denominated in % have weighted averages in the bottom row. "% O/U" indicates the percent over or under the estimated amount. Abbreviations: R.= revised; E.= estimate; and A.= actual.

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Notes for Table A6 showing  
"Comparison of Total Government and Health Capital Budgets"

(The number and letter at the start of each note indicate a row and column, respectively, in Table 6.)

- 1A page 353 in #1.
- 2B page 380 in #1.
- 3D page 380 in #1.
- 1G page 372 in #1. (Tot. of col. 3,4,&5) + Head E 6402 on pg. 374 (tot. of col. 3,4, & 5).
- 2H page 372 in #1 plus Head E 6402 on page 374.
- 3J page 372 in #1 plus Head E 6402 on page 374.
- 2G page 373 in #2 (Tot. of col. 3 & 5) (nothing under Head E 6402).
- 3H page 373 in #2 plus Head E 6402 on pg. 375.
- 4J page 373 in #2 plus Head E 6402 on pg. 375.
- 2A page 380 in #2 (Tot. of col. 3,4, & 5).
- 3B page 380 in #2.
- 4D page 380 in #2.
- 4A page 373 in #4.
- 5B page 373 in #4.
- 6D page 395 in #4.
- 4G page 394 in #4 (Health \$1,820,000) + page 390 Head E 6402 (Water & Sewage \$2,620,000).
- 5H page 394 in #4 (Health \$69,131) + page 390 Head E 6402 (Water & Sewage \$1,340,000).
- 6J page 394 in #4 (Health \$82,351) + page 390 Head E 6402 (Water & Sewage \$14,440).
- 5A page 369 in #5.
- 6B page 391 in #5.
- 5G page 390 in #5 (Health \$504,000) + page 386 Head E 6402 (Water & Sewage \$1,910,000).
- 6H page 391 in #5 (Health \$77,500) + page 387 Head E 6402 (Water & Sewage \$13,285).
- 7J page 391 in #5 (Health \$0) + page 387 Head E 6402 (Water & Sewage \$26,976).
- 7D page 391 in #5.
- 7B page 359 in #6.

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- 6A page 359 in #6.
- 6G page 378 in #6 (Health \$548,500) + page 374 Head E 6402 (Water & Sewage \$38,300).
- 7H page 379 in #6.(Health \$235,000) + page 375 Head E 6402 (Water & Sewage \$151,805).
- 7G page 340 + 341 Sum of heads 3651.1, -2, -3, -4, -5 and 6401.23.
- 7A page 333 in #7.
- 3A page 341 in #3.
- 4B page 341 in #3.
- 5D page 341 in #3.
- 3G page 334 in #3 (Health \$2,830,000) + pg. 337 Head 6402 (Water & Sewage \$2,620,000).
- 4H page 334 in #3. no water
- 5J page 334 in #3. no water
- #1 1981/82 Recurrent Estimates of the Commonwealth of Dominica
- #2 1980/81 Estimates of the Commonwealth of Dominica
- #3 1979/80 Estimates of the Commonwealth of Dominica, Capital Estimates
- #4 1978/79 Estimates of Dominica, approved
- #5 1977/78 Estimates of Dominica, draft
- #6 1976/77. Estimates of Dominica, approved
- #7 1975/76 Estimates of Dominica, approved

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APPENDIX B: PROPOSAL FOR A REVOLVING FUND TO  
FINANCE DRUG PROCUREMENT

Brief Description of the Current Situation

Currently the government health system provides drugs free of charge to all patients who receive services at government facilities, if the required drugs are in stock. In this way the government expects to purchase and distribute close to \$1,000,000 E.C. of drugs and other medical supplies during the current year. The demand for drugs has been increasing, although the rate of increase is unknown.

A number of interrelated problems have arisen which suggest that the government might wish to alter the policy of free drug distribution. These problems include:

1. A severe shortage of funds with which to pay for drugs. Currently, the government owes suppliers more than \$400,000 E.C. for procurements made in the past.
2. High purchase prices for some drugs, in part due to the fact that order quantities are small, in part because purchases are frequently made in considerable haste. (It should be noted that Mr. Davis, in-charge of the Central Medical Stores has procured quite a few basic drugs from ECHO at very reasonable prices.
3. Frequent stock-outs occur at all levels in the health system.
4. The current information system does not provide sufficient information to quantify the problems described above. This is not necessary, however, since it is fairly clear that a major effort is necessary to resolve the problems mentioned above. This effort should include revisions in the information system so that it will routinely produce information on
  - a) existing stock levels at each distribution point,
  - b) consumption at each distribution point, measured in \$,
  - c) frequency of stock-outs at each level in the system, and
  - d) forecasts of future requirements.

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## A Revolving Fund to Finance Drug Procurement

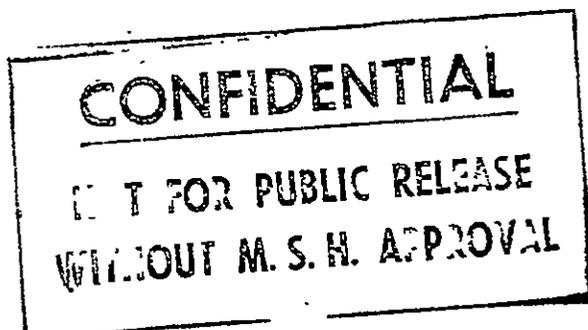
The problems mentioned above are likely to get worse in the near future. Demand for drugs has been increasing. The emphasis being placed on access to primary health care services is likely to stimulate a further increase in demand, particularly in the short-run, as new cases are identified before preventive activities can reduce morbidity rates.

Furthermore, the money currently being spent on "free" drugs (actually the drugs are not "free" since the people pay for them through taxes) might be more effectively used in some alternative way. The hospital needs renovation, as do many smaller health facilities. Equipment needs are great. Outside of the health sector, investment is needed in agriculture and other productive sectors in order to reduce the unemployment rate.

Several countries faced with financial problems similar to Dominica's, have set up revolving funds for drug procurement. The concept is fairly simple and very appealing: a certain amount of money is set aside for the purchase of drugs, these drugs are sold at a price which enables the organization managing the fund to purchase a resupply.

In practice, implementation presents many problems, none of which are insurmountable, but which need to be addressed in the design phase. Before discussing these problems, however, it might be useful to list some of the things a successful revolving fund should accomplish.

1. It will reduce or eliminate the need for annual allocations from the "general fund" for the purchase of drugs. Funding for this component of the primary health care system is assured, by definition, as long as the fund operates successfully.
2. Sufficiently capitalized, the fund will permit the planned procurement of relatively large quantities, reducing the price paid for the drugs and shipping costs.
3. The frequency and length of stock-outs will be reduced.
4. The rate of increase in the consumption of drugs should be reduced. Doctors tend to overprescribe and patients tend to overconsume when drugs are free.
5. If patients pay for their drugs, they are likely to make a greater effort to use them properly. They will attach more importance to drugs, if they pay for them.
6. The information on drug consumption generated by the management information system supporting the revolving fund will be very useful in future planning exercises.



## Implementation Problems

The concept of revolving funds is very attractive. In practice, however, they have proven quite difficult to set up and operate. They require a degree of commitment that is frequently lacking. I don't know of any country that has managed to successfully initiate and maintain a revolving fund for drug procurement on a national scale. I have seen them operating successfully at individual institutions in Haiti. Also, private sector pharmacies are frequently quite successful and they are essentially mini-revolving funds. The following are some of the important problems frequently encountered in establishing revolving funds for drug procurement.

1. The amount of capital required is frequently underestimated. Initial funding must be sufficient to keep the system operating until sufficient income from sales has accumulated to make a second-cycle purchase.
2. Insufficient effort may be devoted to upgrading the management information system which must now, not only account for the flow of drugs, but also for the flow of money.
3. Prepackaging of drugs in the unit of sale; i.e. course-of-therapy packaging, appears to be essential to sufficiently simplify the accounting process. Otherwise accounting problems preoccupy the rural health care provider.
4. Decapitalization tends to occur. Prices may not have been set sufficiently high to recover all costs, yet the funding source may not come up with the recurring supplementary infusions of funds necessary to maintain a full pipeline. Stock-outs will result.
5. Hasty and incomplete design work at the start may doom the fund from the start, by overlooking any or all of the problems mentioned above. The skill level required to design and initiate a new supply system is greater than that required to maintain a system in satisfactory operation.

By avoiding the above pitfalls, the financial success of the revolving fund should be assured. The revolving fund system will have to perform better than the existing system in order to please the people who must now pay for their drugs where they used to get them for free. They will probably evaluate the service they receive on the basis of the following interrelated criteria which should be kept in mind when designing the system.

1. Convenience of location. To the extent consistent with sound medical practice, drugs should be made available near the residence of the patient. The savings to him in transportation costs may totally offset the price he must pay for the drugs.
2. Reliability. Stock-outs must be minimized. When the patient has to pay for his drugs he will become justifiably more insistent that supplies be regularly available.

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3. Understanding. Popular acceptance of the program will be enhanced, if a concerted effort is made to explain it. Pricing policies are particularly important in this regard. The people will demand explanations of prices. The health care providers will receive this demand. They should be adequately prepared to answer questions about the system. They will need some training as well as posters and pamphlets explaining the system.

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## Revolving Fund Proposal: Pricing Policies

Many options exist for encouraging or discouraging the consumption or use of certain drugs, or for assuring that all people have access. Some of the problems commonly encountered are discussed briefly below. They are all inter-related. They all affect the price that must be charged.

How much of the costs are to be recovered?

In Haiti, the objective of the working fund is to recover all recurring costs. In Afghanistan the objective was to recover the purchase price of the drug plus an average of 20% which the village health worker could retain as his profit. All other recurring costs of the Afghan revolving fund were to be born by the Ministry of Health budget. In effect, the Ministry subsidized the drugs.

It is, of course, quite feasible to charge more than the cost of delivering the drugs. The "profits" could be used by the Ministry to help cover other costs; e.g. workers salaries or the reconstruction of the Princess Margaret Hospital. The "profits" could also be retained in the community where the drugs were sold, to be used by the community for local health projects.

What should be done for indigents?

In Haiti, the government will continue to provide drugs free to indigents. The same drugs will be used, but they will be packaged differently. The decision of who gets free drugs will rest with the local health care provider. If she hands out too many free drugs she will run out and indigents will have to either pay, wait until the facility receives a resupply of free drugs, or go to another facility.

In Afghanistan, the village health workers frequently used their "profit" to pay for drugs which they distributed for free to those who could not pay. The village health workers were always people from the village and knew the people. This aided them in making the decision of who is or is not indigent.

The critical problem rests in the need to make the decision concerning who qualifies. No set of criteria will apply without exception. If the decision is made in the community by people who know the individual involved, it is likely to be made correctly. A surcharge on drugs sold to others might be used to create a local fund which could be used to buy drugs for indigents.

What about the pricing policy for preventive drugs?

In general, people are less likely to want to pay for preventive drugs than for curative drugs. Preventive drugs can be subsidized by allocations from the Ministry's operating budget, or they can be subsidized through the proceeds of a surcharge on curative drugs. Since preventive drugs reduce the need for an consumption of curative drugs a strong case can be made for making preventive drugs available for free to everyone.

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Much the same argument applies to certain curative drugs which may be unpopular, but cost-effective. Thus, one might want to subsidize the use of oral rehydration salts possible by placing a surcharge on the use of less cost-effective drugs like I.V. solutions for dehydration.

In Afghanistan sulpha drugs were very popular for treating diarrhea in young children. While this may have been effective in stopping diarrhea, which was what the mothers wanted, it did nothing about dehydration, a problem mothers didn't recognize. Towards the end of the village health worker program, the Ministry was considering a proposal to add sulpha to the village health worker's formulary, and include the price of 1 liter of oral rehydration salts in the price of the sulpha. Patients could purchase oral rehydration salts alone, or sulpha with oral rehydration salts, but not sulpha alone.

What about the pricing of life-saving drugs?

Life-saving drugs may be subsidized by less essential drugs. Thus the person who purchases a bottle of cough syrup helps pay the cost of a course of penicillin for a child that has pneumonia.

The question of children, pregnant women and old people is essentially similar to that of indigents. Drugs can be provided to them at subsidized prices. If these drugs come from the revolving fund, however, the subsidy must be recovered, either from surcharges on other sales or by a regular infusion of funds from some other source. If the cost of the subsidy is not recovered, the pipeline will become decapitalized, purchases will be delayed, and stockouts will occur.

One possible policy which might be tried is to reward mothers and children for accepting preventive advice. Thus, drugs could be sold at a discount to treat children whose child health cards and immunizations are up-to-date. Children whose card was not up to date could pay a small surcharge; in effect, a fine. Adults who contribute labor to a local public health project might be entitled to buy drugs at a reduced cost for a period of time.

These policies may well entail severe administrative difficulties. In general, the initial system should be simple to administer. The ideas suggested above under "Other pricing policy objectives" should probably not be tried until the revolving fund has been running successfully for some time.

Some of the policies mentioned earlier can be easily worked out at the central level. Thus, if one tenth of the drugs are considered to be preventive and to be distributed free, an 11% surcharge on the other drugs would cover the cost of the subsidy.

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## Revolving Fund Proposal: Estimation of Costs

Regardless of whether the objective is to recover 100% of the costs associated with delivering drugs through the health system, an accurate estimate of the cost should be made. Generally, these costs can be classified into 2 categories; recurring or operating costs and development or capital costs.

### Development Costs

To implement a revolving fund, there will be a number of expenses which will occur only once. These expenses are ones for which foreign assistance is most likely to be forthcoming. The major items include:

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#### 1. Capitalization of the Pipeline \$765,000

The drugs and supplies financed by the revolving fund must be ordered, shipped, held in central inventories and then held in health facility inventories. The time that elapses between the payment for a shipment and the receipt of money from the sale of that shipment constitutes the length of the pipeline. The average monthly sales represent the diameter of the pipeline. The product of monthly sales by the length of the pipeline in months is the amount of capital required to fill the pipeline.

Pipelines are usually much longer than people expect. In Afghanistan the pipeline for the drug sales program was estimated to be 24 to 30 months long. In Haiti, because many drugs could be procured locally, the pipeline was estimated to be 19 months long.

If we estimate monthly sales to be \$0.50 per person for a population of 85,000 and assume that the pipeline for Dominica will be 18 months, the capitalization of the pipeline will be \$765,000 ( $\$0.50 \times 85,000 \times 18$ ).

#### 2. Central Medical Stores Expansion

More space will be required to house inventories, if a sales program using course-of-therapy packaging is implemented. A small room with workbenches, and chairs for 3 workers will be required. The repackaged drugs will require more space than drugs in bulk containers. It is difficult to see how the current space could be rearranged to meet the additional requirements. The Central Medical Stores are already crowded.

The planned expansion of Central Medical Stores should be sufficient to meet the increased space requirements. Careful thought should be given to how the additional space will be used. Shelving tends to take up a great deal of space. Large volume items can be left in their shipping cartons and stacked on boards that will keep items off the damp floor.

#### 3. Heat Sealing Machines: \$5,000

Two simple pedal-operated heat sealing machines are needed for course of therapy packaging. One machine would be sufficient but a second is recommended as a back-up. These machines, including spare parts cost somewhat less than \$1,000 in U.S. currency.

#### 4. Technical Assistance

There are several tasks which might lend themselves to outside assistance from someone with experience in setting up drug sales programs elsewhere. This is particularly true, if the government wishes to initiate a drug sales program quickly.

Planning and design tasks which could benefit from technical assistance include:

- a) Assessment of inventory requirements at each level in the health system to individual drugs,
- b) Assessment of storage space requirements at each level,
- c) Space utilization plan for Central Medical Stores,
- d) Ordering heat sealers and spare parts,
- e) Detailed cost analysis,
- f) Analysis of alternative pricing policies,
- g) Detailed implementation plan,
- h) Design of management information system,
- i) Ordering plastic bags, and
- j) Plan for procuring drugs.

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Implementation tasks which might benefit from technical assistance include:

- a) Installation of heat sealer and training persons in its operation,
- b) Entering complete cost information, on inventory records,
- c) Supervise course-of-therapy packaging,
- d) Train health center and primary care unit personnel in use of management information system, and
- e) Generally assist in all activities associated with the start-up of the revolving-fund.

Evaluation tasks which could benefit from technical assistance include:

- a) Review of pipeline estimates,
- b) Review of cost estimates and pricing policy, and
- c) General review of system operation with recommendations for improvements.

Three to 4 weeks should be allocated to the planning and design phase. The implementation phase should follow 3-6 months later and would probably take about 2 months. The evaluation visit should come 6 months to 1 year after the start of implementation and involve about 2 to 4 weeks.

The cost of technical assistance varies greatly according to the source.

#### 5. Other Start-up Costs

During the initial phase of any sales program there are a number of costs associated with the start-up of the program. These might include extra clerical support and unskilled labor costs as the storage facility is upgraded to meet the new demands to be made on it. Training costs for the personnel who will use the system and additional supervisory visits early in implementation are also start-up costs.

The total of these other start-up costs is likely to be small relative to the other development costs described above under items 1-4.

In Haiti, where a revolving fund is being established, USAID is paying for all the development costs including the 5 items mentioned above. In Afghanistan, where a revolving fund was initiated to support a village health worker program, UNICEF capitalized the pipeline, the Ministry of Health had sufficient warehouse space and USAID provided the heat sealers, technical assistance and funding for training and supervision.

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Recurring Costs

These are the costs which will routinely be incurred to operate the revolving fund. Generally, foreign assistance is unlikely for these costs. The objective of the revolving fund will be to recover, through sales, some or all of these costs. The major items include:

1. Purchase price for drugs (estimated as \$.50 x 85,000 x 12 months = ) \$510,000 per year,
2. Inflation, now estimated to be about 12% per year,
3. Transport and insurance to Roseau; UNIPAC estimates this as 15% of the drug cost,
4. Salaries for staff at the Central Medical Stores
  - a) Chief of the Stores \$14,000
  - b) 1 Senior packer, semi-skilled, clerical skills 11,000
  - c) 2 junior packers, un-skilled 14,000
  - d) 1 handyman, un-skilled 7,000

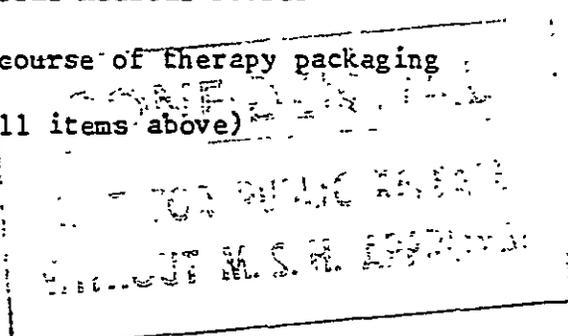
TOTAL	\$46,000
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5. Plastic bags for course of therapy packaging 420,000 per year at \$22.50/1,000 equals \$9,450
6. Other costs associated with course-of-therapy packaging roughly estimated at \$20,000.
7. Clerical costs at health centers; at present the Primary Health Care Team has no administrative workers. At least one will be required for health statistics and management of the revolving fund at the district level. The latter should not be a full-time job for a qualified person. I have assumed that this clerk's salary will be recovered through the revolving fund but that the other costs (transport, paper, etc.) will not be recovered.
8. Experience in other developing countries indicates a wastage rate of 30% from drugs which expire, storm damage, pilferage, etc.

Assuming that the objective of the revolving fund is to recover all the costs mentioned above, the total recurring cost comes to:

1. Purchase price	\$510,000
2. Inflation (over 18 month pipeline at 12%/year)	91,800
3. Transport and Insurance	76,500
4. Salaries at Central Medical Stores	46,000
5. Plastic Bags	9,450
6. Other costs of course of therapy packaging	20,000
7. District clerks	70,000
8. Waste (30% of all items above)	247,125

TOTAL	\$1,070,875
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This suggests that an average mark-up of roughly 110% over wholesale purchase price will be required to recover all costs associated with delivering drugs through the revolving fund. While the mark-up sounds high it may not be so bad, if drugs can be procured inexpensively. a couple of examples are given below using UNIPAC prices.

DRUG	COURSE OF THERAPY	UNIPAC COST (EC)	REVOLVING FUND PRICE (EC)
Multivitamins with iron + folate	30 capsules	\$ .19	\$ .41
Piperazine-adipate	14 tablets	.14	.30
Penicillin V, 250 mg.	30 tablets	1.27	2.66
Aspirin, 300 mg.	12 tablets	.06	.12
Ampicillin, 250 mg.	24 capsules	2.56	5.37

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## Plan to Develop a Revolving Fund to Finance Drug Procurement

There are a number of tasks which must be undertaken before drugs can be sold. The most important of these tasks are listed below. At the appropriate time someone or some group should be assigned responsibility for completing each task. A target date for completion should also be established.

1. A pricing policy should be established and necessary approvals obtained. (I expect this issue will generate the greatest discussion within the government. Agreement on a pricing policy, at least in principle, indicates the necessary commitment exists to justify the effort required to develop the revolving fund. A pricing policy should also be useful in attracting donor funding, since it would indicate to them the seriousness with which the government views the problem.)
2. A careful review of the preliminary development cost estimates needs to be carried out. In particular, the pipeline capitalization requirement and the cost of the planned expansion of the Central Medical Stores.
3. Sources of funding for the development costs need to be identified. If sources can't be identified quickly, alternatives might be examined. Thus, if funding for CMS expansion is not available, can required space be found elsewhere? Location of funding will generally involve the writing of proposals and their presentation to sources of funds.
4. Develop (and keep revising) an implementation plan which will serve as a management tool to evaluate progress. (This section represents a first, preliminary draft of such a plan.) Items which must be included in this plan include:
  - a) Identification and procurement of increased space for drug and supply storage and course-of-therapy packaging.
  - b) Secure agreement in principal of doctors and nurses on course-of-therapy packaging.
  - c) Identify what constitutes the standard course-of-therapy for each drug, broken down by child and adult dosages.
  - d) Calculate the price which will be charged for each course-of-therapy. Depending on the pricing policy adopted this will require obtaining the purchase price for each drug and also a review of the estimated recurring costs of operating the revolving fund.
  - e) Design and reproduce labels, e.g.

Dominica Ministry of Health  
Drug Revolving Fund

8 Aspirin tablets, 300 mg.  
Children aged 5-12  
1 tablet four times per day

Price: \$0.10

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Labels can be reproduced quite inexpensively on a mimeograph machine, a dozen or more copies can fit on a single sheet of paper.

- f) Procure plastic bags and bottles, if necessary, for course-of-therapy packaging. (An initial supply might be forthcoming from a foreign aid donor, but make sure his specifications fit program needs.)
- g) Design forms to be used in the management information system. Forms at all levels in the system (PHCUs, HCs, CMS) will need to be redesigned since money is being collected, in addition to drugs being distributed. The system should be kept as simple as possible. These forms will probably include:
  - prescription slips
  - regular (weekly) sales report reconciling prescription slips with money collected
  - receipts for money turned over to dispenser
  - current stock records (book) of revolving fund items at PHCU
  - issue tickets recording distribution of drugs made by dispensers to PHCUs.

In addition, the functional equivalent of each of the above will be required at the Health Center and hospital levels to record transactions taking place there.

At the health center level there should be a form for recording bank deposits or postal orders.

At the Central Medical Stores, the basic inventory control forms are present along with issue/requisition forms. Cost information will have to be developed and recorded. (Note that this is not quite as easy as it seems, since unit costs of different shipments will vary. A common method is to calculate a new unit cost every time a new shipment is received. Thus you may have 10,000 tetracycline capsules at \$50.00 per thousand in stock when you receive 50,000 additional capsules at \$56.00 per thousand. The new average unit cost is \$55.00 per thousand.)

A running total of total drug usage should be maintained for each facility supplied by CMS. (The same should be maintained at the district level for each PHCU supplied by the dispenser.)

- Standard monthly reports should be designed for the district + CMS levels to assess the operation of the revolving fund. (It should be prepared regularly by the end of the first week of the new month at the district level and by the end of the second week at the central level. The district level report will supplement their monthly requisition.)

The above list is long. Careful design, however, can make each individual item quite simple. Reporting needs will then become a matter of copying information recorded elsewhere and using that to make a few standard calculations.

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- h) Establish minimum and maximum inventory levels for each item in the revolving fund. Separate levels are required for items pre-packaged in courses of therapy and the same item in its bulk form.
- i) Train personnel in the use of the new forms and prepare all personnel who sell drugs to answer questions they will receive from the public.
- j) Recruit personnel to do course-of-therapy packaging. Train senior packager to use the forms on which he records the operation of the course-of therapy packaging operation. (For example 8,000 aspirin received in bulk from room #3, 1,000 course-of-therapy packets with 8 tablets each, placed in storage in room #5.)
- k) Open a special bank account to receive funds from drug sales and familiarize all dispensers with the process for making and recording deposits.

In conclusion, the establishment of a revolving fund is not a simple task. But the rewards should more than outweigh the difficulties.

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