Costs of diarrhoeal diseases and the savings from a control programme in Cebu, Philippines

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A control of diarrhoeal diseases programme was set up in Cebu Province, Philippines, in 1986. In order to compare the reduction in treatment costs before and after implementation of the programme, and the potential savings to be made from its continuation, we collected data for 1985 and 1989 in 10 health facilities in Cebu. Since the programme's introduction, household expenditures on drugs for diarrhoea cases have decreased by a total of 1.03 million Phillipine pesos *(P) (US$ 41 200). At the health centre level, the costs of treating diarrhoea cases were close to optimum, but in the district hospitals treatment of inpatients with diarrhoea changed little between 1985 and 1989. This arose because such hospitals were compensated by the central authorities for inpatients but not for outpatients. Potential savings of around US$ 60 000 could have been made, however, had the district hospitals adopted the practices used in the main referral hospital.*

Introduction

Global efforts to control diarrhoeal diseases began in the 1970s, and by the end of 1991 a total of 129 countries had national plans for the control of diarrhoeal diseases (CDD) programmes.[a] Although considerable effort has been expended in the evaluation of these programmes,[b] few attempts have been made to estimate their cost-effectiveness. In 1988 WHO developed a manual for estimating costs in cost-effectiveness analysis in order to encourage Member States to assess the economic aspects of diarrhoeal diseases.[c] Some CDD programmes have examined the benefits of introducing oral rehydration therapy in major teaching hospitals (*1*, *2*), but few studies of the associated costs and savings at the community level have been carried out (*3*).

A thorough evaluation of the effectiveness of a primary health care intervention requires a set of assessment tools (*4*). Only a few CDD programmes have been able to implement all the recommended stages and an overall evaluation, including an assessment of their effects on morbidity and mortality, has not yet been carried out.[d] In the meantime, CDD programmes should attempt to measure their impact on outcomes such as correct case management or savings from improved practices in the community or in health facilities.[e]

Since 1987 the national CDD programme in the Philippines has implemented a number of activities to reduce diarrhoea mortality and morbidity among under-5-year-olds. Four diarrhoea training units have been established, oral rehydration therapy (ORT) units have been set up in most health facilities, and many courses on the clinical management of diarrhoeal diseases and supervisory skills have been conducted. Oral rehydration salts (ORS) have been produced by the government since 1985, and prior to this several commercial products were available in the Philippines.

In 1990 a study aimed at estimating the costs of diarrhoeal diseases, savings from programme interventions, and potential savings from further CDD activities was carried out by the Department of Health in collaboration with WHO. This article presents some of the key findings and the main conclusions of the study.

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[a] *Programme for Control of Diarrhoeal Diseases: eighth programme report 1990–1991.* Unpublished document WHO/CDD/92.38.

[b] *Diarrhoeal Diseases Control Programme Technical Advisory Group, Tenth Meeting, Geneva, 13–17 March 1989: approaches to evaluation.* WHO unpublished document CDD/TAG/89.5.

[c] *Estimating costs for cost-effectiveness analysis: guidelines for managers of diarrhoeal diseases control programmes.* WHO unpublished document CDD/SER/88.3.

[d] *CDD programme management: a training course.* WHO unpublished document.

[e] See footnote *c*.

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The study was carried out in Cebu Province, since it has one of the most active and best-documented CDD programmes in the Philippines. Cebu Province is located in the central part of the Philippines and comprises the island of Cebu and a few smaller surrounding islands. In 1989 the island had a population of 1.6 million, 56% of whom lived in metropolitan Cebu, the second largest city in the Philippines. Agriculture and fishing are the major sources of income, but local industry and the service sector also provide employment for a good number of people. Cebu has experienced a considerable economic boom over the last few years.

In Cebu the CDD programme is managed by a person working full time for diarrhoeal disease control in a region comprising three other provinces; at the provincial level the programme is fully integrated at all levels. The programme promotes correct case management, proper nutrition and hygiene, and provision of safe water. The supply of water and sewage systems does not, however, fall under the Department of Health.

The purpose of the current study was to estimate the costs of diarrhoeal diseases in Cebu before and after the introduction of the CDD programme and to gauge some of the savings (actual and potential) derived from the intervention. A further aim was to identify at which levels (from households up to the referral hospitals) the programme had reduced the costs of diarrhoea treatment. The final objective was to clarify the potential savings that could be expected from a continuation and intensification of the programme.

Methodology

A comparison was made for 1985 and 1989 of the calculated costs of diarrhoeal diseases in different types of health facilities. The baseline was chosen as 1985 since a formal CDD programme did not really start in Cebu until 1986; ORS had, however, been distributed through health facilities since at least 1985.

Data were collected during visits to the central referral hospital, three district hospitals, three rural health units, and three *barangay* health stations (small facilities usually staffed by a midwife and a nurse). The facilities that were selected represented the three major socioeconomic areas in the province—urban, periurban, and rural.

In each of the study facilities 15 clinical records of children aged <5 years who had a diagnosis of diarrhoea or gastroenteritis in 1985 and 1989, respectively, were reviewed (in the hospitals, 15 inpatients and 15 outpatients). The treatment given and duration of stay were recorded for each case. The prices of drugs or intravenous fluids bought by the hospitals were obtained from purchase orders kept by the hospital accountant; the prices of drugs bought by the public were taken from the Philippine's pharmacopoeia for 1985 and 1989.

Information on staff expenditures and the costs of maintenance and other operations (referred to here as MOOE (maintenance and other operational expenses)) were collected from budgets or annual statements of expenditures in the districts visited.

The recording of the data and the time allocated for the study did not permit an accurate assessment of the capital costs, and therefore they were not considered in the analysis.

The salaries and MOOE for treating diarrhoea among children aged <5 years were calculated by multiplying the total expenses for these items by the proportion of all childhood cases at the health facility that were diagnosed as diarrhoea. For inpatients the mean length of stay for diarrhoea cases was compared with the mean length of stay for all cases and the cost calculated accordingly; for example, if a diarrhoea case stayed, on average, only half as long in the ward as an average case of any illness, it was assumed that costs of salaries and MOOE for treating a diarrhoea case were half those of a general case.

The estimates for the referral hospital (Southern Island Medical Center (SIMC)) were obtained in a similar way to those for the district hospitals. There were no records on outpatients at SIMC for 1985; hence assumptions about the use of ORS had to be made, based on standard recommendations, while the costs of drugs were not included for 1985. Expenditures for inpatient care in private hospitals were not included in the analysis since such hospitals admit very few children with diarrhoea.

In order to assess the expenses incurred by the families of children with diarrhoeal diseases, we used data from surveys conducted in metropolitan Cebu in 1987, 1988, and 1989. Household expenses on drugs and ORS were estimated from the results of two extensive household surveys conducted in 1987 and 1989. The general rates of drugs use in these surveys were 54.8% (1987) and 35.7% (1989), while the rates for ORS use were 7.6% and 16.7%, respectively. The 1989 survey provided details on the types of drugs used. In the absence of such data for 1987, we assumed that no changes in the pattern of drug use had taken place, i.e., that the reduction in use was the same for all types of drugs. The quantities of drugs used were assumed to correspond to the recommended amount and duration of a course of treatment. Data on the incidence of diarrhoea in metropolitan Cebu were obtained from the 1987 and 1989 household surveys.

Information on health-care-seeking behaviour for diarrhoea was obtained from the results of a market survey conducted in 1988 (5). This indicated that 40% of the children with diarrhoea were taken to a health care provider and that 60% of such children were seen by private practitioners. These data were used to calculate the costs of consultations. The proportion of the costs of ORS and drugs borne by a household was also estimated using data from the market survey. For example, the survey showed that most people received ORS free, in which case the cost was assigned to the health services. The costs associated with travelling to the hospitals were estimated from the average bus fare. Loss of income related to the consultation was set to the value of a half-day's work of a female vendor of local products in the market.

Based on information from local authorities, the average fee for consulting a private practitioner in 1989 was set at Philippine *pesos* (P) 30 (US$ 1.36). All costs were adjusted to 1989 levels using a general consumer price index and drug price index provided by public statistical offices in Cebu and Manila.

To ascertain the costs of the interventions to control diarrhoeal diseases, we determined the expenses for all types of CDD programme activities. There were no programme costs in 1985. The costs of national CDD activities, such as management in the Department of Health, were determined by multiplying the total costs for the activity by the proportion of the total population living in Cebu Province; the same procedure was used for costs at the regional level. Training costs were estimated by multiplying the number of participants from Cebu attending a course by the average cost of a participant on that course.

The data were collected by a team of nine persons consisting of WHO advisers, senior programme managers, and senior nurses. Structured forms were used to collect the data.

Results

Household level

Expenses at the household level in metropolitan Cebu were estimated for 1987 and 1989. Household expenditure on drugs for an average child with diarrhoea decreased in real terms by approximately P 5.30 (US$ 0.24) per case from 1987 to 1989 (Table 1). Inclusion of all expenses indicates that a household spent about P 3.70 less than in 1987 on a diarrhoea episode involving a child. From the incidence of diarrhoea obtained in the household survey in 1989 this corresponds to a saving of P 1.03 million (US$ 46 818) for metropolitan Cebu as a whole.

Health centre level

Treatment costs were practically optimal at *barangay* health stations and rural health units, in the sense that there was little use of drugs and intravenous

Table 1: **Estimated costs (1989 prices, Philippine *pesos* (P)) for treating diarrhoea cases aged <5 years in households in metropolitan Cebu, Philippines, 1987 and 1989**[a]

	Cost per case (P)	Proportion paid by self[b]	Total cost paid by self (P)	Estimated number of cases[c]	Total costs (P)	% of total costs
1987						
ORS	0.25	0.2	0.05	368 216	18 410.80	0.19
Drugs	16.89	0.9	15.20	368 216	5 596 883.20	58.98
Consultation fees	5.72	1	5.72	368 216	2 106 195.50	22.20
Travel	0.80	1	0.80	368 216	294 572.80	3.10
Lost income	4.00	1	4.00	368 216	1 472 864.00	15.52
Total costs	32.96		25.77		9 488 926.30	100.00
1989						
ORS	0.64	0.2	0.13	275 627	35 831.50	0.58
Drugs	11.01	0.9	9.91	275 627	2 731 463.50	44.97
Consultation fees	7.20	1	7.20	275 627	1 984 514.40	32.67
Travel	0.80	1	0.80	275 627	220 501.60	3.63
Lost income	4.00	1	4.00	275 627	1 102 508.00	18.15
Total costs	23.65		22.04		6 074 819.00	100.00

[a] US$ 1.00 = P22.
[b] Estimated values (see text for explanation).
[c] Number of cases were estimated from the incidence found in household surveys in 1987 and 1989.

fluids (Table 2). Almost all cases of diarrhoea were given ORS both in 1985 and in 1989.

Hospital level

District hospitals. The treatment costs in district hospitals almost doubled from 1985 to 1989 (Table 2). This was partly due to a substantial increase in salaries and maintenance costs, but expenses on drugs and intravenous fluids also continued to be high for inpatients. There was a small reduction in costs for intravenous fluids over this period, but an increase in expenditures on drugs.

Referral hospital. The change in the diarrhoea case management practices following the establishment of an ORT unit and a diarrhoea training unit had a considerable impact on the type, outcome (Fig. 1), and treatment costs (Table 3) for paediatric diarrhoea cases aged under 5 years at SIMC between 1985 and 1989.

The costs for intravenous fluids fell from P 175 (US$ 7.95) per diarrhoea inpatient in 1985 to P 24 (US$ 1.09) in 1989. Similarly, the costs of drugs decreased from P 48 (US$ 2.18) to P 4 (US$ 0.18). Whereas in 1985, the costs of intravenous fluids represented 23% of the total recurrent costs per diarrhoea patient, in 1989 they constituted only 2%.

Table 2: **Estimated average costs (1989 prices, Philippine *pesos* (P)) for treating 15 diarrhoea patients aged <5 years in three district hospitals, three rural health units, and three *barangay* health stations in Cebu Province, Philippines, in 1985 and 1989**[a]

	Costs (P) in:			
	District hospitals		Rural health units	*Barangay* health stations
	Inpatients	Outpatients		
1985				
ORS	1.45	2.18	2.18	3.55
Drugs	33.54	15.46	11.25	0.00
Intravenous fluids	60.47	0.00	0.00	0.00
Salaries + MOOE[b]	316.15	37.19	61.69	18.75
Total	411.62	54.83	75.12	22.30
1989				
ORS	3.17	4.58	4.58	4.25
Drugs	40.88	13.38	1.37	0.00
Intravenous fluids	44.17	0.00	0.00	0.00
Salaries + MOOE[b]	712.38	107.57	80.02	20.29
Total	800.60	125.53	85.97	24.54

[a] US$ 1 = P22.
[b] MOOE = Maintenance and other operational expenses.

Table 3: **Average cost per case (1989 prices, Philippine *pesos* (P)) for treating 15 diarrhoea inpatients aged <5 years at the Southern Island Medical Center, Cebu, Philippines, in 1985 and 1989**[a]

	Costs (P) in:	
	1985	1989
ORS	0.49	2.47
Intravenous fluids	175.16	24.10
Drugs	47.98 (223.14)[b]	3.63 (27.73)
Salaries + MOOE[c]	532.42	1076.03
Total	756.05	1106.23

[a] US$ 1 = P22.
[b] Figures in parentheses are the subtotal for the costs of intravenous fluids and drugs.
[c] MOOE = Maintenance and other operational expenses.

Also, between 1985 and 1989 the proportion of the total cost attributable to drug use fell from 6% to less than 1%. Overall, the costs of intravenous fluids and drugs per diarrhoea patient fell from P 223 (US$ 10.13) to P 28 (US$ 1.27). Since 544 children were reported to have been admitted to the hospital with diarrhoea in 1989, the actual saving was P 106 080 (US$ 4822) compared with a situation in which treatment practices had remained unchanged.

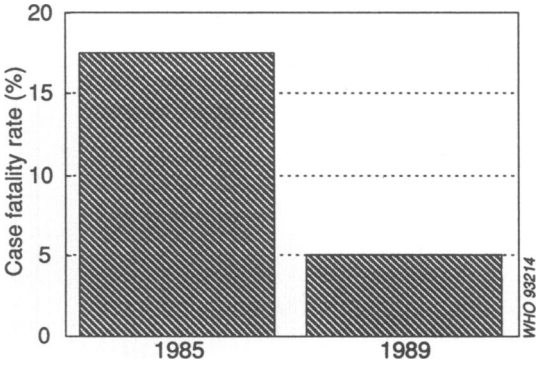
A review of the hospital records revealed that, compared with 1985, a larger proportion of the cases admitted in 1989 were of more severe or complicated diarrhoea. This may have arisen because cases with mild or moderate dehydration were treated with ORT in the outpatient department or more cases of complicated diarrhoea were referred to the hospital, since the medical centre had gained a reputation as a diarrhoea clinic. Despite this, the proportion of diarrhoea-associated deaths among under-5-year-olds was only 5.0% in 1989 compared with 18.3% in 1985, a reduction of 73% (Fig. 1).

Programme costs

Expenditures for running the CDD programme, such as the costs of management, training, and communications, can be viewed as the price of the intervention to achieve the savings at the household and health facility level. The estimated total costs of the CDD programme in Cebu province since its inception are shown in Table 4. As a result of programme acceleration, the costs increased considerably over the study period; much of this increase was due to a communication's project.

Since the programme investments shown in Table 4 were spread over a 5-year period, it is difficult to determine exactly how much the programme

Fig. 1. **Case fatality rate for diarrhoea among under-5-year-olds at the Southern Island Medical Center, Cebu, Philippines, 1985 and 1989.**



cost per year. The most straightforward way to obtain the annual cost would be to divide by 5 the total costs in Table 4, which gives P1.3 million (US$ 59 091) as the estimated cost of programme interventions in 1989.

Discussion and conclusions

The findings presented in this article were obtained from a larger study of the costs of diarrhoeal diseases and savings from an intervention programme.[f]

A substantial reduction in household expenditures on drugs occurred from 1987 to 1989. This could have been caused by either a poorer supply of drugs or lower real incomes in 1987, but there was no evidence that this was the case. More probably, the change was the result of efforts by the CDD programme and the Department of Health to reduce the misuse of drugs in diarrhoea management and to promote the use of ORT. Nevertheless, efforts should be made to reduce further the public's expenditure on drugs. Based on epidemiological findings in the Philippines, at most 10% of children with diarrhoea need antibiotics. Hence, the potential savings at the household level from only this intervention are around P 9.90 (US$ 0.45) per diarrhoea case.

Good treatment practices prevailed at the peripheral health level (rural health units and *barangays*) in 1989. This seems to have been the case also as early as in 1985, possibly because there were few doctors stationed in rural health units at that time. Paramedical staff do not usually dispense drugs. The impact of the acceleration of the CDD programme at this level since 1987 is difficult to assess, but what is clear is that the messages to limit the use of drugs and ensure ample use of ORT for diarrhoea reached the staff in charge of case management.

The treatment practices for under-5-year-old inpatients with diarrhoea in the district hospitals studied did not change as much as expected. Instead, the treatment costs increased considerably at this level. Salaries, and the maintenance of equipment and buildings accounted for a large proportion of the costs. Since inpatients are more resource-demanding, the cost increase could have been offset by shifting patients from wards to the ORT unit. Admission rates fell only slightly, however, in two of the hospitals and by a little more than 50% in the third hospital.

The costs for inpatients could have been reduced if less intravenous fluids and fewer drugs had been used to treat the diarrhoea cases. In two hospitals less was spent on intravenous fluids in 1989 than in 1985, and in one hospital less was spent on drugs, although the overall changes were small. In the district hospitals intravenous fluids and drugs are overused.

Capital costs were not considered in the study, but they would have been greater for inpatient than outpatient care. The relative costs of inpatient treatment are therefore likely to be underestimates.

In the study area there was little incentive for hospital managers to reduce the number of admissions since district hospitals receive a subsidy of P 95 per inpatient from central levels to cover costs of maintenance and other expenses, but receive nothing for outpatients. Because of the generous policy on admissions that results from this, once a child is in the ward the doctor on duty may feel obliged to administer treatment that corresponds to the level of hospital care and to the carers' expectations, even if the child concerned presents with only mild dehydration. This could explain some of the overuse of drugs; also the widespread misconception that intravenous therapy is more effective and requires less monitoring by the nurse could be a reason for its overuse.

The CDD programme should accelerate its efforts to improve case management in district hospitals since the cost of treatment at this level is high and is a major contributor to the total cost of treatment in Cebu Province.

To illustrate the scope of the problem with the district hospitals (15 in Cebu Province), we made various assumptions to estimate the proportion of the total costs for diarrhoea accounted for by inpatient care. An estimate of 30% was obtained by making

[f] **Forsberg, B.C.** *Cost-effectiveness study for diarrhoeal disease control programme.* WHO Regional Office for the Western Pacific, unpublished document ICP/CDD/001–E, 1990.

Table 4: **Direct costs (in Philippine *pesos*) for the control of diarrhoeal diseases programme in Cebu Province, Philippines**[a]

	Cost (P) at the level:[b]				
	National	Regional	Province	District	Total
Management	25 871	167 200	16 500	3700	213 271
Training	4447	122 057	980 376	252 105	1 358 985
Workshops on curriculum revision	2520	54 682	517 232		574 434
Communication	2 827 991	72 156			2 900 147
Instructional material	119 872				119 872
Monitoring and evaluation		51 000	200 000		251 000
Logistics	13 898	187 010	11 715		212 623
Total annual cost[c]	619 617	264 581	358 365	54 121	1 296 683

[a] Costs represent the amount of total CDD costs at each level that were assumed to have been of direct benefit to Cebu Province.
[b] Management costs were for 1989; other costs were the total for 1985–89; US$ 1 = P 22.
[c] Total annual cost was calculated by dividing by five the total costs for 1985–89 plus management costs for 1989.

the assumption (based on field study findings) that around 16% of children with diarrhoea taken to public health facilities are brought to district hospitals, while an estimate of 50% was based on an assumption that a district hospital on average deals with 5–6 cases of childhood diarrhoea per day. For these estimates it was assumed that 16% of children with diarrhoea are taken to a public health facility, as found in the 1988 market survey.

There is little doubt that increased efforts to change practices in district hospitals should be given high priority. Attempts should be made to treat in the outpatient departments all children with no or some signs of dehydration. District managers should be informed of the high cost of treating cases as in-patients and made aware of the potential savings to be gained from improved case management practices.

Of prime importance in this process is the need to increase use of ORT units. The ORT unit at the central referral hospital (SIMC), where the cost per case cured was close to optimum, provides a good example of cost-effective diarrhoea case management. Even though the district hospitals that were surveyed had ORT units, they did not appear to be very actively used. If the patients treated in such units could be counted as admissions, an important obstacle would be removed since it would permit reimbursement of hospitals for their use.

If our findings for the three district hospitals studied apply also to the other district hospitals in the province, an improvement in diarrhoea case management practices along the lines of that made in the central referral hospital would have reduced the total cost of diarrhoea in the province by P 1.3 million (US$ 59 091) in 1989 for the 15 district hospitals.

Although our results do not permit definite conclusions to be drawn, there are reasons to believe that promotion of the CDD programme through health education and the mass media has contributed to several of the positive changes observed in Cebu. Programme costs for the province were estimated to be P 1.3 million (US$ 59 091) in 1989, expenses which seem to have been worthwhile. Only in metropolitan Cebu alone there were savings at the household level of P 1.03 million (US$ 41 200) in 1989 compared with 1987.

How do our results compare with those of other studies of the cost-effectiveness of diarrhoeal diseases programmes in developing countries? The study confirms findings from Mexico, Malawi, and Lesotho (*1, 2, 6*) that considerable savings can be made by introducing oral rehydration practices in major hospitals, such as SIMC. These three studies reported a reduction in the number of inpatients treated for diarrhoea and a shift from the use of intravenous fluids and drugs to ORT as the major sources of cost reductions. In Lesotho, the smaller units in the health care system sometimes lagged in the development of ORT services and, because of this, incur-

red unnecessarily high costs (*7*). In Cebu, district hospitals did not comply with CDD programme policy and accounted for a large share of the total costs for diarrhoeal diseases in the province. For purposes of comparison, it should be noted that a study in Indonesia found that hospital costs only accounted for 4% of the total costs of diarrhoeal diseases (*3*).

Some studies in developing countries have reported a considerable variation in the costs associated with different health facilities (*7, 8*), something also seen in Cebu. Some of this variation might arise because of poor reporting. However, allocation of resources is not always based on the actual work load. This leads to wastage of resources in some facilities and a shortage in others. In view of this, it is clear that improved recording and reporting are essential before improvements can be made in the management of resources in the health sector.

In Indonesia it has been estimated that the average cost of an episode of diarrhoea among children aged under 5 years is US$ 2.27. In Cebu the costs per case were estimated to be US$ 2.50.[g] A review cited by Lerman et al. found that the cost of diarrhoea treatment per case in various countries ranged from US$ 0.70 to US$ 4.57 (*3*).

The costs of diarrhoeal diseases are high and highlight the need for programmes to increase their emphasis on the prevention and treatment of these diseases. Although we did not take into account the indirect benefit to be gained from such an approach, e.g., improved quality of life for children less exposed to potentially dangerous drugs and intravenous treatment, or a possible reduction in child mortality, our findings suggest that interventions to control diarrhoeal diseases are valuable.

[g] See footnote *f*, p. 583.

Résumé

Coût des maladies diarrhéiques et économies réalisées grâce à un programme de lutte à Cebu, Philippines

Cet article présente les résultats d'une étude du coût du traitement de la diarrhée chez les moins de cinq ans à domicile et dans un établissement de soins, avant (1985) et après (1989) la mise en place d'un programme de lutte contre les maladies diarrhéiques (LMD) dans la Province de Cebu, aux Philippines. Les données de 1985 et 1989 ont été recueillies dans dix établissements de soins représentant trois niveaux du système de soins de santé; elles ont été complétées par des informations tirées d'enquêtes à domicile et des rapports officiels des bureaux provinciaux et régionaux de santé publique.

Les dépenses des foyers en médicaments, par cas de diarrhée, dans l'agglomération de Cebu, ont diminué de 5,30 *pesos* philippins entre 1987 et 1989, ce qui correspond à une économie de 1,03 million de *pesos* (US$ 41 200) pour la région. Au niveau du centre de soins, les coûts de traitement étaient quasi-optimaux, avec des dépenses peu élevées en médicaments et solutions intraveineuses. Dans les hôpitaux de district, le traitement des malades hospitalisés a peu varié entre 1985 et 1989: il s'agissait souvent d'enfants et l'on faisait largement appel aux solutions intraveineuses et aux médicaments; par conséquent, le coût du traitement des malades hospitalisés a considérablement augmenté entre 1985 et 1989. Des économies importantes auraient pu être faites si les méthodes de prise en charge des cas de diarrhée avaient été modifiées dans les hôpitaux de district comme elles l'ont été à l'hôpital principal. Dans ce dernier, l'adoption de la thérapie par réhydratation orale (TRO) a considérablement réduit les dépenses en solutions intraveineuses et en médicaments, qui sont passées de 223 *pesos* par cas hospitalisé en 1985 à 28 *pesos* en 1989, soit une économie annuelle d'environ 106 000 *pesos*. Qui plus est, pendant cette même période le taux de létalité des maladies diarrhéiques chez les moins de cinq ans est tombé de 18% à 5%. Le coût annuel du programme LMD pour la période 1985–1989 a été estimé à 1,3 million de *pesos* (US$ 52 000).

Les salaires et les frais de maintenance contribuent pour une large part au coût du traitement des malades hospitalisés; ces coûts seraient plus faibles si un plus grand nombre de malades étaient traités en ambulatoire et réhydratés par voie orale. On aurait également pu de cette façon limiter les dépenses en médicaments et en solutions intraveineuses. Cette politique aurait pu être mise en place rapidement s'il n'y avait eu un obstacle financier, à savoir que les hôpitaux recevaient du pouvoir central une indemnité de 95 *pesos* par malade hospitalisé, tandis que le coût des malades ambulatoires n'était pas pris en charge. Manifestement, les postes de réhydratation orale des services ambulatoires des hôpitaux de district étaient peu utilisés. Si les enfants traités dans ces services pouvaient être comptabilisés comme "hospitalisés", l'un des obstacles à l'utilisation de la TRO tomberait. Il serait possible d'économiser 1,3 million de *pesos* en modifiant les méthodes de traitement dans les hôpitaux de district pour les aligner sur celles qui étaient en

vigueur à l'hôpital principal en 1989. Dans les foyers, il serait encore possible de faire baisser les coûts de 9,90 *pesos* par cas en continuant à réduire l'emploi de médicaments pour le traitement de la diarrhée.

Nos résultats confirment ceux d'études plus anciennes, selon lesquelles le coût des maladies diarrhéiques est considérable, et les programmes de lutte peuvent amener des économies appréciables, tant au niveau des ménages qu'au niveau des services de santé.

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