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COST RECOVERY IN PRIMARY HEALTH CARE IN JAMAICA

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**DRAFT
May 19, 1994**

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1 SUMMARY AND RECOMMENDATIONS

1.1 Objectives

Jamaica has long required most users to pay something for health services. With inflation, however, revenue realized by the J\$2 (US \$0.08) registration fee for curative primary health care visits and other comparable charges has declined to insignificant levels. The Ministry of Health began to institute more substantial fees for secondary care in April, 1993, and the Ministry's fees committee is proposing additional amendments for secondary care. The goals of such cost recovery are:

- to raise revenues which can help improve quality by providing additional resources,
- to increase liquidity (through faster access to cash) to public sector primary care facilities, and
- to allow the Ministry of Finance to reduce the public subsidy to these facilities.

The Director of Primary Care (Acting) initiated this study to examine whether and how cost recovery could accomplish similar goals in primary care.

To gather data for this report, Donald Shepard visited Jamaica from July 19 through July 23, 1993, from October 18 to 23, 1993, and from February 1 through 9, 1994. Van Essayan worked in Jamaica from July 19 through July 30, 1993 and January 30 through February 5, 1994. We were assisted by staff of the primary care section at the national, regional (South East Region), parish (Portland, Kingston and St. Andrew, St. Elizabeth, and Clarendon), and health facility levels. We have performed case studies of health facilities at each level in the primary care structure, as follows:

Community Hospital	Buff Bay Community Hospital
Type V Clinic	Kingston Comprehensive Clinic
Type IV	Port Antonio Health Center
Type III	Santa Cruz Health Center
Type II	Southfield Health Center
Type I	Sandy Bay Health Center

1.2 Unit costs of primary care services

One of the major pieces of information needed was the unit costs of primary care services. We developed a methodology and applied it to derive unit costs of curative and maternal child health visits and "inspection days" for each of the two parishes above. We converted amounts in Jamaican dollars (J\$) to US dollars at the exchange rate in effect at the time of most field work (July 1993) of US \$1 equals J\$25. (As of the latest visit, Feb. 1 through 9, 1994, the exchange rate had become US \$1 equals J\$32.) All costs include indirect costs at the parish, region, and national levels, as well as the direct costs of provider time and supplies. Our estimates of unit costs apply to mid-1993, and do not include salary increases granted to government workers at the end of 1993. We estimated the following unit costs:

Maternal child health visit		
(excluding drugs and contraceptives)		
Portland	J\$ 70	US \$ 2.80
Kingston & St. Andrew	J\$ 94	US \$ 3.76
Average	J\$ 82	US \$ 3.28
Curative visit		
(including pharmacy, lab and supplies, all as currently available)		
Portland	J\$ 155	US \$6.22
Kingston & St. Andrew	J\$ 131	US \$5.22
Average	J\$ 143	US \$5.72
Prescription item (overall average)	J\$ 25	US \$1.00
Inspection day (environmental health)		
Portland	J\$1,416	US \$56.64
Kingston & St. Andrew	J\$2,696	US\$107.84
Best estimate (derived from Kingston & St. Andrew)	J\$2,700	US\$108.00

1.3 Recommended fees

If there were no reason to subsidize a service, economic theory dictates that the Ministry should set prices equal to marginal costs, which would be comparable to the average costs derived above. The Ministry should subsidize services below average costs to the extent that they serve a public health objective. Thus, we suggest that the complete subsidies for maternal/child health consultations and non-commercial environmental health services be continued because of the critical importance of vaccinations, prenatal care, other maternal/child health services, clean water, and other services in these categories. We suggest that curative consultations be partly subsidized to maintain access, but provide additional revenues to improve quality. The imposition of fees must also consider affordability, political acceptability and the costs and feasibility of official fee collection mechanisms. In smaller facilities, these could cost more than the funds collected.

A 1993 social marketing study assessed willingness to pay through a national quota sample of 1500 persons.¹ Thirty-one percent of respondents indicated that they were "covered by health insurance." The extent of coverage was not asked. For each of a series of hypothetical fees, respondents were asked whether they considered the amount reasonable. From a graph of the results, we calculated the amounts that were acceptable to half the respondents by insurance status for two services: registration for an outpatient or casualty visit in a public hospital, and the flat charge for a drug prescription. Results were as follows:

¹J. A. Young Research, Ltd. A research study on health care cost recovery. Prepared for the Health Sector Initiatives Project, Ministry of Health, Kingston, Jamaica, May 7, 1993.

	<u>Registration</u>	<u>Prescription</u>
Without health insurance	J\$20	J\$43
With health insurance	J\$24	J\$47
Overall	J\$21	J\$44

Based on these considerations, we recommend formal fees for curative services in the following types of primary health care services: Type IV and Type V health centers and community hospitals. In these facilities, we suggest a registration fee of J \$20 for curative consultations and a prescription fee of J \$40 for a prescription containing up to 3 generic items on the essential drug list. Since about 90 percent of curative visits currently have a prescription, the average patient would pay J\$56 overall for a visit. The level of cost recovery depends on the extent of quality improvements required.

The greatest level of cost recovery arises if no quality improvements were needed. Then this amount would recover 40 percent of the J\$139 cost of these services as currently provided. The lowest level of cost recovery arises if the added costs of fee collections and quality improvements (particularly better drug supply), consumed all the revenues from user fees. These costs would increase the cost per visit to J\$196 per visit and lower the cost recovery from curative user fees to 29 percent of the J\$196 cost. The remaining cost of J\$140 (71 percent) would represent a public subsidy. We recommend this substantial subsidy because of the public health purpose of treating many curative primary care conditions, such as sexually transmitted diseases and respiratory infections, the importance of keeping the fee in primary care centers below that in hospitals, and maintaining the political support for primary care activities.

As mentioned, we recommend that a prescription for up to three *generic*, essential drugs at these facilities be sold at J\$40 per prescription. In general, brand name or non essential drugs should not be provided at public health facilities. In exceptional cases, however, these items should be sold at their full cost (including distribution costs). A prescription charge of this magnitude would recover about half of the cost for paying patients. The existing government allocation would cover the difference between these proposed charges and the full cost of these items for paying patients, as well as all the costs for free items (e.g., vaccines) and exempted clients. The funds could be operated either by the parish as an official government entity, or by an independent community association within each parish.

Based on work by this consultant and the Ministry's fee committee in 1992, the Ministry has been considering an increase in fees for secondary and tertiary care. The proposed fee schedule calls for a registration fee of J\$50 per visit plus a charge J \$50 per prescription. Assuming that 90 percent of ambulatory patients receive a prescription (the share for primary care), then the average ambulatory patient will pay J\$95. Assuming that both the primary and the secondary care recommended fees were enacted, then the average primary care ambulatory payment of J\$56 would be 41 percent lower for patients who need only three or fewer generic items (the majority of patients)

than the average secondary care ambulatory payment of J\$95. This should be a sufficient difference to encourage patients to respect the referral hierarchy, going first to a primary care facility.

In our data, the average prescription contained two items, each costing the Ministry of Health (in ingredients) J\$25. Thus, the prescription costs J\$50 and is sold at J\$40 to paying patients, representing a cost recovery of 80 percent in paying patients. It is dramatically less expensive than comparable items would cost at a private pharmacy (J\$121 per item, or J\$242 per prescription). If these fees succeed as expected in increasing drug availability, patients will save substantially.

The reason for recommending this level of fees is three-fold. First, the level of cost recovery drugs should be sufficient to make up the gaps of substantial drug shortages, which are estimated qualitatively as at least 50 percent of current needs. Second, the J\$20 registration fee should allow modest increases in amenities for staff and patients. Third, these fees are low enough that they should not be a major barrier to receiving care. Most experts consulted thought fees of this level were reasonable. Once it is clear that quality is, indeed, improving, further increases can be considered in subsequent years.

We calculated the degree of cost recovery that this formal system might generate in Kingston Comprehensive Clinic. Included anticipated improvements in drug supply and fee collections, the cost per consultation would average J\$169.22. The anticipated revenue from registration and prescriptions (assuming that 80 percent of patients pay) average J\$45. Thus cost recovery in a clinic with a formal system would average 27 percent.

Contraceptives should be subsidized according to their public health importance and cost-effectiveness. Both intrauterine devices (IUDs, for which current demand is very low) and Norplant (which lasts 5 years) appear to have favorably low costs per couple year of protection. They appear to be highly cost-effective. IUDs, which place little financial pressure on the public sector, deserve substantial subsidy for public clients. Condoms deserve complete subsidy for clients in sexually transmitted disease clinics for their role in preventing both pregnancy and sexually transmitted diseases, particularly AIDS. In other public sector facilities at all levels, they should continue to be sold at cost along principles similar to those now in effect. Norplant, Depo Provera and pills should receive a partial subsidy. The Ministry and the National Family Planning Board should offer free supplies of most contraceptives for the first three months to encourage new acceptors, with charges for most users thereafter. Exact recommendations will need to be derived based on the budget constraints of the National Family Planning Board, based on the phase out of donor funding from USAID, United Nations Fund for Population Activities (UNFPA), the World Bank, and other donors.

While lower level health facilities (Types I, II, and III) also need funds for improved drug supplies, maintenance, and other requirements, a formal fee system is not currently feasible. Needs for personnel to oversee the system, and the costs of complying with required procedures would be too great. Rather, we would encourage the Ministry of Health to encourage these facilities to expand the practice of requesting informal contributions from clients and to institute more consistent

guidelines. In these facilities, contributions for drugs will probably be most salient. Assuming that 70 percent of patients with prescriptions make such a contribution, the overall cost recovery for prescriptions will be 56 percent (70 percent times 80 percent). The Ministry should help facilities that wish to solicit contributions to set up appropriate accounting and community oversight procedures to assure that contributors receive appropriate value from their payments. One source of support for training are debt relief funds (discussed under donor funding below).

We also recommend that parishes charge commercial establishments, food handlers, and anyone butchering livestock for required commercial environmental health inspections. We recommend a that charges be set according to a fee schedule based on J\$2,700 (US \$108) per inspection day. The charge for each type of facility would be based pm a standard time. For example, a hotel or factory would be charged for a full day. Other facilities and food handlers would be charged various fractions of a day. While food handlers have apparently accepted laboratory and registration fees totaling J\$35 each, they have not been charged for the time of health workers. We recommend that they be charge J\$90 for based on the effort involved when they attend a routine clinic in a health facility. As the charge is less than the combined charge for registration and medications proposed for a hospital visit (J\$100), it should be affordable to these paid workers and commercial establishments.

Employers wishing these clinics to be conducted on site should be asked to pay a one-day fee of J\$2700 for the clinic for up to 25 food handlers, plus a charge of \$90 for each additional participant over 25. Assuming an average of 15 food handlers per clinic, the one-site clinic would cost \$180 per participant. The higher fee is justified by the added cost to the health department, and the convenience to the employer and employees. Employers will be responsible for payment to the health department. They may, however, collect all or part of the costs from employees.

1.4 Budget implications

These recommendations affect the Ministry's budget in two offsetting ways. On one hand, they increase the gross costs. They allow and require that the Ministry address shortages of drugs and other quality constraints in facilities charging formal fees. They require that the administrative costs of fee collections be covered. Also, added funds must be allocated to environmental health to assure that inspectors are paid fully and promptly for travel and other costs for inspections. On the other hand, they increase expected collections. The table below shows how these changes would affect primary health care costs.

	Amount (J\$ million)
Proposed costs of primary health care (at mid-1993 prices)	
Current (mid-1993) costs of primary health care at parish and regional levels*	275.3
Major fee-related recommended increases:	
Improving conditions and alleviating shortages in facilities	4.4

initiating formal fee systems	
Additional travel reimbursement for environmental health inspectors inspectors	4.8
Subtotal, fee-related increases	9.2
Grand total	284.5
* Does not consider pro-rata national support (central Ministry of Health) costs of J\$17.7 million (6.43 percent of direct costs).	

These budget recommendations could be updated to 1994 prices by adding the percentage increase to the budgets made via the supplementary budget around January, 1994. This was approximately a 90 percent increase, as it included retroactive salary adjustments. The table below indicates how the proposed user fees contribute to the financing of primary care.

Proposed official financing for primary health care, mid-1993 prices:

Source of financing	Amount (J\$ million)	% of Proposed Costs
Recommended user fees:		
Recommended commercial inspection fees	48.0	16.9%
Recommended new visit and prescription fees, Types IV and V clinics	4.4	1.5%
Existing user fees where no increases are proposed	1.4	0.5%
Subtotal, user payments	53.8	18.9%
Net budget subsidy from Ministry of Finance	230.7	81.1%
Grand total	284.5	

Altogether, we estimate that charges of the magnitude proposed would have recovered 18.9 percent of the costs of primary health care if they had been fully implemented in fiscal year 1993-94. The rate of cost recovery would have been highest (105 percent) for environmental health and contraceptives (not analyzed in detail), moderately small for curative health services overall (3.6 percent), and virtually zero for maternal-child health (MCH) services. The overall rate of cost recovery for curative services is low because costs are incurred in all types of facilities, while fee increases are proposed only in the higher levels. When the rate is calculated for the facilities collecting fees, the expected revenue per visit (J\$45) is 31.5 percent of the average cost per visit (J\$143). For paying patients, the average payment per visit (J\$56) is 39.4 percent of costs.

By most standards of comparison, these proposed average curative fees per visit of J\$56 still make curative services a bargain. These primary care costs of J\$56 represent 62 percent the corresponding hospital outpatient fees (an average of J\$95 per client, assuming that 90 percent of curative patients receive a prescription); and they are only 11 percent of the combined cost of a curative visit with a private general practitioner (J\$250) and two prescribed items in a private pharmacy (J\$121 each) in the private sector. Over time, as quality improves, these curative fees should be increased and the degree of subsidy reduced.

The share of costs recovered by this schedule in the 1994-95 fiscal year would be smaller because it could not be implemented for several months, due to the need for government approval, capital improvements, public education, procedure development, and staff training. Furthermore, due to salary increases, costs are substantially higher than those shown here. A new fee schedule, if implemented, should be indexed to rise annually with an inflation index in the same manner as that being proposed for hospital fees. Once fully implemented, however, both official and informal user fees should contribute substantially to improved quality in primary health care.

1.5 Fees for Administrative Services

While outside the scope of primary care services, cost recovery would also be appropriate for many administrative services performed by the Ministry of Health, such as the registration of health professionals, providing copies of official certificates, and analyses by the Government Chemist. We understand that the Ministry is already examining higher fees for these services. Increased fees would allow scarce government funds to be reserved for the most essential and cost-effective health services, such as prevention and control of major infectious and chronic diseases.

2 INTRODUCTION

In Jamaica, as in many other countries, the publicly operated health sector is underfinanced. That is, funds are insufficient to operate facilities and programs in the ways that they were designed. Symptoms include: drug shortages, inadequate quality of care, poor maintenance, missing or inoperative equipment, lack of staff travel allowances, and substantial vacancies for nurses. Over the last decade, the needs of the health system have grown, as the need to control chronic diseases has been added to the still-unfinished agenda of controlling infectious diseases. As Jamaica's per capita GNP has stagnated from 1980 to 1991,² little additional money has been forthcoming from Government.

To address these problems, the Ministry of Health has been asking users to accept a greater responsibility for paying a greater share of public health costs. The joint Ministry of Health (MOH) and United States Agency for International Development (USAID) Health Sector Initiatives Project

²World Development Report 1993. New York: Oxford University Press, 1993.

(HSIP) calls this effort the "share care" program. This effort, implemented with posters in health facilities, other media, and market research, has been preparing members of the public that they will have to assume greater financial and personal responsibility for their health.

Since November 1984, Jamaica's health system has maintained a schedule of fees requiring that users who are able should pay *something* for health services. Fees apply at both primary and secondary care facilities. With inflation, however, the actual level of many fees, such as the J\$2 charge for curative primary health care visits, has declined to insignificant levels. With technical support from the HSIP, the Ministry of Health began to institute more substantial fees for secondary care with an official publication in 1993.³ The Ministry's fees committee is proposing additional amendments for secondary care.

The goals of such cost recovery are:

- to raise revenues which can help improve quality by providing additional resources,
- to increase liquidity (through faster access to cash) to public sector primary care facilities, and
- to allow the Ministry of Finance to reduce the public subsidy to these facilities.

The Director of Primary Care (Acting) initiated this study to examine whether and how cost recovery in primary care could accomplish these goals. To address this goal, we shall try to answer the following questions:

- What is the cost of primary care services, in total, and per unit of service?
- What part of that cost comes from the Government budget, international donor contributions, and user payments?
- For which primary care services should higher charges be implemented, and how much should those charges be?
- In which facilities should those charges be implemented?
- What should be the mixture of formal and informal fee systems?
- How should the funds be collected, safeguarded, transported, and managed?
- How should fee income be considered in developing budgets?

In the remainder of this report, we discuss the unit costs of primary health care services, existing fee systems, administrative costs of proposed systems, and options for cost recovery.

3 FINANCING OF PUBLIC PRIMARY HEALTH CARE SERVICES

3.1 Overall patterns

³ The Hospitals (Public) Fees (Amendment) Regulations, 1993, *The Jamaica Gazette*, Vol. 106, No 22A, April 29, 1993.

Most of the money for public primary health care services in Jamaica comes from general government revenues. Current levels of cost recovery are low in the Jamaican Ministry of Health, and particularly in primary care. Jamaica's Ministry of Finance budget for the current fiscal year (ending March 31, 1994) projected levels of cost recovery of 0.52 percent for primary care and 8.6 percent for secondary care. The modest numbers for primary care are feasible (representing J\$1.19 per curative visit), but the rates for secondary care were proving optimistic as the fiscal year ended. Nevertheless, the rate of cost recovery in secondary care during calendar year 1993 of J\$45 million represents about 8 percent of budgeted costs in the current fiscal year. Higher user fees are being proposed by the Ministry, and the Health Sector Initiatives Project is assisting in improving cost recovery. As discussed in this report, substantial pharmaceutical cost recovery is also feasible in the long run.

3.2 Fee Systems

Currently, the primary health care system has three independent systems of fee collection: official, family planning, and informal.

The Official System. The official system relates to funds collected in accordance with the Government's Financial Administration and Audit Act (F.A.A.), most recently amended August 17, 1992 (Jamaica, Law 13 of 1992, The Financial Administration and Audit (Amendment) Act, 1992.) Under this Act, fees must follow the official Schedule of Fees in effect at the time. This amendment added Section 8A. It allows the Minister of Health to make deductions and withdrawals from revenues collected by facilities, but provides that revenues collected under this act "shall be applied for the purposes approved by Parliament and, so far as they are not in fact so applied, shall be paid into the Consolidated Fund Principal Bank Account." Revenues which facilities are expected to collect are treated as "appropriations in aid." The budget for a parish or a hospital shows the full amount which it is authorized to spend for the fiscal year with two sources of finance: general funds from the central government, and retention of fees through appropriations in aid.

Other provisions of the FAA act specify a number of procedures that must be followed with official fees. First, the person collecting the fees must be a permanent (not a temporary) government employee. Second, a cash record must be maintained and official receipts printed by the Government of Jamaica must be issued for money collected. Third, a safe of adequate size (for example, 2 feet high, wide, and deep) must be cemented into a blank wall (free of doors or windows). Fourth, cash must be kept in a cash box until it is transferred to a safe. Finally, if a facility has several cashiers (e.g. at the casualty department and general admissions assessment office), they must transfer collections daily to the main cashier. The main cashier deposits the funds periodically (preferably daily) in a bank account approved by the Minister of Health.

Under the Hospitals (Public) Act of April 29, 1993, the following fees theoretically apply to curative services at Health Centers Types II to V:

Registration (per visit)	J\$ 2.00
Prescription (per prescription)	J\$50.00
Chronic conditions (diabetes, hypertension, asthma)	J\$5.00

Mothers at rural maternity centers are supposed to be charged J\$40 flat rate per delivery. Insured patients (with health and accident insurance) are supposed to be charged the maximum payable under their policies. At Port Antonio Health Center, fees are collected officially for dental extractions. Adults were charged J\$25, children over 12 years J\$5, and children 12 and under were treated free. These fees are slightly lower than the hospital fee. This service generated revenues of J\$45,664 in 1993. At hospitals, the major outpatient fees are:

Registration (per visit)	J\$20.00
Prescription (per prescription)	J\$50.00
Laboratory fees	J\$15.00
Dental extraction	J\$30.00

Community hospitals collect the following official fees for curative services. They generated the following revenues in Buff Bay Community Hospital in 1993:

<u>Item</u>	<u>Fee</u>	<u>Revenue (J\$)</u>
Registration	J\$2	8,522
Maternity delivery	J\$300	36,260
Prescription (child)	J\$10	0*
Prescription (adult)	J\$50	156,905
Hospital (per day)	J\$25	15,475
Dental visit (child)	J\$10	0*
Dental visit (adult)	J\$30	36,276
Ambulance (per 10 miles)	J\$60	1,690
Morgue (per day)	J\$50	12,900
TOTAL		268,028

* Revenue shown is for children and adults combined.

Patients with curative visits are exempted from fees if the patient belongs to one of the following categories: food stamp recipient, government retiree, mentally ill patient, child in school uniform, or services part of prenatal care. Although staff estimated that 20 percent of Buff Bay patients would be exempted, the data showed that some formal payment was received for approximately 94 percent of the 15,380 curative visits in 1993. Formal fees averaged J\$17.43 per curative patient.

Health centers appear to collect the J\$2 registration fee (when the patient is not exempted), but not the pharmacy fee. Community hospitals thus generate considerable revenues. At health

centers, officially collected revenues are small because of both low charges and substantial exemptions.

The Family Planning System. This system was established in 1993 by the National Family Planning Board (NFPB). The Board has been generously supported by the United States Agency for International Development (USAID), the United Nations Family Planning Agency and other donors. Under the Family Planning Initiatives Project, the NFPB agreed to the phase out of USAID funding over the project, and to find local sources of funding by its end, July, 1998. The NFPB's work has contributed to Jamaica's impressive 60 percent rate of contraceptive prevalence among women of reproductive age. To maintain this momentum, the NFPB has adopted the following policies:

- Clients must pay for family planning commodities except in cases of financial hardship.
- Fees are J\$50 per Depo Provera injection,
- \$5 for a one-month cycle of low-dose contraceptive pills, and
- J\$10 per month for standard-dose pills.
- These fees are collected by the nurse or midwife who treats the client.

As the funds collected are as valuable than the commodities themselves, they are treated with equal care. They appear to be kept in an examining room in a cabinet or desk. A simple notebook serves as the cash record. Receipts (from patients) and disbursements (transfers out) are shown chronologically. In Kingston, the nurses take the accumulated funds in cash directly to the Family Planning Board, where they exchange them for the family planning supplies. Outside of Kingston, the nurse or midwife takes them to the parish health office in the course of one of her monthly visits to that office. An official there records the amount received and the name of the health center in a register and puts the money in the safe in the parish office. The nurse receives a replenishment of supplies corresponding to the funds she collected plus "something extra." This extra, approximately 20 percent of each type of commodity, provides her with the supplies that can be delivered free in cases of need. Periodically, a parish official takes the cash with a deposit slip from the National Family Planning Board to the local branch of the bank in which the NFPB has an account. The funds are thus deposited in the NFPB's bank account.

This system is accepted, apparently legal, and by all accounts, generally functions well. Despite the simplicity of the system, there were no anecdotes of theft or disappearance of money or supplies. The small amounts of money involved and the professional commitment of the staff involved to MCH activities apparently avoided theft by staff. The facts that the system was not publicized and that it generates only small amounts of money has so far avoided theft by outsiders. While the nurses, midwives, and other staff do not especially like handling money, they accept the task on this limited scale as part of their regular job. There are anecdotes of fees above those recommended by the NFPB being collected, but the excess could be considered a component of the informal system.

In Buff Bay Community Hospital, staff estimated that patients paid roughly J\$20,000 in 1993 for family planning fees. In Port Antonio Health Center, where actual receipts were totaled, J\$49,540 was collected in formal fees (J\$2 per registered patient).

The informal system. In many facilities, patients are asked to make donations to support the operation of the health facility. The funds pay for stationery (cards), cleaning supplies (such as soap), local purchases of drugs and, in a community hospital, laboratory supplies. At Southfield Health Center, which had a well developed health committee, annual fund raising events raised additional funds. An annual dinner provided funds which helped pay for renovations. At Sandy Bay Health Center, community contributions and labor had helped provide the funds used to construct a new building.

At Buff Bay community hospital, informal visit fees of J\$5 per visit were requested for each of the following types of visits: post-natal, child care, prenatal, curative visit, and family planning. Stationery (records) fees of J\$5 were requested for an appointment card, J\$10 for an initial immunization card (for children), and J\$10 for a replacement immunization card. Staff estimated that the visit fees grossed J\$20,000 and the records fees totaled J\$10,000 in 1993. In Port Antonio Health Center, a fee of J\$5 was requested for each visit except for food handlers, from whom J\$10 was requested. Port Antonio Health Center had 24,104 registered patients in 1993 of whom 11,674 were curative. As contributions amounted to J\$60,000, apparently virtually all curative patients gave the clinic contribution.

This experience suggests that the existing formal fees are the predominant type of fee in community hospitals. All of the various types of fees co-exist, and apparently contribute to the functioning of the health facilities. In the Type IV health center studied (Port Antonio) informal contributions were the largest source of revenue. In the Type I center visited (Sandy Bay), family planning fees were the only type of fees in effect as the basic maternal-child health center performed no deliveries and virtually no curative visits.

3.3 Donor Revenue

Donors support the primary health care system through bilateral projects directed at primary care and debt relief. These activities are almost all directed at maternal-child health or environmental health (latrine construction), although some spillover to curative services may occur. The most important funding is from debt relief. The Government of Netherlands agreed to forgive the Government of Jamaica (GOJ) from repaying debt it was owed, providing that GOJ instead put the money it would otherwise have repaid into expanded maternal child health services. The program began in November, 1992 and is administered by UNICEF and the Ministry of Health. The amounts budgeted in calendar years 1993 and 1994 in US \$1000 are as follows:

<u>Element</u>	<u>1993</u>	<u>1994</u>
Immunizations	173.3	86.7
Diarrhea (including latrine building and supplies)	262.0	152.6
Health education	305.0	197.7
Breast feeding	333.7	332.7
Maternal/perinatal	300.4	194.3
TOTAL	1,374.4	964.0

The amount in 1994 is 30 percent less than that in 1993 because the debt is being retired. The 1995 amount, the last year for these special funds, will be still smaller. These funds are used for a mixture of capital and operating expenses. Capital items include refurbishing the delivery suites at Jubilee hospital, building latrines, in-service training of staff in new skills, and purchasing equipment, such as cold boxes and scales. Operating expenses include paying sessional nurses for outreach and weekend work, travel, and supplies. Ministry officials estimate that to maintain the most essential ongoing MCH activities initiated through these special funds would require an increased contribution by the Ministry of Finance of US \$200,000 per year.

The 1993 amount, converted at the mid-year exchange value of J\$25 per US dollar, is equal to J\$34.3 million. This amounts to about a 50 percent increase to the regular government budget for maternal child health activities. That share was determined by taking the budget for primary health care (program 20) from the Government of Jamaica budget of April, 1993 of J\$275.3 million and assuming, based on analyses of Portland and Kingston and St. Andrew parishes, that about a quarter of the direct services could be attributed to maternal and child health services (the remainder is curative and environmental health services).

The World Bank's Human Resources Development Project was not linked specifically with primary care. Donor contributions through other sources, though not addressed systematically, appeared small. In Portland Parish, for example, the only other donor contribution was photocopier toner cartridges worth J\$16,000 supplied through the Netherlands Development Project.

4 UNIT COSTS OF PRIMARY CARE SERVICES

4.1 Rationale

To set fees appropriately for primary care services, policy makers must know the unit costs of these services. The fees need not equal the costs. They can be priced below cost, requiring a subsidy, or above cost, generating a profit (providing the fee is collected). The unit costs do provide a point of reference, from which specific policy decisions can be made. Primary care services generally encompass three types of services: (1) maternal child health (MCH) services (generally

preventive), including antenatal care, vaccinations, family planning services; (2) curative services (first line medical treatment, generally on an ambulatory basis); and (3) environmental health (both routine and problem based inspections of certain commercial establishments, livestock, and water). For purposes of this study, we add another service: (4) pharmacy items at primary health care facilities. While this service is technically part of MCH and curative services, we separate it because we recommend separate fees for pharmacy items.

In this section we first develop the methods for deriving budgeted costs of services from the detailed budget of the Ministry of Health, and then apply this approach to two parishes. We subsequently derive costs of pharmacy items. As the necessary data are not in the budget, these require separate empirical studies.

4.2 Methodology

4.2.1 Methods for Deriving Costs of Personal Health Services

Personal primary care health services comprise the first two types of care -- MCH and curative services. We have analyzed costs from the level of the parish (the lowest level at which financial analysis is currently done) up. In general, it was not possible to analyze the costs at a single clinic, as its costs would be difficult to identify separately.

Our methodology for examining primary care costs entails analyzing separating costs at each of three administrative levels between "services" and "support." The levels are the 12 parishes with separate offices (Kingston and St. Andrew are combined), the 4 regions, and the nation. Services are activities performed directly for clients; support are indirect activities, such as administration, maintenance, and transport. Tables for this report are in Appendix A. Table 1 (in that appendix) shows the units of service and levels at which each service was provided. Each of these units captures most, though not all, of the activities of each type of care. The national services are direct services, but are provided without an itemized charge to each health facility.

At the parish level, "services" encompasses three disciplines: curative, maternal/child health, and environmental health. "Support" consists of administration and maintenance. At the regional level, costs are entirely for support (administration, transport, and maintenance). At the national level there are a few services (for laboratory services, family planning and a few vertical programs) and support (national administration and maintenance).

We used the following process of calculation. We first developed consistent data on budgets and volume for each level and unit of service. At each of the three administrative levels, we then calculated an "indirect cost rate" as the cost of "support" at that level divided by the sum of the costs of "services" at that level and at all lower levels. For each unit of service, we first calculated its direct cost. Then we obtained direct unit costs by dividing total annual direct costs by annual units of service. We then increased the resulting unit cost for indirect costs at the parish level. Next the result

(total costs at the parish level) was increased by indirect costs at the regional level. Finally, total costs at the regional level were increased by national indirect costs.

4.2.2 Methods for Costing Environmental Health Services

Environmental health services seek to protect public health through sanitary conditions concerning food, food handlers, water, sewage disposal, public accommodations, safe buildings, etc. These services are operated out of each parish office. Much of the work consists of inspection and testing of facilities and workers involved in these activities. To express these on a common basis, we developed the concept of an "inspection day." This consists of one full day in the field, inspecting workers or premises related to public health. It is analogous to a "billable day" for a private environmental health or engineering service.

For each type of inspection, we estimated standard times. We defined the number of "average inspections per day" as the number of average inspections of each type that could be completed in one day if the entire day were devoted to that type of inspection and transportation were available. Thus, the inverse is the fraction of a day required for each type of inspection. As will be shown below, these standard times range from one full day to inspect a hotel to 1/360 day to inspect one chicken at a slaughterhouse.

We divided the actual number of inspections of each type by the average number per day to determine the "annual number of inspection days" for each type of service. The numbers provide a useful standard to compare among services and parishes, but are likely fewer than the number of actual days. The difference between "inspection days" counted here and actual paid days represent the indirect paid time of environmental health workers. This time may be devoted to the following activities, none of which are measured directly: reinspections to check whether problems have been corrected, advice in correcting problems, undocumented inspections, the presence of an additional inspector at an inspection, supervision, absences, office-based activities, such as administration, writing reports, and compiling statistics, and idle time. Idle time, even if it occurs, may be an unavoidable result of seasonal fluctuations in work, or a lack of transportation. Time devoted to all of these uncounted activities is implicitly prorated among the measured inspection days.

We also classified inspections into "commercial" and "non-commercial" inspections. Commercial inspections are inspections of commercial enterprises or the workers in those enterprises. Non-commercial inspections are all other inspections for public health, such as water supplies, schools, private houses, etc. In general, these commercial premises and workers require annual inspections for renewal of their licenses by local governments.

We propose that inspection fees be charged for commercial inspections, but that non-commercial inspections remain "free" to the premises being inspected and continue to be supported from general revenues.

4.2.3 Pharmacy Costs

The goal of this component of the study was to provide information for the government to assist in developing policies for cost recovery in primary health care. Within that, it had three objectives: (1) to determine the current cost to the Jamaican Ministry of Health of procuring and distributing a prescribed pharmaceutical item to a representative primary health care clinic, (2) to determine the potential average cost of these items if bought through international low cost distributors, such as UNICEF or IDA, and (3) to compare the results with the retail prices in private pharmacies that patients would be required to pay if the drugs were not available in public health centers or hospitals, and (4) to help interested medical officers to increase the efficiency of prescribing practices by starting to build a price awareness system for the medical staff.⁴

We compared ingredient cost per item from three alternative sources: (1) the Ministry of Health's Pharmacy Office and Island Medical Stores (since replaced by Health Corporation, Limited), which obtains imported items from the Jamaica Commodity Trading Corporation and local items through domestic producers, (2) international generic suppliers, based on the average unit price in an international guide,⁵ and (3) retail pharmacies in Port Antonio, where the majority of the data were collected.

To perform this analysis, we selected a systematic sample of 62 curative patients from Southfield (Level II) and Port Antonio (Level IV) Health Centers, and Buff Bay Community Hospital.

To reduce the risk of seasonal trends in either diseases or prescribing practices, the systematic sample was spaced uniformly over the year. We selected a random starting point on the selected day, and choosing subsequent patients on that date following a pre-set sampling fraction. We selected four specific dates (see below) by designing a program to select one weekday randomly from each quarter of calendar year 1992. We then designated a randomly chosen starting curative patient (from 1 to 4) and selected every fourth patient to obtain 5 curative patients for each chosen date. As shown in the exhibit, for January 24, 1992 (the first chosen date) the five patients selected were the 2nd, 6th, 10th, 14th, and 18th curative patients. If the clinic was not in operation on the chosen date or did not sufficient patients to select the entire sample, the corresponding patients were chosen from the next day of operation. Appendix B shows the form used for data collection. Each sample curative patient was included, regardless of whether or not medications were prescribed. Both new and renewal prescriptions were included.

⁴The authors are indebted to Dr. Theo Bracken and Ms. Arlene McKenzie of Port Antonio clinic for the initial test of this methodology.

⁵International Drug Price Indicator Guide, 1992-93, (Boston, MA: Drug Management Program, Management Sciences for Health, 1993).

Patient Selection Chart for Systematic Sample

Quarter	Date (1992)	Curative Patients to Select
1	Friday, January 24	#2, #6, #10, #14, #18
2	Tuesday, May 12	#3, #7, #11, #15, #19
3	Wednesday, August 12	#4, #8, #12, #16, #20
4	Thursday, November 19	#2, #6, #10, #14, #18

For each selected patient, the patient's medical record was retrieved from the files, the entry for the selected date located, and any prescribed (or renewed) medications noted in the chart were abstracted using the form in Appendix B. To obtain the cost to the Ministry of Health, a list of prices of vital drugs was obtained from Mrs. Grace Allen Young, Director of the Pharmaceutical Services Division (Ministry of Health Price List for Drugs and Medical Supplies [Vital Items Only], September, 1993). The cost to the government for the prescribed item was computed by prorating the price from this list for the exact quantity, and increasing the result by 25 percent for costs of distribution, spoilage and loss within Jamaica. To obtain the international price, the item's average price from an international guide book⁶ was prorated by the exact quantity prescribed and the result increased by 50 percent to cover both international distribution costs (from source of supply to Jamaica, approximately 20 percent of supplier prices), and internal distribution within Jamaica (approximately 30 percent of international supplier prices). These increases were developed in consultation with Jamaican primary care officials.

To obtain retail prices, a study team member contacted a pharmacy in Port Antonio (usually by telephone) and recorded the retail price for the prescribed item. If the item was not available in Port Antonio, as occasionally happened, the price from a Kingston pharmacy was used. The retail price corresponds to the quantity that a retail pharmacy would dispense. For some ointments and liquids in tubes or bottles of fixed size, the quantity exceeded the prescribed quantity somewhat.

4.3 Data

4.3.1 Overall Parish Budgets

In this study, we have applied the methods to two parish offices -- Kingston and St. Andrew, and Portland. We chose these two parishes in consultation with the Director of Primary Care (Acting) to include a large urban area (Kingston) where the potential for cost recovery appeared good, and a less affluent rural area with reasonably complete data (Portland) where cost recovery

⁶Management Sciences for Health, "International Drug Price Indicator Guide, 1992-93." Boston, MA: Management Sciences for Health, 1993.

might pose greater challenges. For cost data, we have used the approved budget for the current (1993/94) fiscal year presented by the Ministry of Finance June 10, 1993.⁷ For volumes of service, we have used the actual volumes for the just completed (1992/93) fiscal year, as presented in the budget document. In general, there was little difference between actual volumes for this year and projected volumes for the year in progress when both were reported. In many cases, no projections were reported. Where there have been major discrepancies between actual and forecasted expenditures, they generally represent cumulative adjustments for increases in salary or allowances which had been delayed for some while. Thus, they do not represent resources consumed in producing health services over the period covered by the volume data. Thus, the budget data appeared to be reasonable estimates of the costs of producing services based on prices and wages in effect at the beginning of the fiscal year.

In its budget proposal, each parish generates a budget for the three service and two support disciplines. To generate consistent data, we adjusted the parish budget to agree with the total recommended by Ministry of Finance. The Ministry of Finance's recommendation gives a breakdown by "object" or line item (e.g. personnel), but not by discipline. In Portland, a cross-classification was available of the requested budget by object and discipline. We then applied an adjustment factor to discipline within each object, based on the ratio of the parish's requested budget to that recommended for the parish by the Ministry of Finance (see Tables 2 and 3).

4.3.2 Personal Health Services

We obtained units of service from the text of the recommended budget for Portland parish (Table 4) and Kingston and St. Andrew parishes (Table 5). Projections for Portland parish shown in Table 4 show that they were generally similar to data for the previous year. National projections were not reported in aggregate, but were calculated by adding the numbers for each parish, as shown in Table 6. Although some items for individual parishes were uncertain,⁸ overall totals agreed with published counts of the volume of visits from previous and subsequent years. In 1990, the total number of visits to health centers was 2.25 million and extremely stable (with a rise of 3.0 percent from 1988 to 1989 and decline of 0.3 percent from 1989 to 1990).⁹ In 1993, the number of curative

⁷The source is: Ministry of Finance, Government of Jamaica, Budget Estimates, 1993-94. These cover the fiscal year beginning April 1, 1993 through March 30, 1994. We have not considered the supplementary budget passed late in 1993 to adjust for substantial salary increases granted to Ministry of Health personnel, as it was approved after most of the cost data for this report had been obtained. While the supplementary budget almost doubles the nominal amounts, the original budget is consistent in time with data obtained from other sources.

⁸Reported data were identical for some MATERNAL-CHILD HEALTH (MCH) services between two parishes (Kingston and Portland, and Hanover and Westmoreland), and St. Thomas did not report data in the same categories as other parishes.

⁹Source: Statistical Yearbook of Jamaica, 1991. Kingston: Statistical Institute of Jamaica, 1991.

visits to primary health care facilities was 887,645.¹⁰ While our approach generally uses volumes in 1992 as projections for 1993, the stability makes this approach reasonable.

We obtained the direct unit costs of visits in Portland parish (Table 7), Kingston and St. Andrew parish (Table 8) by dividing the direct costs by the volume. We estimated the cost of laboratory services per patient by allocating the total between primary and secondary care in proportion to the direct costs of these two services, and dividing the primary care portion by the volume of visits (Table 9).

4.3.3 Indirect Cost Rates

We obtained the indirect cost rates at the parish levels for Portland (Table 10) and Kingston and St. Andrew (Table 11), at the regional level for all regions (Table 12), and at the national level (Table 13) by dividing the support costs at each level by the direct service costs at that level. At the national level, budgetary program 60 (Health Services Support) combined both services and support functions, and has been allocated by subprogram or activity as shown in Table 13.

4.3.4 Environmental Health

We estimated the average number of inspections per day of each type (assuming the entire day were devoted to one type of inspection) through an interview with the Acting Director of Environmental Health for Portland Parish (Public Health Inspector IV) and corroboration with the public health inspectors in Kingston and St. Andrew parish. For one type of service, checking water samples to monitor water quality (for chlorine levels and fecal counts), the annual report for one parish (Kingston and St. Andrew) explicitly stated the number of inspections per day (8.3). Food handler clinics are conducted at regular health department facilities and on employers' premises. We estimated the volume separately for each.

The volume of inspections of each type was based on statistics for 1992 for each parish, derived by interviews and reading the environmental health sections of the parish annual reports. In a few cases, the terminology for Kingston and St. Andrew did not match that of Portland; we classified the activity with the closest related activity from Portland. For example, in Portland sewage inspections were classified with water system inspections.

For livestock, the average weight of each type of animal was calculated from the totals in the 1992 Annual Report for Portland Parish and confirmed by interviewing the parish's Public Health Inspector IV. Reported data for Kingston and St. Andrew Parish indicated only the total number of inspections and aggregate weight of livestock inspected, without the breakdown by type of animal. We applied the average result from Portland that one inspection day was sufficient for 7700 pounds of livestock. This estimate is probably conservative, as the average weight in Portland (19 kg. or 42

¹⁰Source: Health Information Unit, Ministry of Health, unpublished data, March 10, 1994.

lbs.) is substantially less than that in Kingston (148 lbs.), presumably due to a larger proportion of poultry in Portland. Larger animals are faster to inspect per pound.

4.4 Results

4.4.1 Personal Health Services.

Applying the indirect costs at each level, we obtained the overall unit costs for Portland and Kingston and St. Andrew parishes (Table 14).

4.4.2 Environmental Health

While hygienic eating establishments benefit the general public to some extent, the major beneficiaries are the patrons of the specific establishment. The patrons of all food establishments benefit indirectly through the assurance that food establishments in Jamaica in general are periodically inspected. In the long run, this benefit accrues to the owners of the facilities, who can attract more customers and charge higher prices because their product is considered safe. A proprietor who opens additional establishments requiring inspection by the Environmental Health section imposes additional work on the section. On grounds of economic efficiency and equity, we feel that commercial inspections should pay the full cost of their inspections. For the greatest administrative and political acceptability, these fees should be uniform across the country.

Tables 15 and 16 show the standard times, expected days, and proposed charge per inspection day in fiscal year (FY) 92 for Portland and the combined Kingston and St. Andrew parish, respectively. Although Portland Parish enjoyed a lower cost per inspection day, it had a greater proportion of non-commercial inspections. Thus, the extent of cost recovery was almost identical for the two parishes (76 percent in Portland, 71 percent in Kingston and St. Andrew). In Portland parish, there were high and inconsistent numbers of reported inspections of homes, tenements, and barracks.¹¹ Because of these non-commercial inspections, the apparent cost per inspection day was half that of Kingston and St. Andrew parish. As these inspections are not needed for any license, we were unable to validate the data. We were concerned that the Portland data may have contained an error, and based our estimate of unit costs and charges on the experience of Kingston and St. Andrew parish.

The base costs per inspection day for Portland Parish was J\$1,626 and that for Kingston and St. Andrew parish J\$2,696 (Table 17). These were calculated by deriving the direct costs of environmental health (Tables 2 and 3) by the number of inspection days (both commercial and non-

¹¹On page 47, the Annual Report 1992 of Portland Health Department reported 11,823 inspections of homes, tenements, and barracks in 1992. In the column for Dec. '92 in the table on the following page, however, it reported that 14,409 of these premises were satisfactory and 3,815 were unsatisfactory. The total of 18,224 is 54 percent higher than the previously reported number.

commercial, Tables 16 and 17). We added indirect costs based on the indirect cost rates derived above. We increased the observed cost by 20 percent to account for undocumented and follow-up inspections, the fact that government costs may not represent full costs due to periodic subsidies from the Ministry of Finance (e.g. retroactive salary increases), and the fact that environmental health services are underfunded (inspectors complained, for example, that travel allowances are often delayed or unpaid). The 20 percent increase was based on the extent of internal discrepancies in the parish annual report concerning the number of inspections. Proposed or recommended user charges would probably be set nationally. Because we had greater confidence in the data for Kingston and St. Andrew parish, we based the recommended national fee levels on its experience, obtaining J\$2,700 or US \$108 per inspection day.

4.4.3 Laboratory

Centers that have on-site laboratories, such as Kingston Comprehensive, could charge for those laboratory services. As a point of comparison, we were told that a private laboratory performs VDRL tests for food handlers under contract at J\$30 per test -- an indication of the probable cost.

4.4.4 Pharmacy

Summary results were obtained from all three sites combined. Overall, 92 percent (51 of the 62 curative patients) had a prescription. The medical record listed 2.1 items per average prescription. Only 43 percent of the 121 prescribed items were written in the medical record under their generic name. While the Pharmacy Act allows generic substitution, the extent of pharmacist compliance is not known. As brand name items are more expensive, they are probably more profitable to private pharmacists.

When the sample of prescribed items was compared against the WHO Essential Drug list, the following results were obtained:

On Essential Drug List	55%
Complementary item (useful adjuncts to essential items)	6%
Not on list	39%

Similar results were obtained by comparing the items to Jamaica's drug list. Of the 39 items in Exhibit 2 for which international prices were available, 24 or 62 percent were on the Ministry's price list for vital drugs.

More detailed results were analyzed separately from Port Antonio, where the first sample was obtained. Out of 25 curative patients there, 84 percent (21 patients) had a prescription for medication. Of the 4 patients who received no prescription, one received dressings, and one was referred for testing, so 92 percent (23 patients) received something in addition to the consultation. In the 21 patients with a prescription, there were 2.3 items per prescription (48 items total). Thus, these findings are quite similar to those from the overall study.

In theory, patients should be able to obtain prescribed items at no additional charge, after paying the nominal registration fee, at the clinic's pharmacy window. In practice, however, prescribed items were often out of stock at the clinic. In some of these cases, the drug was available at the Port Antonio hospital, although a much higher prescription fee (J\$50) was levied. Clinic personnel were asked to report the availability of each of the 48 items at the clinic or the back up source -- the hospital. They reported only 48 percent (23 of 48) of the items were available in the clinic, and only 50 percent (24 out of 48) at the local public hospital.

Exhibit 2 in Appendix B shows the detailed pharmacy costs. The average cost (\pm standard error of the mean) to the government was J\$24.81 \pm 7.72 per course of therapy. From an average international supplier, the corresponding cost was J\$26.96 \pm 8.32. The average private sector retail price in July to October, 1993, was J\$120.68 \pm 28.10. We calculated the ratio of prices of each source to the other two for all common items. Comparing government (generally Jamaica Commodities Trading Corporation (JCTC)) to retail, the average ratio was 0.18 \pm .05. Comparing international to retail, the average ratio was 0.22 \pm 0.07. Finally, comparing government to international, the average ratio was 0.92 \pm 0.39.

On the initial sample of five patients, we also compared UNICEF costs to retail. UNICEF ingredient costs averaged only 18 percent of retail prices in private pharmacies. If distribution costs were included, the UNICEF-based costs would average only 27 percent of retail prices.

Several lessons emerge from this analysis. First, the average price per item in primary care clinics is relatively modest -- J\$24.81. Despite the small sample size of only 25 patients, we can have considerable confidence that this order of magnitude is correct. A 95 percent confidence interval of 1.96 standard errors gives a range in the cost of an item from J\$9.68 to J\$48.62. Even the upper end of this range is substantially below the retail prices.

Second, the cost borne by patients to obtain drugs from private retail pharmacies is enormous -- about five times the cost to government system, plus the time and possible out-of-pocket expense required to travel to the pharmacy. A system which could maintain all vital and essential drugs in stock at all primary care facilities would generate substantial savings for patients.

Third, there is little overall difference in cost between the current suppliers used by the Ministry of Health and international suppliers. Many individual items, however, showed variation by a factor of two. This finding is bolstered by a 1990 price comparison in which the latest Jamaican procurement cost was compared to the average international price of 16 items.¹² Then, Jamaican prices ranged from 66 to 322 percent of average international prices, with a median of 100 percent and a mean of 145 percent. Thus, the Pharmaceutical Services Division could further improve its efficiency by arranging for the registration of manufacturers selling to international generic

¹² Le Roy, Aida A. Jamaica: Pharmaceutical management indicators survey. Survey funded by the Health and Nutrition Sustainability Project and the Health Sector Initiatives Project. Kingston, Sept. 1992 - March 1993.

distributors (or registering those distributors). The new Health Corporation, Limited, which replaced the Jamaica Commodity Trading Corporation, could then purchase from international distributors whenever prices were favorable.

Fourth, a fee of J\$15 per item would cover 60 percent of the cost of pharmaceuticals for paying patients for drugs in primary care. If fees were collected for 75 percent of patients (after allowing exemptions and uncollected fees), then revenues would cover 45 percent of the cost of drugs. As about 50 percent of the items were out of stock, drug purchases would need to be doubled to avoid these outages. The proposed level of revenues, combined with the present level of subsidy, should be sufficient for generating adequate funds to maintain the supply of drugs. As the cost estimates included domestic distribution costs, their costs as a percentage of all drug costs should decline as more drugs are sold.

While an increase in prescription prices might seem regressive and harmful to the poor, it might actually prove quite beneficial. The reason is that under the current policy, primary care facilities often run out of medications and force the patient to seek them elsewhere at substantially higher prices. A 1993 study using matched comparison areas found that when drugs were offered for sale, use of public health facilities increased and population expenditures declined compared to patterns in control areas.¹³

5 ANALYSIS OF FEE COLLECTION SYSTEMS

A complex practical issue in fee collections is appropriate procedures for collecting, safeguarding, and transporting funds collected in primary health care facilities. Since different policies might be appropriate for different types of primary health care facilities, we first examined the volume of curative services by type of primary health care facility. Then, to see whether the official system was feasible, we estimated the costs of instituting an expanded formal system of fee collections in a facility that does not currently have one. Both capital and recurrent costs would be entailed. All were estimated in February, 1994.

5.1 Capital Costs

The capital costs are renovating a room, buying a safe, having it installed, and buying a cash box. According to Locksafe, a safe of 32" by 28" would cost J\$48,000. It is assumed that installation would cost about J\$17,000. Renovation costs will obviously vary with the level of security required, and the extent that an existing room can meet the needs for a cashier's need. At Comprehensive Clinic, for example, where the need for security is great, an existing room would require a grill for the roof (costing J\$25,000), a grill for the door (perhaps J\$10,000), and a grilled window with one-way glass, so the cashier can see out, but the client cannot see into the cashier's

¹³Litvack JI, Bodart C:-- User fees plus quality equals improved access to health care: results of a field experiment in Cameroon. Social Science and Medicine 1993; 37:369-383.

room (perhaps J\$20,000). A locking cash box would cost about J\$1,000. Altogether, these capital improvements would cost about J\$121,000 (US \$3,800). Amortized at a real interest rate of 3 percent per year over 10 years, the annualized capital cost would be J\$14,000.¹⁴

5.2 Recurrent Costs

The recurrent costs would include, first, the salary and fringe benefits of a permanent employee to serve as chief cashier (assumed to be J\$75,000 per year). Next are the costs of transporting revenues from the health facility to a bank. Both private and public options are available. Kingston Public Hospital uses the public option. There police (who are based permanently at the hospital) escort the chief cashier around the hospital to collect money from secondary cashiers, and by car from the main cashier's room to a bank. The police perform this as part of their regular security activity; there is no separate payment. To maintain security, the cashiers declined to discuss the specifics of these arrangements.

Alternatively, a private security service could be used. A price quotation from Brinks Security of Jamaica indicates what would be involved. The charge is J\$320 per trip, plus J\$1 per J\$1000 transported. Each trip would also require a security seal on the bag, costing J\$5 per seal. To estimate the amount that would be carried, suppose that the volume of visits remained the same as it was in 1993, estimated (from 11 months of data) at 32,468 curative visits per year, or 624 per week. If there were two trips each week (scheduled at irregular days and times), each trip would represent the fees from 312 patients on average. Suppose that the fee schedule was J\$20 for registration, and J\$40 per prescription (assumed to be received by 90 percent of curative patients), and that fees were collected for 80 percent of curative patients. The revenue per patient would average J\$45. An average trip would transport J\$14,000, with a cost per trip of J\$320 (basic charge), plus J\$5 (seals) plus J\$14 (based on the value) or J\$339. Altogether, the semi-weekly transport would cost J\$35,256 per year.

Costs of maintaining a separate bank account also must be considered. Inquiries to the Bank of Nova Scotia and the National Commercial Bank both in Kingston and Santa Cruz indicated that there would be little, if any, charge for a checking account provided a sufficient balance was maintained. While the 1993 official monthly charge of J\$23 was noted in Kingston, a bank official in Santa Cruz noted informally that this charge could probably be waived. In any case, the annual charge amounted to J\$276. Stamp duty was J\$0.20 per check (assumed to be J\$12 per year). The main cost, then, would be the opportunity cost of keeping money without interest in the face of severe inflation. Assuming that the bank account held, on average, one month's collections and that the opportunity cost of capital was 30 percent per year, the average balance would be J\$121,755. This is derived as 32,468 visits per year times J\$45 per visit divided by 12 months per year equals

¹⁴The nominal (financial) interest rate (averaging lending and savings rates) would thus be about 3 percent above the projected annual inflation rate. Thus, if inflation were projected at 27 percent, the nominal interest rate would be 30 percent.

J\$121,755. The opportunity cost of keeping it interest free is J\$37,000. Thus the actual and implicit banking charges (including transport of money) are \$70,000.

The final category of recurrent costs is stationery and communications. Approximately J\$1 per patient or J\$32,468 should be sufficient.

5.3 Volume of Visits

Table 18 shows the volume of curative visits in calendar year 1993 at several facilities of each type, and projections to the population of all facilities. Data for the Types I and II facilities were based on our site visits. Those for Types IV and above and the total are unpublished data from the Health Information Unit. As data were not yet available on the average volumes for Types I, II, and III, the data for Types I and II were inferred from the site visits with adjustment factors based on the fact that Southfield was a large Type II center that functioned like a Type III center, and the Type III centers are close to Type IV centers. The adjustment factors were calibrated so that the overall volume of curative visits agrees with the number from the Health Information Unit, 887,645 visits.

5.4 Overall Annual Collection Costs

Maximum annual costs. Overall annual collection costs are examined under two alternative assumptions. The maximum annual costs are derived using Brinks and including opportunity costs. Altogether, in this case the annual costs of expanded fee collections are:

Added staff position	J\$ 75,000
Banking costs	J \$ 70,544
Stationery	J\$ 32,468
SUBTOTAL, RECURRENT	J\$178,014
Annualized Capital Costs	J\$ 14,000
TOTAL ANNUAL COSTS	J\$192,000

The semi-weekly revenue from fees was projected at J\$14,000 or J\$1.46 million per year. The projected recurrent and annualized capital costs amount to 13 percent of the projected revenue.

Apart from stationery, the cost of collecting fees under the formal system varies slightly with the type of facility, whereas the revenue obtained depends directly on the volume of paying curative clients. Thus, it is possible to estimate the collection's cost if formal systems were instituted in various types of facilities. The amounts below assume that the volumes of curative patients can be extrapolated directly from our limited data without adjustment, that Brinks is used for transporting money, and that opportunity costs of keeping money in the bank are included. Thus, this gives the maximum estimates of both revenue (because of high volume) and expenses.

Maximum Amounts in J\$1000, (1993)*

Level Type of Facility	No. of Curative Visits	Est. Rev- enue	Est. Expendi- tures	Net Re- covery	% Expendi- tures
1 Sandy Bay	126	6	160	154	2816%
2 Southfield	6,832	307	166	141	54%
3-4 Type 4 Average	14,074	633	174	460	27%
Comm. Hosp.	11,711	527	171	356	32%
5 Comprehensive	32,468	1,461	192	1,269	13%

* Assumes that revenue average J\$45 per curative visit, and that all expenses except stationery are the same as those estimated for Comprehensive Clinic (J\$192 thousand).

These results show that collection costs would exceed a third of revenues for Types 1 and 2 clinics, so that formal fee collection systems would not be appropriate. The cost of collecting funds would offset a large part of the revenues. For Types 3, 4, and Community Hospitals, collection costs with Brinks would be about a third of the revenues. Here, other considerations enter in the choice of which types of facilities are appropriate for formal fee collection systems. As community hospitals already have such systems, they should continue. The Type IV clinics will probably have lower administrative costs than the Type III. These are clinics in the same compound as the parish health department, so that many of the costs of banking and transport of money can be obviated.

Minimal collection costs. To reduce collection costs, we suggest that local police be asked to serve as escorts of cashiers to banks. Currently, police perform this function at Kingston Public Hospital, not too far from Comprehensive. For budgeting purposes, we will also exclude the opportunity cost of foregone interest from keeping cash in the bank, and consider only actual expenditures. This gives the following annual costs of fee collection in Comprehensive Clinic (in J\$):

Added staff position	J\$ 75,000
Stationery	J\$ 32,468
SUBTOTAL, RECURRENT	J\$107,470
Annualized Capital Costs	J\$ 14,000
TOTAL ANNUAL COSTS	J\$121,000

In this case, the cost of collection in Comprehensive is 8.3 percent of the funds of J\$1.46 million expected to be collected, a modest share. Community hospitals, which already have formal systems, apparently have the necessary facilities, personnel, and stationery already. Thus they should entail no additional costs. In Type IV facilities, the costs are comparable to those in Comprehensive except that stationery costs will be lower, as the volume of patients is less. The overall minimal cost here is J\$103,000 per year, or 16.3 percent of the anticipated revenues of J\$633,000.

5.5 National revenue estimates

We needed to determine the volume of revenues that would be generated by a proposed fee schedule. To do this, we needed to estimate the volume of services on which fees would be collected and the average revenue for both curative and environmental health services.¹⁵ For curative services, the Health Information Unit was able to provide the total volume of curative visits in primary health care facilities in 1993 (887,645 visits) and the volumes in all Types IV and V health centers and community hospitals. Table 18 shows these data. (In some cases, data were available for only 11 months; the count was extrapolated to 12 months based on the monthly average.)

Data were not available when this report was completed, however, on the volumes of services by type of center in the smaller three types of health centers. These counts were extrapolated from the site visits by assuming that Sandy Bay was representative of a Type I center, that Southfield, although technically a Type II center, actually had volume comparable to an average Type III center; and that the average Type II center had a volume equal to 71.05 percent of that of Southfield (this percentage was chosen so that the overall volume of visits would agree exactly with the national total). These assumptions are consistent with all available evidence.

Table 19 uses the average volume by type of facility to estimate the gross and net revenue from formal fee collection systems for curative services. We assumed that the proposed fees would be sufficiently small that they would have little deterrent effect to use of services. We further assumed that the attraction of quality improvements would more than offset any deterrence to determine use of services. Table 20 derives the anticipated revenues from environmental health inspections. Lacking detailed data by parish (which would have required visits or correspondence with each parish), we extrapolated paid (or commercial) inspection days per 1000 population from the case studies of Kingston and St. Andrew and Portland parishes.

As noted in the Summary and Recommendations, if the proposed fees had been in effect throughout 1993, the overall level of cost recovery in that year would have been 18.9 percent of primary health care costs (including pro-rata indirect costs). We next wanted to examine the levels of cost recovery by type of service. We estimated the revenues from fees in environmental health by assuming complete compliance. From the cases studies in Kingston and St. Andrew and Portland, we estimated that environmental health represented 14.9 percent of the parish level expenditures on primary health care (13.3 percent and 16.5 percent, respectively). Applying this share to the national 1993 primary care total of J\$275.3 million gives costs of J\$41.0 million for existing environmental health activities. Assuming that better reimbursement for travel expenses to inspectors would require J\$4.8 million, the total volume of costs would be J\$45.8 million. The projected revenues of J\$48 million are 5 percent over these costs. The modest excess could defray losses from unpaid bills. Thus,

¹⁵Since the cost recovery system for family planning services already appears to function satisfactorily, we have not analyzed that in detail. To avoid distortions, our analysis excludes both the costs and revenues from family planning supplies. These, in general, are managed by the semi-autonomous National Family Planning Board and not by the central Ministry of Health.

the environmental health fees should fully cover the costs of environmental health services.

To estimate cost recovery for curative services, we found that curative services represented 58.8 percent of primary care service costs in the two parishes we studied (60.7 percent in Kingston and St. Andrew and 56.9 percent in Portland). Extrapolating nationally, these services cost J\$161.9 million in 1993. Adding J\$4.4 million for needed improvements in drugs gives J\$166.3 million in recurrent costs of the primary care system. The anticipated formal revenues from curative services of J\$5.8 million (both existing and additional) represent only 3.5 percent of these costs. This amount is constrained by the desires to keep primary care fees below those of outpatient secondary and tertiary care and to limit formal fees to only the largest facilities.

As Kingston Comprehensive Clinic is the largest facility to be affected by the proposed policy, it is useful to examine how the proposed fees would apply to it. Using the average cost per curative visit from both parishes, we obtain the following costs per curative visit:

<u>Component</u>	<u>Cost (J\$)</u>
Existing consultation cost	142.99
Additional pharmaceuticals cost*	22.50
Additional collection cost	3.73
TOTAL	169.22

*Assumes one additional item, 90% of patients

The revenue per curative patient would be J\$45. This estimate assumes that 80 percent of curative patients would pay the formal fees. These would consist of a registration fee (J\$20) and, in 90 percent of paying patients, a prescription fee (J\$40). Thus, the level of cost recovery would be 27 percent.

In facilities with informal systems, most of the revenue would probably come from drugs. Assuming that each prescription consists of two items costing J\$25 each, the cost is J\$50. Assuming that voluntary contributions of J\$40 per prescription (the same amount as the formal fee) are obtained in 70 percent of curative patients, the expected drug revenue of J\$28 per prescription would represent 56 percent of the drug costs.

While the overall level of cost recovery for curative services is small, it can make an important contribution to improving the supply of drugs and contraceptives, and represents an important base on which future policies can build.

6 COST RECOVERY FOR ADMINISTRATIVE SERVICES

While outside the scope of primary care services, cost recovery would also be appropriate for many administrative services performed by the Ministry of Health, such as the registration of health

professionals, and providing copies of official certificates. Fees for these services could raise funds without jeopardizing access to essential health services. Thus, this discussion complements the suggested increases for primary care (covered in this report) and secondary care (analyzed in a previous report). While outside the specific scope of the assignment, brief explorations demonstrated promise relevant to the overall purpose of the project. Prices for administrative services provided by the Ministry could be raised to current levels for similar services in other countries. Examples of these opportunities include: fees for registrations of pharmaceuticals and pesticides; fees for medical licenses paid to the Medical Council (which is financially subsidized by the Ministry of Health (MOH) which pays the salaries for the registrar, secretary and stenographer and provides office space); fees for documents produced by the Registrar General's office; and fees for services performed by the Government Chemists' office.

6.1 Government Chemists' Office (Activity 309 of the Health Budget)

Using only direct budgeted allocations (estimated 1993/94) of J\$2,605,000 and the estimate given in the budget for 1993/94 of 5,000 total analyses, the average cost per analysis is estimated at J\$521. Pro-rata national overhead costs of 5.24 percent would raise this average cost to J\$548. Revenues for the same time period are estimated to be J\$100,000 or only J\$20 average per analysis. On a per analysis basis, there is a shortfall of J\$528 or 96 percent of costs per analysis. Any increase in charges levied would narrow the difference between costs and revenues. While many of the analyses are clearly public health activities (i.e. public goods), many are currently done on a fee-paying basis for the private sector (Toxicology Division; blood and urine for drugs and poisons and Pharmaceutical Division; analysis of locally manufactured drugs for label claims and efficacy). This line of investigation warrants an investment in time to determine its potential financial return.

6.2 Registration of Pesticides and New Pharmaceutical Products

When this study began in mid-1993, all pesticides and pharmaceuticals in Jamaica were registered for virtually no fee. By contrast, in other countries the fees charged for registration usually bear some relationship to the value of the market -- either very high one-time or high recurring. Fees were raised in 1993. Given the substantial private market for pharmaceuticals in Jamaica (extrapolated from the 1992 Survey of Living Conditions by Dr. William Bicknell at about J\$600 million in 1993 prices), the market value to distributors and importers is substantial. Thus, these two areas represent exciting opportunities for revenue enhancement for the Ministry.

6.3 Professional Councils

The professional councils (Medical, Dental, Nurses, Medical Professionals (i.e., technicians)) charge very small fees for registering health professionals. The Medical Council is worthy of attention as physicians in Jamaica currently pay a ridiculously low fee (i.e., J\$200) to register for life. The Ministry of Health currently subsidizes the costs (salaries of registrar, secretary and stenographer) and provides space for offices. Other English speaking British Caribbean Islands (Trinidad and Tobago) have moved to an Annual Retention Fee for an "Annual Practicing Certificate"

which could be valued at something like J\$1,000 per year. If a plan like this were to be adopted, then at least the cost of the Medical Council could be offset and financial independence from the Ministry established. Another possibility, of course, would be to charge a fee more in keeping with the value of the private medical license (i.e., J\$10,000/year) partially exempting government physicians.

The Registrar General's offices is currently allocated J\$11,339,000 in the estimated 1993/94 budget, offset by only J\$2,500,800 in revenues, or about (22 percent) of costs. As fees for passports and driver's licenses have just been raised, it is logical that higher fees could be added here, with the goal of self-sufficiency eventually. There are working examples of mechanized systems which provide clients with documents on demand for a fee. The Government of Chile's new computerized system (SRCeI) is an inexpensive basic system. At a more sophisticated level, the State of California and IBM has developed a new system that provides official copies of personal official documents such as birth, marriage or death certificates via terminals located in kiosks located in high traffic locations.

APPENDIX A: TABLES FOR ANALYSIS OF COST RECOVERY

TABLE 1. Units of service

<u>Type of service</u>	<u>Unit of service</u>	<u>Level provided</u>
1. MCH		
MCH consultation	MCH visit	Parish
Family Planning supplies	Product	National
2. Curative		
Curative consultation	Curative visit	Parish
Pharmaceutical supplies	Prescription	National
Laboratory services	Curative visit	National
3. Environmental	Inspection day	Parish

Table 2. Budget for Portland Parish

Description	Approved/ Requested	Direct. & Ad.	Cura- tive	Mat.& Child	Envir. Health	Maint. & Sup.	TOTAL
PARISH 105 Portland							
Comp. of Employees	0.9370	500	3,194	1,751	1,032	1,523	8,000
Travel Expenses & Sub.	0.9615	178	250	290	515	166	1,400
Rental of Property, Mach.	1.0417	0	0	45	0	0	45
Public Utility Services	1.7895	850	0	0	0	0	850
Purchases Goods & Services	1.0000	462	1,862	395	0	0	2,720
Purchases of Equipment	0.9524	21	19	0	0	0	40
TOTAL	0.9176	2,012	5,325	2,481	1,548	1,689	13,055
Percent of all disciplines		15.4%	40.8%	19.0%	11.9%	12.9%	100.0%
Percent of services			56.9%	26.5%	16.5%		100.0%

a/ Drug budget of J\$2,720,000 set directly by Ministry of Finance, as shown here. Requested budget for other goods and services reduced to 51 percent of requested value (J\$1,000,000 approved out of J\$1,951,000 requested). This reduction was applied pro-rata to all disciplines.

Table 3. Budget for Kingston and St. Andrew Parishes, 1993-94 (J\$1000)

<u>Description</u>	Approved/ Requested	Direct. & Ad.	Cura- tive	Mat.& Child	Envir. Health	Maint. & Sup.	TOTAL
Comp. of Employees	0.8075	2,805	16,266	5,349	3,143	2,438	30,000
Travel Expenses & Sub.	1.0873	988	982	2,478	1,341	11	5,800
Rental of Property, Mach.	0.9903	120	0	0	0	0	120
Public Utility Services	1.0000	1,920	0	0	0	0	1,920
Purchases Goods & Services	0.8000	1,453	5,418	1,905	480	1,032	10,288
Purchases of Equipment	0.0000	0	0	0	0	0	0
TOTAL	0.8286	7,286	22,666	9,731	4,963	3,481	48,128
Percent of total costs		15.1%	47.1%	20.2%	10.3%	7.2%	100.0%
Percent of services			60.7%	26.0%	13.3%		100.0%

Table 4. Number of visits, Portland Parish (1993/94)

Type of visits:	92/93
Curative care visits	
Curative	41,789
Dental	13,009
Home visits (10%)	2,354
Subtotal	57,152
Maternal child health visits	
Antenatal	6,494
Postnatal	3,037
Child health	15,704
Home (90%)	21,188
Family planning	11,165
Subtotal	57,588
Grand TOTAL	114,740

Table 5. Number of visits: Kingston & St. Andrew Parishes

Type of visits:	92/93
Curative care visits	
Curative	202,657
Dental	63,887
Home visits (10%)	5,054
Subtotal	271,598
Maternal child health visits	
Antenatal	6,494
Postnatal	3,037
Child health	15,278
Home visits (90%)	45,484
Family planning	86,664
Subtotal	156,957
GRAND TOTAL	428,555

Table 6. Summary of numbers of visits by parish and type, 1992

Parish	Code	Population	Curative TOTAL	MCH TOTAL	GRAND TOTAL
K. & St. And.*	101	643,771	320,962	211,280	532,242
St. Thomas	102	86,000	42,358	55,360	97,718
St. Catherine	103	361,535	197,377	116,221	313,598
Portland	105	76,067	78,340	36,400	114,740
St. Mary	106	107,933	72,570	43,013	115,583
St. Ann	107	149,015	65,899	51,713	117,612
Trelawny	109	71,646	68,290	31,892	100,182
St. James	110	156,152	108,137	59,068	167,205
Hanover*	111	65,958	75,496	33,984	109,480
Westmoreland*	112	130,000	91,274	45,257	136,531
St. Elizabeth	114	144,118	136,605	63,511	200,116
Manchester	115	164,979	77,595	52,969	130,564
Clarendon	116	212,324	105,458	77,759	183,217
TOTAL	--	2,369,498	1,440,361	878,427	2,318,788

* Data from Health Information Unit for calendar year 1992. Other data from FY 1993 budget of Jamaica for fiscal year 1992.

Table 7. Direct Cost per Visit, Portland parish (1993/94)

	Maternal Child Health	Curative Consul- tation
Discipline costs (J\$1000)	2,406	4,824
Number of visits	57,588	57,152
Cost per visit (J\$)	41.78	84.41

Table 8. Direct cost per visit, Kingston and St. Andrew parish 1993/94

	Maternal Child Health	Curative Consul- tation
Discipline costs (J\$1000)	9,731	22,666
Number of visits	156,957	271,598
Cost per visit (J\$)	62.00	83.45

Table 9. National ancillary cost from 1993/94 costs (J\$1000)

	Family Plan- ning	Central Labor- atory
National program costs (J\$1000)	13,175	20,001
Ratio (% for primary care)	100.00%	26.76%
National program costs for primary care (J\$1000)	13,175	5,352

Table 10. Indirect cost rates for Portland and Kingston & St. Andrew parishes

<u>TYPE OF SERVICE</u>	<u>K&SA Costs (J\$1000)</u>	<u>Port- land Costs (J\$1000)</u>
Direct services		
a) Curative care	22,666	5,325
b) Maternal child health	9,731	2,481
c) Environmental health	4,963	1,548
Subtotal	37,360	9,354
Support services		
a) Direction and administration	7,286	2,012
b) Maintenance and support	3,481	1,689
Subtotal	10,768	3,701
Grand Total	48,128	13,055
RATIO OF SUPPORT TO DIRECT*	28.82%	39.56%

* Calculation for K&SA: $10,768/37,360 = 28.82\%$.

Table 11. Derivation of regional indirect cost rates from regional costs, J\$1000

<u>Region</u>	<u>Regional Total</u>	<u>Components</u>		<u>Ratio: Reg. Support to Parish Activities/e</u>
		<u>Regional Support</u>	<u>Parish Activities</u>	
		<u>Primary Care</u>		
South East /a	97,984	9,412	88,572	10.6%
North East /b	50,123	4,330	45,793	9.5%
Western /c	65,445	7,265	58,180	12.5%
Southern /d	61,753	4,668	57,085	8.2%
TOTAL	275,305	25,675	249,630	10.3%
		<u>Secondary and Tertiary Care</u>		
South East /a	307,668	11,858	295,810	4.0%
North East /b	62,205	4,448	57,757	7.7%
Western /c	123,447	4,545	118,902	3.8%
Southern /d	80,245	4,709	75,536	6.2%
University Hosp.	180,000	0	180,000	0.0%
TOTAL	753,565	25,560	728,005	3.5%

a/ Kingston, St. Andrew, St. Thomas, St. Catherine

b/ Portland, St. Mary, St. Ann

c/ Trelawny, St. James

d/ Manchester, Clarendon

e/ Illustrative calculation of support rate: $9,412/88,572 = 10.6\%$

Table 12. Higher level costs (J\$1000, 1993-94)

Program	National Support	Direct Services	Total
1 Executive Direction and Administration	52,897.00	0	52897
2 Training	0.00	36366	36366
4 Regional and International Coop. Primary and Sec. Care	0.00	8155	8155
20 Primary Health Care	0.00	275305	275305
40 Secondary and Tertiary Health Care	0.00	753565	753565
60 Health Services Support:			
60 Surveillance, Prevention and Control of Diseases	0.00	3305	3305
61 Paramedical services:			
Blood Transfusion Services	0.00	11455	11455
Laboratory Services	0.00	20001	20001
62 Grants and Contributions	0.00	3120	3120
63 Hospital maintenance unit /a	12710		12710
70 Family Planning	0.00	13175	13175
80 Pharmaceutical Services	6670	0	6670
SUBTOTAL: Primary and Secondary	0.00	1028870	1028870
GRAND TOTAL (NET)*	72277	1124447	1196724

Ratio of national support to services 6.43%

* Transfers of \$120 million for pharmaceuticals are counted under programs 20, 40, and others. The ratio of primary care to the total of primary and secondary care, for allocating laboratory expenses, is 26.76%..

Table 13. Summary of Cost per Visit by Parish (J\$, 1993)

<u>Cost Element</u>	<u>Kingston & St. Andrew</u>			<u>Portland</u>		
	<u>Indirect Cost Rate</u>	<u>Mater- nal Child Health</u>	<u>Cura- tive Consul- tation</u>	<u>Indirect Cost Rate</u>	<u>Mater- nal Child Health</u>	<u>Cura- tive Consul- tation</u>
Provider Cost (Direct)		62.00	83.45		43.09	93.18
Parish support (Indirect)	28.82%	17.87	24.05	39.56%	17.05	36.86
Parish subtotal (Direct & Indirect)		79.87	107.50		60.14	130.04
Regional support (indirect)	10.63%	8.49	11.42	9.46%	5.69	12.30
Regional subtotal (Direct & Indirect)		88.36	118.93		65.82	142.34
General national support (Indirect)	6.43%	5.58	7.64	6.43%	4.23	9.15
Laboratory support (indirect)			3.95			3.95
GRAND TOTAL (Direct & Indirect)		94.04	130.53		70.05	155.44

Table 14. Summary of Personal Health Costs by Parish

Component	Amounts in J\$		Amounts in US\$ /a		
	Portland	Kingston	Portland	Kingston	Average
<u>Maternal Child Health Visit</u>					
Provider cost	43.09	62.00	1.72	2.48	2.10
Parish support	17.05	17.87	0.68	0.71	0.70
Regional support	5.69	8.49	0.23	0.34	0.28
National support					
Gen. Administrative	4.23	5.68	0.17	0.23	0.20
Laboratory	0.00	0.00	0.00	0.00	0.00
SUBTOTAL	70.05	94.04	2.80	3.76	3.28
Separate Service Costs					
Family planning	15.96	15.96	0.64	0.64	0.64
TOTAL	86.01	110.00	3.44	4.40	3.92
<u>Curative Visit</u>					
Provider cost	93.18	83.45	3.73	3.34	3.53
Parish support	36.86	24.05	1.47	0.96	1.22
Regional support	12.30	11.42	0.49	0.46	0.47
National support					
Gen. Administrative	9.15	7.64	0.37	0.31	0.34
Laboratory/a	3.95	3.95	0.16	0.16	0.16
TOTAL	155.44	130.53	6.22	5.22	5.72

a/ Derived by dividing number of curative visits in primary care into national laboratory costs.

b/ Converted at US\$1 equals J\$25 (July, 1993 rate)

Table 15. Portland Environmental Health Inspections

Type of Inspection (1)	No. In- spec. (2)	Avg. Insp. /Day (3)	Annual Insp. Days (4)	% (5)	Prop. Insp. Fee (6)	Anticipated Revenue (7)
<u>Commercial Inspections</u>						
Premises						
Hotels	8	1	8		2,700	21,600
Barber shops	43	8	6		338	16,200
Bars	849	10	30		270	81,000
Food shops	1,737	10	94		270	253,800
Slaughter houses	471	5	10		540	27,000
Villas (Guest houses)	215	6	36		450	97,200
Freighters and visiting ships	235	2	118		1,350	318,600
Stores	23	4	6		675	15,525
Bakeries	28	2	14		1,350	37,800
Dairies	5	2	3		1,350	6,750
Itinerant vendors	312	12	26		225	70,200
Markets	5	12	0.00		225	1,125
Milk plants	0.00	2	0.00		1,350	0.00
Restaurants	144	3	48		900	129,600
Food plants	3	3	1		900	2,700
Factories	3	1	3		2,700	8,100
Subtotal	4,081	10.1	403	19%	266	1,087,200
Food handlers						
Food Handler Visits	4,596	30	153	7%	90	413,640
Food Handler Clinics (employer's location, 2 inspectors, 15 visits)	61	1	61	3%	2,700	165,456
Subtotal	4,657	21.7	214	10%	124	579,096

Table 15 (continued)

Type of Inspection (1)			No. In- spec. (2)	Avg. Insp. /Day (3)	Annual Insp. Days (4)	% (5)	Prop. Insp. Fee (6)	Antici- pated Revenue (7)
Meat inspection								
	Actual average wt. (kg)	Total, kgs						
Oxen	317	617,075	1,944	24	81		113	218,700
Pigs	113	296,778	2,623	36	73		75	196,725
Goats	25	32,419	1,293	72	18		38	48,488
Sheep	43	345	8	60	0.00		45	360
Poultry	5	178,222	39,400	360	109		8	295,500
Subtotal	25	1,124,839	45,268	161	281	13%	17	759,773
GROUP TOTAL			53,945		837	39%	373	2,426,069
<u>Non-Commercial Inspections</u>								
Homes			17,122	16	1,070		0.00	0.00
Tenements			1,046	16	65		0.00	0.00
Barracks			56	16				
Schools			121	4	30		0.00	0.00
Water Supplies			64	4	16		0.00	0.00
Others			2,254	20	113		0.00	0.00
GROUP TOTAL			20,663	16.0	1,294	61%	0.00	0.00
TOTAL REVENUE			74,608	89.1	2,132	100%		2,426,069

Table 16. Kingston and St. Andrew Administration: Environmental Health Inspection

Type of Inspection (1)	No. In- spec. (2)	Avg. Insp. /Day (3)	Annual Insp. Days (4)	% of Rev. (5)	Prop. Insp. Fee (6)	Anticipated Revenue (7)
<u>Commercial Inspections</u>						
<u>Premises</u>						
Hotels	12	1	8		2700	21600
Barber shops and hair parlors	344	8	6		338	16200
Bars	1208	10	30		270	81000
Food shops (small)	1228	8	94		338	253800
Supermarkets	50	3				
Slaughter houses	31	5	10		540	27000
Villas (Guest houses)	139	6	36		450	97200
Freighters and visiting ships*	235	2	118		1350	318600
Stores	1622	4	406		675	1094850
Bakeries	72	2	36		1350	97200
Dairies (selling milk)	2	2	1		1,350	2,700
Itinerant vendors	1863	12	155		225	419175
Markets	76	2	38		1350	102600
Milk plants	8	2	4		1350	10800
Restaurants	468	3	156		900	421200
Factories	3	1	3		2700	8,100
Subtotal	7361	6.7	1101	0.33	404	2972025
<u>Food handlers:</u>						
Food Handler Visits (at parish clinic)	18000	30	600	0.18	90	1620000
Food Handler Clinic (employer's location, 2 inspectors, 15 visits)	240	1	240	0.07	2700	648000
Subtotal	18240	21.7	840	0.25	124	2,268,000

Table 16 (continued)

Type of Inspection (1)		No. In- spec. (2)	Avg. Insp. /Day (3)	Annual Insp. Days (4)	% of Rev. (5)	Prop. Insp. Fee (6)	Antici- pated Revenue (7)
<u>Meat inspection</u>	Wght (Lbs)						
7,700 lbs/day)	/Insp Total lbs. 148 6,143,764	41450	52	798	0.24	52	2154307
GROUP TOTAL		67051	24.5	2739	0.82	580	7394332

Non-Commercial Inspections

Homes	2727	10	273				
Tenement buildings	171	10	17				
Schools	288	4	72				
Water/Sewage Facilities	95	4	24				
Water Quality Monitoring	1616	8	202				
Others /a	196	8	25				
GROUP TOTAL	5093	8.3	612	0.18	0.00	0	
TOTAL		72144	21.5	3351	0.82		7394332

a/ Lock-up police stations public sanitary facilities (31), public health centers (29), public sanitary facilities (52), and others (125).

Table 17. Cost per Inspection Day by Parish

Environmental Health Cost Element	<u>Kingston & St. Andrew</u>		<u>Portland</u>	
	Rate	Cost (J\$)	Rate	Cost (J\$)
Direct costs		4,963,272		1,547,502
Indirect Costs:				
Parish support	28.82%	1,430,454	39.56%	612,204
Regional support	10.63%	679,422	9.46%	204,213
National support	6.43%	454,647	6.43%	174,446
TOTAL COSTS		7,527,795		2,515,867
Number of inspection days		3,351		2,132
Cost per inspection day		2,247		1,180
Proposed mark up	20%	449	20%	236
Total fee per inspect. day		2,696		1,416
Rounded fee		2,700		

Table 18. Volume of Curative Visits by Type of Primary Health Care Center

<u>Type, Name</u>	<u>Actual Sample Volume</u>	<u>Adjust-ment Factor</u>	<u>Pop. Est. Average Volume</u>	<u>No. of Centers</u>	<u>Est. Pop. Total Volume</u>
Type I: Sandy Bay	126	100.00%	126	184	23,184
Type II: Southfield	6,832	71.05%	4,854	92	446,592
Type III:	6,832	100.00%	4,099	66	270,547
Type IV: Port Antonio	11,674				
Falmouth	9,357				
Lucy	5,227				
St. Jago Park	30,039				
Average	14,074	100.00%	14,074	4	56,297
Type V: Comprehensive	32,468	100.00%	32,468	1	32,468
Community Hospital: Chapleton	17,330				
Buff Bay	15,380				
Ulster Spring	5,324				
Alexandria	10,926				
Isaac Barrant	9,597				
Average	11,711	100.00%	11,711	5	58,557
TOTAL PROJECTED				352	887,645

Table 19. Projected Additional Curative Care Revenues in Primary Health Care

Type of Center	Number of Centers	Average Admin. Expense (J\$1000)	Est. Total Volume (Visits)	Potential Informal Revenue (J\$1000)	Gross Formal Revenue (J\$1000)	Aggreg. Admin. Expense (J\$1000)	Net Formal Revenue (J\$1000)
Type I	184		23,184	1,043			
Type II	92		446,592	20,097			
Type III	66		270,547	12,175			
Type IV	4	103	56,297		2,533	412	2,121
Type V	1	121	32,468		1,461	121	1,340
Commun. Hospital	5	0	58,557		937	0	937
TOTAL	352	225	887,645	33,315	4,931	534	4,397

Note: Assumes net revenues of J\$45 per visit in Types IV and V health centers and J\$16 in community hospitals (considering new registration and pharmacy fees of J\$20 and J\$40, respectively, and assuming that 80% of curative patients pay these fees).

Table 20. Estimated national revenues from proposed fees for commercial inspections

	Kingston & St Andrew	Portland	Jamaica
Paid inspection days	2,739	837	
Population	646,400	77,100	
Inspection days/1000 pop.	4.24	10.86	
Average		7.55	
Population			2,355,100
Est. inspection days per 1000 pop.			7.55
Est. total commercial inspection days			17,773
Proposed daily fee (J\$)			2,700
Total predicted revenue (J\$ million)			48.0

APPENDIX B: FORMS FOR PHARMACEUTICAL STUDY

Exhibit 1. UNICEF PRICE PER COURSE OF MEDICATION: Illustrative List (Prices from 1992 UNICEF Catalog)

MEDICATION NAME	UNICEF NUMBER	FORM	DOSAGE LEVEL	DOSAGE RATE/ (MEDIAN)	DOSAGE DAYS /(MEDIAN)	COURSE UNITS	UNIT PRICE (US\$)	COURSE PRICE	
								US\$	JS
AMPICILLIN	00 050 75	CAPS/TABS	250 MG	12- 24DAY/(18)	7	126	0.02503	3.15	78.75
METRONIDAZOLE (TRICHOMONIASIS)	15 556 50	TABS	250 MG	3 DAY/(3)	7-10/(9)	27	.00704	0.19	4.75
METRONIDAZOLE (AMOEBIASIS)	15 556 50	TABS	250 MG	6 DAY/(6)	5-10/(8)	48	0.00704	0.34	8.50
TETRACYCLINE	15 690 00	CAPS/TABS	250 MG	8-16 DAY/(12)	7	84	0.01123	0.94	23.50

Exhibit 2.

Comparison of Pharmaceutical Prices: Jamaica Government, International and Retail Pharmacies

Patient Item No. No	Medication Prescribed	Generic Name of Medication	Dose		Dose		Availability			JCTC Unit Price (J\$)	Formula to Calculate JCTC Course Price (J\$)	JCTC Pharmacy Course Price (J\$)	Ratio: JCTC to Pharm	Interest.		Interest Course Price (J\$)	Ratio: JCTC to Internat.	Ratio: Internat. to Pharm.
			Units	Rate	Dose	Days	Dose	Pharm.	Hosp.					Chn.	Unit Price (US\$)			
147	1 Brenerdin Tablets	Combination drug/No generic	1	1	30	30	1	1	1			132.00						
147	2 Mycostatin Vaginal Pessaries	Nystatin Pessaries	100Kiu	1	1.5	10	15	1	1	1	3.3053 (3.3053*1.25)*15	61.97	141.20	0.44	0.0612 (.0612*1.5)*15*25	34.43	1.80	0.24
941	1 Diabinese Tablets	Chlorpropamide Tablets	500 mg	1	2	90	180	1			0.2056 (.2056*1.25)*2*180	92.52	1344.00	0.07	0.0121 (.0121*1.5)*2*180*25	163.35	0.57	0.12
941	2 Iron Liver Vitamin Tablets	Unknown medication		3	1	30	90	1				26.00						
1617	0 No medication prescribed	NA																
1880	1 Hydrochlorothiazide Tablets	Hydrochlorothiazide Tablets	50 mg	1	1	60	60	1				23.00			0.0039 (.0039*1.5)*60*25	8.78		0.38
1880	2 Aldomet Tablets	Methyldopa Tablets	250 mg	1	1	60	60	1			0.0460 (.0460*1.25)*5*60	1.72	125.00	0.01	0.0326 (.0326*1.5)*60*25	73.35	0.02	0.59
5260	1 Tetracycline Caps	Tetracycline Caps	500 mg	4	1	7	28	1	1			68.80			0.0140 (.0140*1.5)*28*25	14.70		0.21
5260	2 Metronidazole Tablets	Metronidazole Tablets	250 mg	3	1	7	21	1	1	1	0.6652 (.665*1.25)*21	17.46	33.10	0.53	0.0108 (.0108*1.5)*21*25	8.51	2.05	0.26
5260	3 Gynopevaryl Pessaries	Econazole Nitrate Pessaries		1	1	3	3	1	1	1		311.90						
5260	4 Pevione Cream	Econazole Nitrate Triamcinolone Crm		2	1	14	28	1	1	1		188.20						
6088	1 Penaduria Injection	Penicillin, Benzathine Injection	1.2 mu	1	1	1	1	1	1	1	6.0400 (6.04*1.25)*1	7.55	180.00	0.04	0.2422 (.2422*1.5)*1*25	9.08	0.83	0.05
6088	2 Panadol - Acetamol Tablets	Paracetamol Tablets	500 mg	2	1	12	24	1	1	1	0.0304 (.0304*1.25)*24	0.91	41.60	0.02	0.0101 (.0101*1.5)*24*25	9.09	0.10	0.22
8871	1 Amoxycillin Tablets	Amoxycillin Tablets	250 mg	4	1	7	28	1	1		0.0360 (.036*1.25)*28	1.26	85.00	0.01	0.0327 (.0327*1.5)*28*25	34.34	0.04	0.40
9306	1 Doxycycline Tab/Caps	Doxycycline Tab/Caps	100 mg	2	1	7	14	1			0.0445 (.0445*1.25)*14	0.78	34.60	0.02	0.0393 (.0393*1.5)*14*25	20.63	0.04	0.60
9937	1 Panadol Syrup	Paracetamol Syrup	5 ml	3	5	10	150	1	1	1	0.0589 (.0589*1.25)*150	11.04	164.60	0.07				
9937	2 Emycin Suspension	Erythromycin Suspension	5 ml	4	5	7	140	1			0.3991 (.3991*1.25)*140	69.84	241.65	0.29	0.0161 (.0161*1.5)*140*25	84.52	0.83	0.35
9998	1 Doxycycline Tab/Caps	Doxycycline Tab/Caps	100 mg	2	1	7	14	1			0.0445 (.0445*1.25)*14	0.78	34.60	0.02	0.0393 (.0393*1.5)*14*25	20.63	0.04	0.60
10828	1 Esidrez	Hydrochlorothiazide	50 mg	1	1	90	90	1	1	1		64.00			0.0039 (.0039*1.5)*90*25	13.16		0.21
10828	2 Brufen Tablets	Ibuprofen Tablets	400 mg	2	1	30	60	1	1	1	0.2298 (.2298*1.25)*2*60	34.47	135.00	0.26	0.0185 (.0185*1.5)*60*25	41.63	0.83	0.31
10828	3 Magnesium Trisilicate	Magnesium Trisilicate	10 ml	3	1	30	90	1	1	1		337.50			0.0028 (.0028*1.5)*90*25	9.45		0.03
14590	1 Mint Magnesium Trisilicate	Magnesium Trisilicate	10 ml	3	1	14	42	1				61.50			0.0028 (.0028*1.5)*42*25	4.41		0.07
14590	2 Vitamin B Complex	Vitamin B Complex		3	1	30	90	1				96.43			0.0028 (.0028*1.5)*90*25	9.45		0.10
14590	3 Brenerdin Tablets	Combination drug/No generic		1	1	30	30	1	1	1		132.00						
14590	4 Hydrochlorothiazide Tablets	Hydrochlorothiazide Tablets	50 mg	1	1	30	30	1				11.50			0.0039 (.0039*1.5)*30*25	4.39		0.38
14914	0 No medication prescribed	NA																
15796	1 Ampicillin Capsules	Ampicillin Capsules		1	7	1	7	1				36.80						
15796	2 Probenecid Tablets	Probenecid Tablets	1 g	1	2	1	2	1	1			18.20			0.0402 (.0402*1.5)*2*2*25	6.03		0.33
16113	1 Amoxycillin Suspension	Amoxycillin Suspension	5 ml	3	5	7	105	1			0.5000 (.5*1.25)*105	65.63	71.00	0.92	0.0110 (.0110*1.5)*105*25	43.31	1.52	0.61
16113	2 DPH Elixir	Diphenhydramine HCl Elixir	5 ml	3	5	5	75	1	1			49.75			0.0049 (.0049*1.5)*75*25	13.78		0.28
16113	3 Cetamol Syrup	Paracetamol Syrup	5 ml	3	5	5	75	1	1		1.7600 (1.76*1.25)*75	165.00	168.75	0.98	0.0061 (.0061*1.5)*75*25	17.16	9.62	0.10
21021	1 Oxybion Suspension	Ampicillin Suspension	5 ml	4	1	7	28	1	1	1		113.75			0.0080 (.0080*1.5)*28*25	8.40		0.07
21021	2 Diphenbel Hydramine Elixir	Diphenhydramine HCl Elixir	5 ml	3	1	7	21	1	1			18.00			0.0049 (.0049*1.5)*21*25	3.86		0.21
21021	3 Cetamol Syrup	Paracetamol Syrup	5 ml	3	1	5	15	1	1		0.0589 (.0589*1.25)*15	1.10	33.75	0.03	0.0061 (.0061*1.5)*15*25	3.43	0.32	0.10
21021	4 Tetracycline Ointment	Tetracycline Ointment		2	1	7	14	1	1			62.80			0.0301 (.0301*1.5)*14*25	15.80		0.25
21433	1 Amitriptyline HCl	Amitriptyline HCl	10 mg	1	1	14	14	1	1		0.0847 (0.0847*1.25)*14	1.46	12.80	0.12	0.0081 (.0081*1.5)*14*25	4.25	0.35	0.33
21433	2 Vitamin B Complex	Vitamin B Complex		1	1	14	14	1	1			31.50			0.0028 (.0028*1.5)*14*25	1.47		0.05
21651	1 Chloromycetin Eye Drops	Chlorophenicol Eye Drops	5 ml	2	0.5	7	7	1			1.3060 (1.306*1.25)*7	11.43	102.20	0.11	0.0491 (.0491*1.5)*7*25	12.89	0.89	0.13
21652	1 Hemafed Capsules	Combination drug/No generic		3	1	30	90	1				98.00						
21652	2 Panadol Tablets	Paracetamol Tablets	500 mg	3	2	7	42	1	1	1	0.0304 (.0304*1.25)*42	1.60	72.80	0.02	0.0101 (.0101*1.5)*42*25	15.91	0.10	0.22
900010	1 Hemafed Capsules	Combination drug/No generic		1	1	14	14	1				15.24						
900010	2 Panadol Tablets	Paracetamol Tablets	500 mg	2	2	6	24	1	1	1	0.0304 (.0304*1.25)*24	0.91	41.60	0.02	0.0101 (.0101*1.5)*24*25	9.09	0.10	0.22
900020	1 Penaduria Injection	Penicillin, Benzathine Injection	1.2 mu	1	1	1	1	1	1	1	6.0400 (6.04*1.25)*1	7.55	180.00	0.04	0.2422 (.2422*1.5)*1*25	9.08	0.83	0.05
900020	2 Panadol Tablets	Paracetamol Tablets	500 mg	2	1	12	24	1	1	1	0.0304 (.0304*1.25)*24	0.91	41.60	0.02	0.0101 (.0101*1.5)*24*25	9.09	0.10	0.22
900030	1 Flagyl Tablets	Metronidazole Tablets	250 mg	3	1	7	21	1			0.0242 (.0242*1.25)*21	0.64	21.65	0.03	0.0612 (.0612*1.5)*21*25	48.20	0.01	2.23
900030	2 Nystatin Pessaries	Nystatin Pessaries	100Kiu	1	1.5	7	10	1	1	1	3.3053 (3.3053*1.25)*10	41.32	141.20	0.29	0.0612 (.0612*1.5)*10*25	22.95	1.80	0.16
900040	0 None, Only dressing	NA																
900050	0 None, Referred for testing	NA																
900060	1 Diabinese Tablets	Chlorpropamide Tablets	250 mg	1	1	60	60	1			0.2056 (0.2056*1.25)*60	15.42	224.00	0.07	0.0121 (.0121*1.5)*60*25	27.22	0.57	0.12
900060	2 Aldomet Tablets	Methyldopa Tablets	500 mg	1	2	60	120	1			0.0460 (.0460*1.25)*120	6.90	122.00	0.04	0.0326 (.0326*1.5)*2*120*25	293.40	0.02	1.61
900060	3 Lasix Tablets	Furosemide Tablets	20 mg	1	0.5	14	7	1				26.95			0.0067 (.0067*1.5)*7*25	1.76		0.07
900060	4 Vitamin B Complex	Vitamin B Complex		1	1	14	14	1				15.00			0.0028 (.0028*1.5)*14*25	1.47		0.10
Means												24.81	120.68	0.16		26.96	0.92	0.22
Number of entries												25	48	25		39	24	39
Standard error of the mean												7.72	28.10	0.05		8.32	0.39	0.07

